

Table of Contents

Course Descriptions	3	Culinary Arts	119
Quarter	3	Custom-Designed Major	122
Undergraduate	3	Dance	123
Accounting	4	Data Science	126
Advertising Design	6	Design & Merchandising	126
Africana Studies	7	Digital Media	130
Anatomy	9	Economics	131
Animation	9	Education Human Resource Development	134
Anthropology	12	Education Learning Technologies	135
Arabic	14	Electrical & Computer Engineering	137
Architecture	15	Electrical & Computer Engineering - Power Engineering	142
Architectural Engineering	44	Electrical & Computer Engineering - Computers	145
Art History	45	Electrical & Computer Engineering - Electroph	148
Arts & Sciences-Interdisp Stud	48	Electrical & Computer Engineering - Systems	150
Behavioral & Addictions Couns	49	Electrical Engineering Lab	154
Biomedical Engineering & Sci	52	Electrical Engineering Technology	155
Biomedical Engineering Tech	61	Engineering Management	158
Bioscience & Biotechnology	62	Engineering, General	160
Business Analytics	73	English	161
Business Statistics	74	English as a Second Language	167
Chemical Engineering	75	Entertainment & Arts Management	173
Chemical Engineering Chemistry	78	Entrepreneurship and Innovation	176
Chemistry	79	Environmental Engineering	180
Chinese	84	Environmental Graphic Design	183
Civic Engagement	86	Environmental Science	184
Civil & Arch Engineering	87	Environmental Studies & Sustainability	191
Civil Engineering	87	Exercise Science	192
Civil, Arch & Envr Engr	90	Fashion Design	194
Common Exams	91	Film & TV Production	197
Communication	91	Film Studies	202
Complementary and Integrative Therapies	98	Finance	204
Computer Engineering Technology	98	First-Year Exploratory Studies	206
Computer Science	99	Food Science	207
Computing and Informatics	105	French	208
Computing Technology	106	Game Art & Production	210
Construction Management	108	General Business	212
Cooperative Education	112	General Studies	214
Creativity Studies	112	Geoscience	215
Criminology & Justice Studies	113	German	218
		Global Studies	220
		Graphic Design	221

Health Sciences	224	Peace Engineering	324
Health Services Administration	228	Performing Arts	324
Hebrew	233	Philosophy	325
History	234	Philosophy, Politics and Economics	329
Honors Program	241	Photography	330
Hotel & Restaurant Management	243	Physics	333
Human Resource Management	247	Physics - Environmental Science	340
Humanities, General	247	Political Science	340
Industrial Engineering	248	Product Design	344
Information Science & Systems	251	Professional Studies	347
Interactive Digital Media	254	Project Management	348
Interior Design	257	Psychology	349
International Business	260	Public Health	355
International Studies	261	Real Estate	360
Italian	261	Real Estate Management & Development	361
Japanese	261	Religious Studies	362
Jewish Studies	263	Retail Leadership	362
Korean	266	Science, Technology and Society	363
Language	267	Screenwriting & Playwriting	364
Law	267	Sociology	367
Legal Studies	269	Software Engineering	372
Linguistics	271	Spanish	373
Management	271	Special Education	375
Management Information Systems	273	Sport Coaching Leadership	377
Manufacturing Engineering Technology	274	Sport Management	379
Marketing	277	STEM Teacher Education	382
Materials Engineering	280	Systems Engineering	384
Mathematics	283	Taxation	385
Mathematics Education	289	Teacher Education	386
Mechanical Engineering & Mechanics	290	Theatre	390
Mechanical Engineering Technology	297	TV Production	393
Middle East and North Africa Studies	299	TV Studies	393
Military Science	299	Visual Studies	394
Music	301	VR and Immersive Media Design	397
Music Industry Program	305	Web & Motion Graphic Design	399
Naval Science	310	WEST Studies	399
Neuroscience	311	Women's and Gender Studies	400
Nursing	311	Writing	401
Nutrition & Food Science	318	Index	406
Operations Management	321		
Operations Research	322		
Organizational Behavior	323		

Course Descriptions

- Quarter (p. 3)
 - Graduate (<https://catalog.drexel.edu/coursedescriptions/quarter/grad/>)
 - Undergraduate (p. 3)
- Semester (<https://catalog.drexel.edu/coursedescriptions/semester/>)
 - Graduate (<https://catalog.drexel.edu/coursedescriptions/semester/grad/>)
 - Undergraduate (<https://catalog.drexel.edu/coursedescriptions/semester/undergrad/>)

Quarter

- Graduate (<https://catalog.drexel.edu/coursedescriptions/quarter/grad/>)
- Undergraduate (p. 3)

Undergraduate

Antoinette Westphal College of Media Arts & Design (A)

Advertising Design (ADGD) (p. 6)
 Animation (ANIM) (p. 9)
 Architecture (ARCH) (p. 15)
 Art History (ARTH) (p. 45)
 Dance (DANC) (p. 123)
 Design & Merchandising (DSMR) (p. 126)
 Digital Media (DIGM) (p. 130)
 Entertainment & Arts Management (EAM) (p. 173)
 Environmental Graphic Design (EVGD) (p. 183)
 Fashion Design (FASH) (p. 194)
 Film & TV Production (FMTV) (p. 197)
 Film Studies (FMST) (p. 202)
 Game Art and Production (GMAP) (p. 210)
 Graphic Design (VSCM) (p. 221)
 Interactive Digital Media (IDM) (p. 254)
 Interior Design (INTR) (p. 257)
 Music (MUSC) (p. 301)
 Music Industry Program (MIP) (p. 305)
 Performing Arts (PRFA) (p. 324)
 Photography (PHTO) (p. 330)
 Product Design (PROD) (p. 344)
 Retail Leadership (RETL) (p. 362)
 Screenwriting & Playwriting (SCRIP) (p. 364)
 TV Production (TVPR) (p. 393)
 TV Studies (TVST) (p. 393)
 Theatre (THTR) (p. 390)
 VR and Immersive Media Design (VRIM) (p. 397)
 Visual Studies (VSST) (p. 394)
 Web & Motion Graphic Design (WMGD) (p. 399)
 Westphal Studies (WEST) (p. 399)

College of Arts and Sciences (AS)

Africana Studies (AFAS) (p. 7)
 Anthropology (ANTH) (p. 12)
 Arabic (ARBC) (p. 14)
 Arts & Sciences-Interdisp Stud (AS-I) (p. 48)

Bioscience & Biotechnology (BIO) (p. 62)
 Chemical Engineering Chemistry (CHEC) (p. 78)
 Chemistry (CHEM) (p. 79)
 Chinese (CHIN) (p. 84)
 Communication (COM) (p. 91)
 Criminology and Justice Studies (CJS) (p. 113)
 English (ENGL) (p. 161)
 English as a Second Language (ESL) (p. 167)
 Environmental Science (ENVS) (p. 184)
 Environmental Studies & Sustainability (ENSS) (p. 191)
 French (FREN) (p. 208)
 Geoscience (GEO) (p. 215)
 German (GER) (p. 218)
 Global Studies (GST) (p. 220)
 Hebrew (HBRW) (p. 233)
 History (HIST) (p. 234)
 Humanities, General (HUM) (p. 247)
 International Studies (IST) (p. 261)
 Italian (ITAL) (p. 261)
 Japanese (JAPN) (p. 261)
 Jewish Studies (JWST) (p. 263)
 Korean (KOR) (p. 266)
 Language (LANG) (p. 267)
 Linguistics (LING) (p. 271)
 Mathematics (MATH) (p. 283)
 Middle East & North African Studies (MENA) (p. 299)
 Neuroscience (NEUS) (p. 311)
 Philosophy (PHIL) (p. 325)
 Philosophy, Politics & Economics (PPE) (p. 329)
 Physics (PHYS) (p. 333)
 Physics-Environmental Science (PHEV) (p. 340)
 Political Science (PSCI) (p. 340)
 Psychology (PSY) (p. 349)
 Religious Studies (RELS) (p. 362)
 Science, Technology and Society (SCTS) (p. 363)
 Sociology (SOC) (p. 367)
 Spanish (SPAN) (p. 373)
 Women's and Gender Studies (WGST) (p. 400)
 Writing (WRIT) (p. 401)

LeBow College of Business (B)

Accounting (ACCT) (p. 4)
 Business Analytics (BSAN) (p. 73)
 Business Statistics (STAT) (p. 74)
 Economics (ECON) (p. 131)
 Finance (FIN) (p. 204)
 General Business (BUSN) (p. 212)
 Human Resource Management (HRMT) (p. 247)
 International Business (INTB) (p. 260)
 Legal Studies (BLAW) (p. 269)
 Management (MGMT) (p. 271)
 Management Information Systems (MIS) (p. 273)
 Marketing (MKTG) (p. 277)
 Operations Management (OPM) (p. 321)
 Operations Research (OPR) (p. 322)
 Organizational Behavior (ORGB) (p. 323)
 Project Management (PROJ) (p. 348)
 Real Estate Management & Development (REMD) (p. 361)
 Sport Management (SMT) (p. 379)
 Taxation (TAX) (p. 385)

Close School of Entrepreneurship (C)

Entrepreneurship and Innovation (ENTP) (p. 176)

College of Computing and Informatics (CI)

Computer Science (CS) (p. 99)
 Computing Technology (CT) (p. 106)
 Computing and Informatics (CI) (p. 105)
 Data Science (DSCI) (p. 126)
 Information Science & Systems (INFO) (p. 251)
 Software Engineering (SE) (p. 372)

Center for Civic Engagement (CV)

Civic Engagement (CIVC) (p. 86)

College of Engineering (E)

Architectural Engineering (AE) (p. 44)
 Biomedical Engineering Tech (BET) (p. 61)
 Chemical Engineering (CHE) (p. 75)
 Civil & Architectural Engineering (CAE) (p. 87)
 Civil Engineering (CIVE) (p. 87)
 Civil, Architectural & Environmental Engr (CAEE) (p. 90)
 Computer Engineering Technology (CET) (p. 98)
 Construction Management (CMGT) (p. 108)
 Elec & Comp Engr-Computers (ECEC) (p. 145)
 Elec & Computer Engr-Electroph (ECEE) (p. 148)
 Elec & Computer Engr-Power Eng (ECEP) (p. 142)
 Elec & Computer Engr-Systems (ECES) (p. 150)
 Electrical & Computer Engr (ECE) (p. 137)
 Electrical Engineering Lab (ECEL) (p. 154)
 Electrical Engr Technology (EET) (p. 155)
 Engineering Management (EGMT) (p. 158)
 Engineering, General (ENGR) (p. 160)
 Environmental Engineering (ENVE) (p. 180)
 Industrial Engineering (INDE) (p. 248)
 Manufacturing Engr Technology (MET) (p. 274)
 Materials Engineering (MATE) (p. 280)
 Mechanical Engr & Mechanics (MEM) (p. 290)
 Mechanical Engr Technology (MHT) (p. 297)
 Peace Engineering (PENG) (p. 324)
 Real Estate (REAL) (p. 360)
 Systems Engineering (SYSE) (p. 384)

Goodwin College of Professional Studies (GC)

First-Year Exploratory Studies (FYE) (p. 206)
 General Studies (GSTD) (p. 214)
 Professional Studies (PRST) (p. 347)

Thomas R. Kline School of Law (L)

Law (LAW) (p. 267)

College of Nursing & Health Professions (NH)

Anatomy (ANAT) (p. 9)
 Behavioral & Addictions Couns (BACS) (p. 49)
 Biomedical Engineering & Sci (BMES) (p. 52)
 Complementary & Integrative Therapy (CIT) (p. 98)

Culinary Arts (CULA) (p. 119)
 Exercise Science (ESCI) (p. 192)
 Food Science (FDSC) (p. 207)
 Health Sciences (HSCI) (p. 224)
 Health Services Administration (HSAD) (p. 228)
 Hotel & Restaurant Management (HRM) (p. 243)
 Nursing (NURS) (p. 311)
 Nutrition & Food Science (NFS) (p. 318)

Pennoni Honors College (PE)

Custom-Designed Minor (CSDN) (p. 122)
 Honors Program (HNRS) (p. 241)

Dornsife School of Public Health (PH)

Public Health (PBHL) (p. 355)

School of Biomedical Engineering, Science & Health Systems (R)

Biomedical Engineering & Sci (BMES) (p. 52)

School of Education (T)

Creativity Studies (CRTV) (p. 112)
 Education Human Resource Devel (EHRD) (p. 134)
 Education Learning Technologies (EDLT) (p. 135)
 Mathematics Education (MTED) (p. 289)
 STEM Teacher Education (ESTM) (p. 382)
 Special Education (EDEX) (p. 375)
 Sport Coaching Leadership (SCL) (p. 377)
 Teacher Education (EDUC) (p. 386)

University Courses (X)

Common Exams (EXAM) (p. 91)
 Cooperative Education (COOP) (p. 112)
 Military Science (MLSC) (p. 299)
 Naval Science (NSC) (p. 310)

Accounting

Courses

ACCT 110 Accounting for Professionals 4.0 Credits

The course is open only to non-business students. A nontechnical introduction to the principles of financial and managerial accounting with emphasis on the use and interpretation of financial reports, managerial planning and control. The course would also provide an overview of business entities and taxation for businesses and individuals. The course is for the individual who seeks a basic knowledge of accounting and its uses. It is designed for the user of accounting information rather than the preparer. This course cannot be substituted for ACCT 115 or 116. Students graduating with a major in the School of Business cannot receive credit for this course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ACCT 115 Financial Accounting Foundations 4.0 Credits

Introduces preparation of the income statement and the balance sheet. Covers analysis and recording of business transactions and a detailed study of accounting for assets, liabilities, and equity.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ACCT 116 Managerial Accounting Foundations 4.0 Credits

Introduces the managerial accounting tools and models available for planning and projecting, controlling, and business analysis with an emphasis on decision-making. Covers budgeting, product costing, and analysis and projection of financial statements for internal purposes.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 115 [Min Grade: D] or ACCT 110 [Min Grade: D]

ACCT 120 Accounting Essentials for New Ventures 4.0 Credits

The course covers essential accounting topics specific to new entrepreneurial ventures. Topics include: Financial Statement, cash flow issues, cost accounting, tax calculations, and choice of business entity.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ACCT 200 Emerging Issues in Accounting & Tax 1.0 Credit

This course focuses on emerging issues facing businesses with an accounting and tax lens. Using an experiential approach, the class will feature robust class discussions, research, and guest speakers in and outside the accounting profession to study select issues.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 115 [Min Grade: C]

ACCT 321 Financial Reporting I 4.0 Credits

Provides intensive review of preparation of the income statement and balance sheet. Covers current accounting practice in light of authoritative pronouncements and critical study of theory and practice relating to accounting for current assets.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 115 [Min Grade: C]

ACCT 322 Financial Reporting II 4.0 Credits

Continues critical study of accounting theory and practice relating to financial statement items. The emphasis is on accounting principles underlying the measurement, recognition and reporting of long-lived tangible and intangible assets, long-term liabilities including bonds and leases, and equity transactions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 321 [Min Grade: C]

ACCT 323 Financial Reporting III 4.0 Credits

Provides a detailed analysis of higher level financial accounting topics and advanced knowledge in topics including long-term liabilities, convertible securities, equity compensation transactions, accounting for income taxes, investments, and current topics. Connects topics learned in all financial reporting classes.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 322 [Min Grade: C]

ACCT 327 Financial Statement Analysis 4.0 Credits

In this course you will develop a deeper understanding of how to interpret and analyze a firm's financial statements to evaluate a firm's strategy, valuation, and sustainability. You will use traditional analysis and valuation tools including ratio analysis, trend analysis, and common sizing, as well evaluation of qualitative information. Additionally, you will learn and apply data analytics and visualization to convey financial information more effectively.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 321 [Min Grade: C]

ACCT 329 Advanced Accounting 4.0 Credits

Study of accounting as well as theory that underlines merger, acquisition, and investment activity between firms. These activities result in complex financial structures and complex financial reporting. Topics covered include investment accounting, consolidation reporting, derivatives, translation of foreign financial statements, and other current topics.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ACCT 322 [Min Grade: C]

ACCT 331 Cost Accounting 4.0 Credits

Continues and expands the study of managerial accounting with an emphasis on cost accounting, internal reporting, analyzing accounting information for planning and projecting and making strategic short and long term business decisions through the use of case studies and/or projects.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 116 [Min Grade: C] and ACCT 321 [Min Grade: C]

ACCT 341 Principles of Auditing 4.0 Credits

Covers auditing standards and professional ethics, auditing theory and concepts, audit evidence and procedures, and auditors' reports.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 322 [Min Grade: C]

ACCT 344 Internal Auditing 4.0 Credits

Internal Auditing brings a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes. It is designed to add value and improve an organization's operations. Topics covered include: The Institute of Internal Auditors' International Professional Practices Framework; risk assessment, including internal control system evaluation; and the relationship of management and employee fraud to the internal audit process. Outside speakers and case studies will be used to demonstrate the application of internal auditing practices in the real world.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ACCT 350 Accounting Information Systems 4.0 Credits

The rapid evolution of information technology (IT) is changing how accounting professionals work today. In this course you will gain a conceptual overview and hands-on experience with relevant topics including: Semantic modeling and event driven accounting information systems (AIS); development, documentation, internal control, and audit of AIS, with reference to the COBIT framework; XBRL and its role in financial reporting; the use of database management software and accounting software in developing modern AIS including the concept of enterprise resource planning/ enterprise system (ERP/ES).

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 115 [Min Grade: C]

ACCT 360 Lead & Learn: Financial Accounting 4.0 Credits

This course supports, enhances and expands your knowledge of financial accounting through collaborative learning and delivery of workshops. The course provides a variety of study strategies and employs professional development exercises to assist in improving your understanding of financial accounting, assimilating fundamental learning competencies, and building critical thinking and presentation skills while you lead and facilitate workshops on specific financial accounting topics.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ACCT and classification is Junior or Senior.

Prerequisites: ACCT 321 [Min Grade: B] and ACCT 322 [Min Grade: B]

ACCT 420 Emerging Industry Analysis: Accounting Perspective 4.0 Credits

Examine and critically evaluate a select emerging industry from an accounting perspective. The course takes an experiential approach to accounting analysis using case studies, robust class discussions, and in-depth research. Students will apply their cross-disciplinary knowledge and skills to study the industry from historical, economic, social, and legal viewpoints as well as considering the value proposition to diverse stakeholders.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: C]

ACCT I199 Independent Study in Accounting 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT I299 Independent Study in Accounting 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT I399 Independent Study in Accounting 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT I499 Independent Study in Accounting 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT T180 Special Topics in Accounting 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT T280 Special Topics in Accounting 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT T380 Special Topics in Accounting 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ACCT T480 Special Topics in Accounting 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Advertising Design

Courses

ADGD I199 Independent Study in ADGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD I299 Independent Study in ADGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD I399 Independent Study in ADGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD I499 Independent Study in ADGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD T180 Special Topics in Advertising Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD T280 Special Topics in Advertising Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD T380 Special Topics in Advertising Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ADGD T480 Special Topics in Advertising Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Africana Studies

Courses

AFAS 101 Introduction to Africana Studies 3.0 Credits

Provides an overview of the experience, culture, and political practices of African descendants in the Americas and the Caribbean. The course uses a multidisciplinary approach to introduce students to the history, art, music, and literature of the African Diaspora.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 201 Cross Currents in Africana Studies 3.0 Credits

With a temporal focus on the 20th century, this course critically explores and analyzes the cultural, political and intellectual practices of blacks in North, Central, and South America as well as in the Caribbean.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 210 Topics in Africana Arts 1.0-12.0 Credit

This course will focus on the literatures/music/or culture of the Africana Diaspora. The topics covered in this course will change from quarter to quarter and will often be offered in collaboration with other departments on campus.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

AFAS 219 History of Policing Homosexuality 4.0 Credits

This course surveys the medical and penal criminalization of homosexuality from the late 19th to early 21st Century in the United States. It also traces the varied historical responses to the policing of homosexuality by LGBTQ+ people and other individuals who engage in same-sex sex. The course will approach policing (both medical and penal) with particular emphasis on how race, Blackness, gender performance, and class impact policing and the formation of homosexual identities through time.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 220 Topics in Africana Society 1.0-12.0 Credit

This course will take a social science approach to the study of the societies of the African Diaspora inside of the US or internationally. The topics covered in this course will change from quarter to quarter and will often be offered in collaboration with other departments on campus.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

AFAS 221 Freedom, Medicine and Slavery 4.0 Credits

Covering the fifteenth to the nineteenth centuries, this course examines the history of medicine alongside the history of slavery from Africa to the Americas and traces the continuing presence of African diasporic knowledge and practices against the transformation of white "men of science" into modern physicians and specialists.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 222 Freedom, Medicine and Slavery's Afterlives 4.0 Credits

Covering from the end of the American Civil War to present, this course examines the history of medicine in the United States, focusing on the contributions of African and African-descended peoples to western medicine alongside the continuing presence of African diasporic knowledge and practices into the era of the modern hospital and medical industrial complex.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 230 Topics in African History 1.0-12.0 Credit

This course will provide students with a historical understanding of African Societies from the medieval period to the present. The topics covered in this course will change from quarter to quarter and will often be offered in collaboration with other departments on campus.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

AFAS 240 Topics in Africana Current Events 1.0-12.0 Credit

This topical course will offer students the chance to focus on current events in the global Africana Diaspora. The topics covered in this course will change from quarter to quarter and will often be offered in collaboration with other departments on campus.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

AFAS 255 Gender & Black Popular Culture 3.0 Credits

This course critically examines the media's role in the social construction of "Blackness." Paying particular attention to images of race, culture and gender, this course examines representations of Black women and men in "popular culture" (film, television, music, advertising, etc.).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 260 Race, Politics and Religion 3.0 Credits

An examination of race and religion as in liberal tradition. How has liberal theory purported the state will confront issues of race and religion? Have the political realities of race and religion in the modern state lived up to the promises laid out by liberalism?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

AFAS 301 Politics of Hip Hop 3.0 Credits

This class is an interdisciplinary, socio-historical introduction to rap music and hip hop culture. Several themes will be explored including the origins of rap music as well as the role of urban youth and their notions of race and gender. Record industry practices will also be investigated together with the impact of commercialism on hip hop. We will also consider sexism, misogyny, and violence in both the music and culture.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 307 History of Education and Anti-Colonial Resistance 4.0 Credits

This course will explore historically complex moments in the history of education and the resistance forces that emerged during liberation struggles across the globe. Students in this class will engage with a critically historical study on the history and process of education that will allow us to think and reflect on educational experiences and also to think, imagine and develop possible strategies and praxis of the revolutionary pedagogy for liberation and decolonization. Some topics that will be approached in this course are 1) the theory of the hidden curriculum, 2) education under colonial and oppressive regimes, 3) social and political movements' educational practices, 4) their transnational approaches, and 5) historical ideas of learning, talent, opportunity and human difference.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 310 Women, Crime, & History 3.0 Credits

This class will examine gender, race and crime in US history. Specifically, we will explore the experience of female criminals from the colonial period to the present. We will conduct primary research into this subject at the Philadelphia City Archive (PCA), located at 3101 Market Street. Students will be responsible for a final research paper based on their research findings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 344 History of the AIDS Pandemic 4.0 Credits

This course explores responses to the AIDS crisis in Philadelphia and the United States. It investigates the medical, political, and activist responses to the AIDS crisis with a special emphasis on the lesser-known perspectives of AIDS activists and organizations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 368 Silences in African History 4.0 Credits

Colonization and capitalism deeply impacted the history of Africa, including in the way we understand the history. This course examines some of the silences in the historical record and considers the ways research can construct and reproduce the silences, as well as unveil them, in the history of the continent. What are these silences? What forces might be moving behind them? What hidden languages can we find when we question the silences? How do these silences affect our perception of the continent today? What are the ramifications in the world today?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 385 Rum, Rice and Revolution: Caribbean History 3.0 Credits

Course provides a broad, interdisciplinary and socio-historical introduction to the Caribbean. Several themes are covered including empire and the making of the Caribbean; slavery and emancipation; labor formation and race; revolution and resistance; gender oppression and women's experiences; and cultural expressions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 401 Urban Social Justice Practicum I 3.0 Credits

The Urban Social Justice Practicum offers Drexel students an exciting opportunity to work on-site at a variety of community based organizations that address issues relevant to the African Diaspora. Students can work as mentors, teaching assistants, and interns and inner-city schools, governmental agencies, judicial offices and health care facilities. Working 5 hours per week at a site of their choosing, students also participate in weekly seminars, maintain journals, and complete a final paper. Course runs over two quarters.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AFAS 402 Urban Social Justice Practicum II 3.0 Credits

The Urban Social Justice Practicum offers Drexel students an exciting opportunity to work on-site at a variety of community based organizations that address issues relevant to the African Diaspora. Students can work as mentors, teaching assistants, and interns and inner-city schools, governmental agencies, judicial offices and health care facilities. Working 5 hours per week at a site of their choosing, students also participate in weekly seminars, maintain journals, and complete a final paper. Course runs over two quarters.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: AFAS 401 [Min Grade: CR]

AFAS I199 Independent Study in AFAS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AFAS I299 Independent Study in AFAS 0.5-3.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 6 credits

AFAS I399 Independent Study in AFAS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AFAS I499 Independent Study in AFAS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AFAS T180 Special Topics in Africana Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AFAS T280 Special Topics in Africana Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AFAS T380 Special Topics in Africana Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AFAS T480 Special Topics in Africana Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Anatomy

Courses

ANAT 202 Sectional Anatomy 3.0 Credits

This course reviews human anatomy of the head, neck, thorax, abdomen, pelvis and extremities. Relationships of surface and internal structures from different bodily systems are emphasized. The analysis is supported by anatomical illustrations, radiological images, and cadaver photographs.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Animation

Courses

ANIM 100 Foundational Tools for Animation & VFX 3.0 Credits

Students will learn fundamentals of core tools in Digital Animation & Visual Effects related disciplines. Tools introduced include pixel based image manipulation tools (such as Photoshop), vector based graphics tools (such as Illustrator), video and animation compositing tools (such as After Effects and Nuke) and 3D CGI tools (such as Maya). Animation and visual effects related applications introduced include digital image alteration, digital matte painting, three dimensional type creation, and other foundational animation and visual effects tasks.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ANIM 110 Digital Imaging for Animation & VFX 3.0 Credits

Students learn foundational image acquisition, lighting and processing techniques and principles utilized in Animation & VFX disciplines. Topics covered include digital still and video imaging and lighting fundamentals for reference and background gathering, texture creation, normal map sampling, spherical and high dynamic range acquisition, location survey and more.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ANIM 115 Introduction to Production with Animation & VFX 3.0 Credits

This course introduces students to many of the core principles, techniques and technologies employed in the creation of media incorporating animation and visual effects. The basics of planning and shooting live action, greenscreen and still image media are introduced in conjunction with design, creation, animation and compositing of both 2D and 3D assets.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 211 [Min Grade: D] or ANIM 100 [Min Grade: D] or PHTO 141 [Min Grade: D] or VSCM 200 [Min Grade: D] or DIGM 100 [Min Grade: D]

ANIM 140 Computer Graphics Imagery I 3.0 Credits

Students learn to represent 3D objects and spaces in 2D media using a variety of drawing and computer graphic techniques. This course lays important foundations for subsequent courses in 3D computer modeling and animation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ANIM 141 Computer Graphics Imagery II 3.0 Credits

This course will introduce students to the principles and techniques of 3D virtual scene building for animation, visualization and game development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 140 [Min Grade: D]

ANIM 145 Realtime Visualization 3.0 Credits

In this course, students learn principles and techniques of scene building in realtime, 3D interactive graphics engines for use in animation, visualization, game design, VR, AR and other forms of digital media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 140 [Min Grade: D] or ARCH 134 [Min Grade: D] or INTR 245 [Min Grade: D]

ANIM 146 Basic Portfolio 1.0 Credit

This course focuses on the basics of portfolio creation, editing, and presentation while examining portfolio examples of current professionals in various industry roles that can serve as models for student portfolio development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ANFX.

ANIM 152 Multimedia Timeline Design 3.0 Credits

Introduces basic design concepts and tools to create time based 2D and 3D multimedia. Addresses issues from pre-production planning, through post-production and delivery; emphasis on time-based multimedia.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 100 [Min Grade: D] or DIGM 100 [Min Grade: D] or PHTO 141 [Min Grade: D] or VSCM 200 [Min Grade: D] or GMAP 101 [Min Grade: D]

ANIM 155 Previsualization for Animated Production 3.0 Credits

Previsualization is the all-important design and planning process that takes place before embarking on the production of an animation or visual effects piece. In this course, student will learn and practice the creation, motivation and use of pre-production plans, concept art, mood boards, shot storyboarding, animatics, performance reference and other topics integral to the previsualization process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 140 [Min Grade: D]

ANIM 211 Animation I 3.0 Credits

Explores computer animation with an introduction to concepts of 3D animation. Includes narrative structure, storyboarding, and development. Emphasizes aesthetic, technical and conceptual issues. Requires students to create short, 3D animations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ANIM 140 [Min Grade: D]

ANIM 212 Animation II 3.0 Credits

Builds on topics introduced in ANIM 211 Animation I, incorporating advanced animation techniques such as inverse kinematics and dynamics. Requires students to propose, design, and produce a short animation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ANIM 211 [Min Grade: D]

ANIM 213 Rigging I 3.0 Credits

This class will introduce students to the fundamental concepts of IK and FK rigging, weight painting, and deformation solutions for humanoid characters. Lectures may also include common rigging solutions for other miscellaneous tasks and advanced-level topics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ANIM 211 [Min Grade: D]

ANIM 214 Digital Character Creation 3.0 Credits

This course introduces all aspects of digital character creation within a 3D environment. Students will learn how to model and rig humanoid characters optimal for both real time and raytraced render environments. Topics covered will include modeling and topology for characters, FK/IK rigs, and production workflows for character integration.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 212 [Min Grade: D]

ANIM 215 History of Animation 3.0 Credits

Students learn the pre-cursors to modern animation and the evolution of the art since the beginning of the 20th century. Concepts in both 2D and 3D animation will be covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ANIM 220 Digital Compositing I 3.0 Credits

Examines digital compositing possibilities through the manipulation and recombination of acquired and produced digital imagery, including study of digital image and video formats, color space, live action digital matte painting, Greenscreen/Bluescreen compositing, rotoscope masking and 2D tracking.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 140 [Min Grade: D] or ANIM 110 [Min Grade: D] or FMTV 110 [Min Grade: D] or VRIM 110 [Min Grade: D]

ANIM 221 Digital Compositing II 3.0 Credits

Examines 2D and 3D digital compositing possibilities through the manipulation and recombination of acquired and produced digital imagery, including 2D/3D Integration, 3D Matchmoving, and High Dynamic Range Imagery.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 140 [Min Grade: D] and ANIM 220 [Min Grade: D]

ANIM 225 Digital Matte Painting 3.0 Credits

Students will build upon existing compositing and animation knowledge to create digital matte painting visual effects shots using 2D and 3D approaches. This course will teach students the process of creating dramatic scenes that leverage movement, depth, and scale.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 220 [Min Grade: D]

ANIM 231 Scripting for Animation and Visual Effects 3.0 Credits

This course explores modern scripting languages utilized in Animation and Visual Effects operating systems and software tools that are integral to artist productivity and production pipeline scalability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: CS 140 [Min Grade: D] or CS 150 [Min Grade: D] or CS 171 [Min Grade: D] or DIGM 131 [Min Grade: D]

ANIM 240 Lighting & Surfacing 3.0 Credits

Students will continue to build on core skills by diving deeper into texture and shader development as well as lighting techniques for the purposes of creating photorealistic digital imagery. Several render engines will be introduced allowing students to recognize core concepts universal to lighting and surfacing and improving production versatility.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 140 [Min Grade: C]

ANIM 246 Advanced Portfolio 1.0 Credit

This course focuses on building skills for the career-long practice of producing and maintaining a professional creative portfolio while allowing the students the opportunity to create or refine additional student-driven portfolio work that synthesizes their skills and experience from direct class assignments in their other coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 3 credits

Prerequisites: ANIM 146 [Min Grade: D]

ANIM 247 Organic Modeling I 3.0 Credits

This course presents an intensive exploration of human character modeling and rigging for animation, with emphasis on human anatomy and articulation. Through lectures, demonstrations, class critiques and individual feedback from peers and the instructor, students will learn best practices for modeling human forms for animation and why these approaches are valid. Although the focus is on humans, the concepts and techniques presented for organic modeling, sculpting and rigging apply to all organic characters.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 141 [Min Grade: C] or ANIM 145 [Min Grade: C]

ANIM 248 Advanced Lighting 3.0 Credits

Students will learn to integrate production-oriented lighting techniques into animation. Techniques utilizing both point-based and raytraced global illumination will be covered, and how to optimize pipelines for animation. Basic shader development will also be covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ANIM 141 [Min Grade: D] or ANIM 145 [Min Grade: D] or ANIM 240 [Min Grade: D]

ANIM 250 Professional Practices for Animation & VFX 3.0 Credits

Provides a professional orientation to the animation and visual effects industry through an exploration of a variety of projects and studies. In addition to lecture and discussions, students learn to take active part in role plays and presentations to achieve an understanding of the importance of team building, team work, and team management in all phases of animation and visual effects productions from proposals to final delivery, as well as personal development and promotion through personal learning, development of work demonstration materials.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 211 [Min Grade: D] or ANIM 221 [Min Grade: D]

ANIM 301 Procedural Animation 3.0 Credits

This class introduces students to the fundamentals of procedurally generated 3D content. Students will learn procedural tools for the generation of different effects systems in topics such as modeling, rigging, animation, visual effects, and look development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ANIM 140 [Min Grade: D]

ANIM 314 Character Animation I 3.0 Credits

In this course, students learn humanoid rigging, body mechanics, body language and theories of acting with emphasis on having characters emote and perform with deliberateness of action. The course will culminate with a two character pantomime animation that students will create with a partner.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ANIM 212 [Min Grade: C]

ANIM 315 Character Animation II 3.0 Credits

Students learn human facial deformation and movement as it's applied to thought driven character performance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ANIM 314 [Min Grade: C]

ANIM 347 Organic Modeling II 3.0 Credits

In this course, students will learn organic modeling of creatures, both real and imagined, for animation, taking into consideration anatomy, articulation and the fundamentals of creature design. In addition, we'll look at various concepts and techniques for rigging animals and creatures as you'll develop and present your own creature, modeled, sculpted, rigged, and posed in a final animation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 247 [Min Grade: C]

ANIM 377 Animation Workshop I 3.0 Credits

This course examines leadership and developmental roles involved in each stage of a collaborative production, from concept to finished project. Students will work in groups to research and plan an animation production that results in a pre-production prototype.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 212 [Min Grade: D] and (ANIM 221 [Min Grade: D] or ANIM 247 [Min Grade: D] or ANIM 314 [Min Grade: D])

ANIM 378 Animation Workshop II 3.0 Credits

This course provides an environment in which the pre-production of ANIM 377 Animation Workshop I can be taken through a full production effort. Students will work in groups to bring a selected prototype to completion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 377 [Min Grade: D]

ANIM 410 Advanced Compositing 3.0 Credits

Students learn to create detailed visual effects, and the best methods to integrate them into live-action plates. Drawing on existing compositing and animation knowledge, students will work in groups to produce short visual effects sequences.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ANIM 221 [Min Grade: C]

ANIM 411 Advanced Animation 3.0 Credits

This course explores a wide range of visual effects assets, both practical and synthetic. Projects focus on the creation of a comprehensive short animation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: ANIM 212 [Min Grade: D]

ANIM 412 Advanced Visual Effects 3.0 Credits

In this course students will study advanced techniques and software in order to successfully recreate natural phenomenon, simulations, and effects that can be used in the Film, Animation, or Gaming industries.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ANIM 301 [Min Grade: C]

ANIM 435 Technical Directing for Animation 3.0 Credits

Students learn toolsets for technical direction of animated films and visual effects. The topics covered can include Python scripting, pipeline development and integration, the creation of custom shaders to streamline production processes, and technical direction for lighting, crowds, or other relevant disciplines in the animation and visual effects industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ANIM 231 [Min Grade: C-]

ANIM I199 Independent Study in Animation 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM I299 Independent Study in Animation 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM I399 Independent Study in Animation 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM I499 Independent Study in Animation 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM T180 Special Topics in Animation 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM T280 Special Topics in Animation 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM T380 Special Topics in Animation 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ANIM T480 Special Topics in Animation 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Anthropology

Courses

ANTH 101 Introduction to Cultural Diversity 3.0 Credits

Examines the diversity that exists in human culture. Uses lectures, films, and discussions to examine and illustrate the relationship between humans and their social/cultural systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 112 Language, Culture & Cognition 3.0 Credits

This course is an introductory survey of three ways language is understood as a central element that glues together human culture; language around categories and taxonomies as shared perception; language origins and evolution; and language as socialization. An additional fourth unit on fieldwork methods in cross-cultural understanding and language starts to prepare you for future qualitative research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 117 Introduction to World Religions 3.0 Credits

This course is meant to be a foundational course for the minor in religious studies. It introduces students to the world religions from an anthropological perspective. Hence the basic concerns of an anthropological approach – worldview, ritual, myth, and so forth – are introduced early and applied to each of the religions studied.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 205 Imagining Africa 3.0 Credits

This course introduces students to Africa by exploring how Africa and Africans have been viewed, perceived or imagined by non-Africans; how such images and stories have affected Africans' roles in global politics, economy, and media; and how images and stories generated by Africans are used creatively to express a sense of African lives in public life, in the arts and in the sciences. The course includes multiple video screenings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 212 [WI] Topics in World Ethnography 3.0 Credits

Examines the peoples and cultures of the selected cultural areas. Emphasizes indigenous cultures and the effects of modernization on these cultures.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH 217 Anthropology of Interfaith Relations 3.0 Credits

This course aims to introduce students to how anthropological and ethnographic analyses can help us understand the variety of ways in which people of different faiths both conflict with and work amicably together.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 240 Urban Anthropology 3.0 Credits

This course will give students the opportunity to familiarize themselves with the major themes in urban anthropology and how they relate to other areas of research in anthropology and the social sciences in general. Students will focus on the research methods used by urban anthropologists as well as read different ethnographic cases of urban life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 250 Anthropology of Immigration 3.0 Credits

By examination of key ethnographical texts, the course covers basic theoretical and topical approaches to the anthropology of immigration, including: immigration and emigration; transnationalism and globalization; reception contexts; ethnic economies, enclaves and ethnic businesses; global economic strategies for migrant households; refugees, the state and immigration; culture, identity, and adaptation and assimilation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 270 Comparative Religious Ethics 3.0 Credits

The eternal teaching of the different religions and how they address such issues as war, sexuality and economics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 330 Media Anthropology 3.0 Credits

This course will introduce students to the anthropological study of media including traditional forms of mass media as well as new media such as the Internet. Students will be exposed to the theories and methodologies of media study from an anthropological perspective. Students will also engage in their own ethnographic studies of media to gain first hand experience with the methods of anthropology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 345 Visual Anthropology 3.0 Credits

Introduces students to the subdiscipline of visual anthropology through an overview of visual theory and a survey of ethnographic photography and film. Students will learn to evaluate ethnographic visual representation as well as develop their own skills as visual anthropologists through documenting and representing cultural phenomena.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ANTH 101 [Min Grade: D]

ANTH 355 Digital Culture 3.0 Credits

This course will focus on how the internet, new and social media have changed the way we think about space and time. It will look at the ways we work and engage in leisure activities. We will bring the approach of anthropology to the study of these new media in order to ask key questions about social life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH 375 Digital Ethnography 3.0 Credits

This course is the second part in the ethnographic methods series. It introduces students to the research methodologies employed by anthropologists to study online environments, digital communities, and virtual worlds. Students will gain practical, firsthand experience carrying out digital ethnographies and learn to evaluate the quality of digital ethnographic research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ANTH I199 Independent Study in ANTH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH I299 Independent Study in ANTH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH I399 Independent Study in ANTH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH I499 Independent Study in ANTH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH T180 Special Topics in Anthropology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH T280 Special Topics in Anthropology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH T380 Special Topics in Anthropology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ANTH T480 Special Topics in Anthropology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Arabic

Courses

ARBC 101 Arabic I 4.0 Credits

Introductory Arabic includes listening, speaking, reading and writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ARBC 102 Arabic II 4.0 Credits

Continues ARBC 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ARBC 101 [Min Grade: D]

ARBC 103 Arabic III 4.0 Credits

Continues ARBC 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ARBC 102 [Min Grade: D]

ARBC 201 Arabic IV 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on Arabic 103.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ARBC 103 [Min Grade: D]

ARBC 202 Arabic V 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on Arabic 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ARBC 201 [Min Grade: D]

ARBC 310 Advanced Writing and Speaking 4.0 Credits

Provides advanced practice in written and oral communication, including journalistic, professional and creative writing. Examines contemporary cultural contexts through media and news. Taught in Arabic.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ARBC 202 [Min Grade: C]

ARBC 320 Introduction to Language for the Professions 3.0 Credits

This course covers Introduction to Arabic communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of this course may change every term it is offered and is repeatable for credit. Taught in Arabic.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: ARBC 310 [Min Grade: C]

ARBC 410 Advanced Grammar and Translation 3.0 Credits

This course provides advanced grammar instruction and fosters translation and communication skills within a contemporary cultural context. The content of this course may change every term it is offered and is repeatable for credit. Taught in Arabic.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: ARBC 310 [Min Grade: C]

ARBC 420 Advanced Studies in Language for the Professions 3.0 Credits

This course provides advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of this course may change every term it is offered and is repeatable for credit. Taught in Arabic.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: ARBC 310 [Min Grade: C]

ARBC 450 Advanced Studies in Language, Media, and Society 3.0 Credits

Advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Arabic.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: ARBC 310 [Min Grade: C]

ARBC I199 Independent Study in Arabic 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC I299 Independent Study in Arabic 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC I399 Independent Study in Arabic 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC I499 Independent Study in Arabic 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC T180 Special Topics in Arabic 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC T280 Special Topics in Arabic 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC T380 Special Topics in Arabic 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ARBC T480 Special Topics in Arabic 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Architecture

Courses

ARCH 118 Architectural Design Foundations I 3.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored through investigation of abstract and applied design projects explored in two and three- dimensional abstract exercises. Exercises incorporate heightened observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 119 Architectural Design Foundations II 3.0 Credits

Investigates basic architectural design principles that emphasize the inter-relationship between the scale of the human body and its movement within three-dimensional space. Design exercises will advance the understanding of the design process, development of a conceptual idea and a higher-level graphic and oral presentation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 118 [Min Grade: C] or ARCH 191 [Min Grade: C]

ARCH 140 Appreciation of Architecture 3.0 Credits

Historical survey of architecture from prehistory through today drawn from around the globe (and from Philadelphia) that considers broadly applicable topics including style, material, construction, and function. Intended for non-majors as an introduction to architecture and urbanism.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 141 Architecture and Society I 3.0 Credits

This survey course examines the evolution of architectural and urban thought, form, space, and structure in light of changing human values and institutions. Particular attention is paid to materials, meaning, and use. It explores global built environments from the prehistoric era through the early Medieval period (9th century CE) in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 142 Architecture and Society II 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global built environments from the early Medieval period (9th century CE) through the 18th century in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 141 [Min Grade: C-]

ARCH 143 Architecture and Society III 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global modern built environments from the 18th century through the 21st century in Europe, the Americas, Asia, Australasia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 142 [Min Grade: C-]

ARCH 170 Architectural Technology I 3.0 Credits

Introduction to the fundamental aspects of building technology with exposure to materials, structure and building systems that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 172 Architectural Technology II 3.0 Credits

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 170 [Min Grade: C-]

ARCH 173 Architectural Technology III 3.0 Credits

Introduction to the technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 172 [Min Grade: C-]

ARCH 181 Architecture Studio 1A 4.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored in two and three dimensional abstract exercises. Exercises incorporate observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 182 Architecture Studio 1B 4.0 Credits

Transitions from abstract design principles to simple architectural exercises, considering function, scale, user and ordering strategies in relation to form-making in three-dimensional space. Exercises heighten observation and graphic skills while developing an architectural vocabulary.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 181 [Min Grade: C]

ARCH 183 Architecture Studio 1C 4.0 Credits

Focuses on a series of basic architectural problems developed around issues of context and material use in relationship to the organization of space and human activity. Design exercises will cultivate the design process through developing a conceptual idea through graphic and oral communication.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 182 [Min Grade: C] or INTR 233 [Min Grade: C-]

ARCH 191 Studio 1-AE 3.0 Credits

Architectural engineering majors only. Covers basic design principles using three-dimensional abstract and applied projects. Exercises heighten observation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

ARCH 192 Studio 2-AE 3.0 Credits

Architectural engineering majors only. Continues ARCH 191. Uses design exercises to emphasize the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

Prerequisites: ARCH 191 [Min Grade: D]

ARCH 211 Architectural Representation I 2.0 Credits

Introductory course that will provide a survey of drawing types with an emphasis on process and visual literacy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 212 Architectural Representation II 2.0 Credits

Emphasis on craft and composition in the architectural representation of the built environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 211 [Min Grade: C]

ARCH 213 Architectural Representation III 2.0 Credits

Exploration of digital representation with an emphasis on making combining process drawing, digital fabrication and analog craft to develop three-dimensional representation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 212 [Min Grade: C]

ARCH 221 Materials & Methods I 1.5 Credit

Introduction to the fundamental aspects of building technology with exposure to materials and methods that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-]

ARCH 222 Materials & Methods II 1.5 Credit

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 221 [Min Grade: C-]

ARCH 223 Materials & Methods III 1.5 Credit

Introduction to technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 222 [Min Grade: C-]

ARCH 224 Architectural Representation IV 2.0 Credits

Emphasizes the communication of design through perspective, view-making and rendering. Through the use of digital and analog techniques, the ability to select the proper media to visually convey a design concept will be developed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 213 [Min Grade: C] and ARCH 183 [Min Grade: C]

ARCH 225 Architectural Representation V 2.0 Credits

Emphasizes the tools to complete a final quality architectural presentation in a variety of venues including portfolios, digital representations and online media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 224 [Min Grade: C] and ARCH 281 [Min Grade: C]

ARCH 226 Architectural Representation VI 2.0 Credits

Explores parametric thinking and the iterative design process while reinforcing critical skills in detailing and design development through various software programs.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 225 [Min Grade: C] and ARCH 282 [Min Grade: C]

ARCH 251 Structural Systems I 1.5 Credit

Introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 252 Structural Systems II 1.5 Credit

Further introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 251 [Min Grade: C-]

ARCH 253 Structural Systems III 1.5 Credit

Introduction and intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 252 [Min Grade: C-]

ARCH 274 Architectural Technology IV 3.0 Credits

Intermediate development of architectural technology with a focus on application of analysis of primary materials, structure and systems. Depth and range of analytical tools are addressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 173 [Min Grade: C-] and PHYS 183 [Min Grade: C-]

ARCH 275 Architectural Technology V 3.0 Credits

Further development of analytical skills for building technology. Case studies and real world precedents examine materials, structure and systems in the support of larger architectural objectives.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 274 [Min Grade: C-]

ARCH 276 Architectural Technology VI 3.0 Credits

Examination of technical analysis and design in support of iterative architectural concepts. Materials, structure and systems are utilized to develop strong design synergies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 275 [Min Grade: C-]

ARCH 281 Architecture Studio 2A 4.0 Credits

Introduces issues of architectural form, site and programmatic concerns.

Design exercises will explore simple issues of structure, building and material systems and sustainability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 183 [Min Grade: C] and (ARCH 213 [Min Grade: C] or INTR 245 [Min Grade: C-])

ARCH 282 Architecture Studio 2B 4.0 Credits

Covers architectural design problems of incremental complexity that emphasizes the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 221 [Min Grade: C-] and ARCH 251 [Min Grade: C-]) or ARCH 170 [Min Grade: C-] or INTR 351 [Min Grade: C-],) and ARCH 281 [Min Grade: C] and (ARCH 224 [Min Grade: C] or INTR 341 [Min Grade: C-])

ARCH 283 Architecture Studio 2C 4.0 Credits

Explores architectural design problems that introduce the full range of challenges in the areas of organization, program, context, systems and formal expression.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 222 [Min Grade: C-] and ARCH 252 [Min Grade: C-]) or ARCH 170 [Min Grade: C-]) and ARCH 282 [Min Grade: C] and ARCH 225 [Min Grade: C]

ARCH 291 Building Systems I 1.5 Credit

Introduction to architectural technology with a focus on application of analysis pertaining to environmental systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 292 Building Systems II 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to water within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 293 Building Systems III 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to lighting within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 315 Sustainable Built Environment I 3.0 Credits

Provides an overview of contemporary sustainable design principles and systems involved to posit novel solutions to various design challenges. Combining theoretical knowledge, field trips and case studies enabling students to critically assess sustainability as it relates to the built environment through five key subsystems: materials, air, water, energy and life.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARCH 320 Sustainable Built Environment II 3.0 Credits

Students will examine the work of scientists, designers, authors, artists, architects, engineers, planners, etc to gain a deeper conceptual understanding of current and emerging strategies in sustainability and the complex and integrated systems approach to the built environment in the present and near future.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ARCH 315 [Min Grade: C-]

ARCH 324 Materials & Methods IV 1.5 Credit

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 223 [Min Grade: C-]

ARCH 325 Materials & Methods V 1.5 Credit

Further exploration of advanced building technology concepts through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 324 [Min Grade: C-]

ARCH 326 Materials & Methods VI 1.5 Credit

Advanced integration of building technology concepts through design problems and examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 325 [Min Grade: C-]

ARCH 335 Professional Practice I 3.0 Credits

This seminar is the first of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Community and Social Responsibility, Leadership, Ethics & Professional Judgment, Client Role in Architecture, Basic Principles of Architectural Practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 243 [Min Grade: C-] or ARCH 383 [Min Grade: C-]

ARCH 336 Professional Practice II 3.0 Credits

This seminar is the second of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Practice Management, Project Management, Financial Considerations, Legal Responsibilities, Ethics & Professional Judgment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 335 [Min Grade: C-]

ARCH 340 American Architecture & Urbanism 3.0 Credits

Surveys the development of American architecture and urbanism from its Native American origins through the arrival of early Modernism in the 1930s and 1940s.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 341 [WI] Theories of Architecture I 3.0 Credits

Seminar that examines theories and principles of Western architecture before 1700. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 342 [WI] Theories of Architecture II 3.0 Credits

Continues ARCH 341. Seminar that examines theories and principles of Western architecture from the Baroque era of the 17th century to the beginning of Modernism in the 20th century. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 343 Theories of Architecture III 3.0 Credits

Seminar that examines 20th-century theories of architecture, including analysis and discussion of current theoretical positions. History/theory elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 346 [WI] History of Philadelphia Architecture 3.0 Credits

Covers the architecture of the city of Philadelphia from 1682, examining its architects, styles, and sources through lectures, walking tours, and student reports. History/theory elective. Fall. Alternate years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 347 [WI] Intensive Architectural Studies 1.0-6.0 Credit

An intensive study tour of selected domestic and foreign destinations focusing on architecture and related design disciplines. Combines lecture, site visits, sketching and individual research. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C-] or INTR 200 [Min Grade: C-] or ARTH 103 [Min Grade: C-]

ARCH 348 [WI] Studies in Vernacular Architecture 3.0 Credits

A topical survey of world traditions of vernacular architecture, with emphasis on houses and dwelling environments. The survey topics include basics of shelter, construction methods, response to climate, patterns of settlement, social and economic organization, cultural expression, and methods of research and analysis.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 350 Contemporary Architecture 3.0 Credits

Survey and analysis of significant developments in architecture and urbanism over the past 50+ years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 354 Structural Systems IV 1.5 Credit

Intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 253 [Min Grade: C-]

ARCH 355 Structural Systems V 1.5 Credit

Intermediate structural analysis for architectural design. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 354 [Min Grade: C-]

ARCH 356 Structural Systems VI 1.5 Credit

Intermediate structural analysis for architectural design with a focus on composite systems. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 355 [Min Grade: C-]

ARCH 377 Architectural Technology VII 3.0 Credits

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 276 [Min Grade: C-]

ARCH 378 Architectural Technology VIII 3.0 Credits

Building technology and analysis are explored through design precedents and sketch problems to develop integrated design and analytical skills. Focuses on large and small scale elements that can become generative and performative aspects of major design decisions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 377 [Min Grade: C-]

ARCH 379 Architectural Technology IX 3.0 Credits

Advanced building technology design and analysis is utilized in iterative and integrated design methods to support comprehensive design processes. Materials, structure and systems are developed qualitatively and quantitatively through design and analysis exercises.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 378 [Min Grade: C-]

ARCH 381 Architecture Studio 3A 4.0 Credits

Investigates the design relationship between man-made and the natural environment. Cultivates advanced analysis methods and the development of informed and resolved design solutions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C] and ARCH 226 [Min Grade: C] and ARCH 223 [Min Grade: C] and ARCH 253 [Min Grade: C]

ARCH 382 Architecture Studio 3B 4.0 Credits

Studies the relationship between building, site and context. Architectural design problems emphasize concept development that translates careful analysis into the building ideas with a progressing understanding of architectural concerns.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 381 [Min Grade: C] and ARCH 274 [Min Grade: C-] or (ARCH 291 [Min Grade: C-] and ARCH 354 [Min Grade: C-])

ARCH 383 Architecture Studio 3C 4.0 Credits

Focuses on architectural problems with intermediate complexity. Integrates issues of context, site, program, function, and architectural systems into advanced design proposals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 382 [Min Grade: C] and ARCH 275 [Min Grade: C-] or (ARCH 292 [Min Grade: C-] and ARCH 355 [Min Grade: C-])

ARCH 394 Building Systems IV 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to mechanical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 291 [Min Grade: C-]

ARCH 395 Building Systems V 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to acoustical design and energy consumption within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 394 [Min Grade: C-]

ARCH 396 Building Systems VI 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to lighting and electrical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 293 [Min Grade: C-]

ARCH 421 [WI] Environmental Psychology and Design Theory 3.0 Credits

Examines the relationship between human behavior and architecture from the perspective of environmental psychology. Topics include aesthetics, environmental experience, social interaction, social organization, and culture. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 431 [WI] Architectural Programming 3.0 Credits

Introduces current techniques of building programming and their relationship to building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 353 [Min Grade: C-] or ARCH 483 [Min Grade: C-]

ARCH 432 The Development Process 3.0 Credits

Introduces the process of land development. Explores traditional and emerging development models (the architect as the equity participant and developer) in relation to new construction and rehabilitation. Covers various methods of initiating building projects and financing and tax issues. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 441 Urban Design Seminar 3.0 Credits

Expands the concept of architecture to urban design scale and presents the principles of city planning through a series of case studies. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 451 Advanced Drawing 3.0 Credits

Covers advanced architectural rendering, concentrating on the effects of light, shade, and color using the techniques of water-color rendering. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-] or INTR 341 [Min Grade: C-]

ARCH 455 Computer Applications in Architecture 3.0 Credits

Covers two-dimensional and three-dimensional computer representations and applications. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-]

ARCH 463 Case Studies in Architectural Technology 3.0 Credits

A holistic study of design and construction technology of significant buildings by leading architects through case studies. This course offers a unique opportunity to engage the topic of meaning in architecture through the lenses of spatial understanding and methods of technology and construction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-] or INTR 451 [Min Grade: C-]

ARCH 464 Building Enclosure Design 3.0 Credits

Examines the integrations of aesthetics, building science, and technology in the design of building enclosures. Professional Elective. Summer.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 465 Energy and Architecture 3.0 Credits

Creates an awareness of the availability of energy resources and their effect on the built environment. Discusses alternative sources of energy. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 466 The Architectural Detail 3.0 Credits

This seminar will explore architectural detail as a key to understanding of the craft and intrinsic nature of time, technology and cultural importance of the building.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 326 [Min Grade: C-] or INTR 350 [Min Grade: C-] or INTR 674 [Min Grade: C-]

ARCH 467 Introduction to Historic Preservation 3.0 Credits

An introduction to historic preservation as it relates to the built environment. The goal of this course is to familiarize the student with the history and the legal, theoretical and policy underpinnings of the historic preservation movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (ARCH 143 [Min Grade: C] or INTR 200 [Min Grade: C]) and (ARCH 283 [Min Grade: C] or INTR 342 [Min Grade: C] or INTR 442 [Min Grade: C])

ARCH 481 Architecture Studio 4A 4.0 Credits

Focuses on more complex architectural challenges through analysis of case studies that address the relationship between the man-made built environment and the natural environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 383 [Min Grade: C] and ARCH 276 [Min Grade: C-] or (ARCH 356 [Min Grade: C-] and ARCH 293 [Min Grade: C-])

ARCH 482 Architecture Studio 4B 4.0 Credits

Further the understanding of context and design and the application of solutions and strategies surrounding more complex architectural and environmental problems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 481 [Min Grade: C] and ARCH 377 [Min Grade: C-] or (ARCH 324 [Min Grade: C-] and ARCH 394 [Min Grade: C-])

ARCH 483 Architecture Studio 4C 4.0 Credits

Challenges to develop and refine architectural solutions through an advanced understanding of the relationship between buildings and environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 482 [Min Grade: C] and ARCH 378 [Min Grade: C-] or (ARCH 325 [Min Grade: C-] and ARCH 395 [Min Grade: C-])

ARCH 484 Specialized Studio 4.0 Credits

This design studio is taught as a vertical studio combining students from multiple years. Sections of this studio focus on a variety of special issues in the broader realm of architecture, urbanism and design and may be taught as an interdisciplinary studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 12 credits

Prerequisites: (ARCH 382 [Min Grade: C] or INTR 342 [Min Grade: C-] or INTR 442 [Min Grade: C-]) and ARCH 482 [Min Grade: C]

ARCH 487 Architecture Studio 5A 4.0 Credits

Addresses the complex relationship through analysis and synthesis of form, site, program, building technology and theory within specific building context.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 483 [Min Grade: C] and ARCH 379 [Min Grade: C-] or (ARCH 326 [Min Grade: C-] and ARCH 356 [Min Grade: C-] and ARCH 396 [Min Grade: C-])

ARCH 488 Architecture Studio 5B 4.0 Credits

Emphasizes complex architectural problems while demonstrating understanding and appropriate application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 487 [Min Grade: C]

ARCH 489 Architecture Studio 5C 4.0 Credits

Integrates in-depth application and coordination of all architectural building criteria in a large scale and complex architectural problem.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 488 [Min Grade: C]

ARCH 490 Capstone Project I 4.0 Credits

This course is the first part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to an introduction to methods applicable to architectural design and research that will lead to the capstone project in the second term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 283 [Min Grade: C-]

ARCH 492 Capstone Project II 4.0 Credits

This course is the second part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to the continued research in architectural theory, technology and/or design and the completion and presentation of a capstone project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 490 [Min Grade: C-]

ARCH 493 Senior Project I 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part one of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: (ARCH 363 [Min Grade: C-] or ARCH 489 [Min Grade: C]) and ARCH 431 [Min Grade: C-]

ARCH 494 Senior Project II 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part two of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 493 [Min Grade: C]

ARCH 495 Senior Project III 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part three of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 494 [Min Grade: C]

ARCH I199 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I299 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I399 Independent Study in Architecture 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I499 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

ARCH T180 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T280 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T380 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T480 Special Topics in Architecture 1.0-6.0 Credit

Covers special topics in architectural history, theory, or technology that satisfy history/theory or professional elective requirements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

Courses

ARCH 118 Architectural Design Foundations I 3.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored through investigation of abstract and applied design projects explored in two and three-dimensional abstract exercises. Exercises incorporate heightened observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 119 Architectural Design Foundations II 3.0 Credits

Investigates basic architectural design principles that emphasize the inter-relationship between the scale of the human body and its movement within three-dimensional space. Design exercises will advance the understanding of the design process, development of a conceptual idea and a higher-level graphic and oral presentation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 118 [Min Grade: C] or ARCH 191 [Min Grade: C]

ARCH 140 Appreciation of Architecture 3.0 Credits

Historical survey of architecture from prehistory through today drawn from around the globe (and from Philadelphia) that considers broadly applicable topics including style, material, construction, and function. Intended for non-majors as an introduction to architecture and urbanism.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 141 Architecture and Society I 3.0 Credits

This survey course examines the evolution of architectural and urban thought, form, space, and structure in light of changing human values and institutions. Particular attention is paid to materials, meaning, and use. It explores global built environments from the prehistoric era through the early Medieval period (9th century CE) in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 142 Architecture and Society II 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global built environments from the early Medieval period (9th century CE) through the 18th century in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 141 [Min Grade: C-]

ARCH 143 Architecture and Society III 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global modern built environments from the 18th century through the 21st century in Europe, the Americas, Asia, Australasia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 142 [Min Grade: C-]

ARCH 170 Architectural Technology I 3.0 Credits

Introduction to the fundamental aspects of building technology with exposure to materials, structure and building systems that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 172 Architectural Technology II 3.0 Credits

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 170 [Min Grade: C-]

ARCH 173 Architectural Technology III 3.0 Credits

Introduction to the technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 172 [Min Grade: C-]

ARCH 181 Architecture Studio 1A 4.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored in two and three dimensional abstract exercises. Exercises incorporate observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 182 Architecture Studio 1B 4.0 Credits

Transitions from abstract design principles to simple architectural exercises, considering function, scale, user and ordering strategies in relation to form-making in three-dimensional space. Exercises heighten observation and graphic skills while developing an architectural vocabulary.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 181 [Min Grade: C]

ARCH 183 Architecture Studio 1C 4.0 Credits

Focuses on a series of basic architectural problems developed around issues of context and material use in relationship to the organization of space and human activity. Design exercises will cultivate the design process through developing a conceptual idea through graphic and oral communication.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 182 [Min Grade: C] or INTR 233 [Min Grade: C-]

ARCH 191 Studio 1-AE 3.0 Credits

Architectural engineering majors only. Covers basic design principles using three-dimensional abstract and applied projects. Exercises heighten observation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

ARCH 192 Studio 2-AE 3.0 Credits

Architectural engineering majors only. Continues ARCH 191. Uses design exercises to emphasize the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

Prerequisites: ARCH 191 [Min Grade: D]

ARCH 211 Architectural Representation I 2.0 Credits

Introductory course that will provide a survey of drawing types with an emphasis on process and visual literacy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 212 Architectural Representation II 2.0 Credits

Emphasis on craft and composition in the architectural representation of the built environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 211 [Min Grade: C]

ARCH 213 Architectural Representation III 2.0 Credits

Exploration of digital representation with an emphasis on making combining process drawing, digital fabrication and analog craft to develop three-dimensional representation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 212 [Min Grade: C]

ARCH 221 Materials & Methods I 1.5 Credit

Introduction to the fundamental aspects of building technology with exposure to materials and methods that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-]

ARCH 222 Materials & Methods II 1.5 Credit

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 221 [Min Grade: C-]

ARCH 223 Materials & Methods III 1.5 Credit

Introduction to technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 222 [Min Grade: C-]

ARCH 224 Architectural Representation IV 2.0 Credits

Emphasizes the communication of design through perspective, view-making and rendering. Through the use of digital and analog techniques, the ability to select the proper media to visually convey a design concept will be developed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 213 [Min Grade: C] and ARCH 183 [Min Grade: C]

ARCH 225 Architectural Representation V 2.0 Credits

Emphasizes the tools to complete a final quality architectural presentation in a variety of venues including portfolios, digital representations and online media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 224 [Min Grade: C] and ARCH 281 [Min Grade: C]

ARCH 226 Architectural Representation VI 2.0 Credits

Explores parametric thinking and the iterative design process while reinforcing critical skills in detailing and design development through various software programs.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 225 [Min Grade: C] and ARCH 282 [Min Grade: C]

ARCH 251 Structural Systems I 1.5 Credit

Introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 252 Structural Systems II 1.5 Credit

Further introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 251 [Min Grade: C-]

ARCH 253 Structural Systems III 1.5 Credit

Introduction and intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 252 [Min Grade: C-]

ARCH 274 Architectural Technology IV 3.0 Credits

Intermediate development of architectural technology with a focus on application of analysis of primary materials, structure and systems. Depth and range of analytical tools are addressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 173 [Min Grade: C-] and PHYS 183 [Min Grade: C-]

ARCH 275 Architectural Technology V 3.0 Credits

Further development of analytical skills for building technology. Case studies and real world precedents examine materials, structure and systems in the support of larger architectural objectives.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 274 [Min Grade: C-]

ARCH 276 Architectural Technology VI 3.0 Credits

Examination of technical analysis and design in support of iterative architectural concepts. Materials, structure and systems are utilized to develop strong design synergies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 275 [Min Grade: C-]

ARCH 281 Architecture Studio 2A 4.0 Credits

Introduces issues of architectural form, site and programmatic concerns. Design exercises will explore simple issues of structure, building and material systems and sustainability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 183 [Min Grade: C] and (ARCH 213 [Min Grade: C] or INTR 245 [Min Grade: C-])

ARCH 282 Architecture Studio 2B 4.0 Credits

Covers architectural design problems of incremental complexity that emphasizes the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 221 [Min Grade: C-] and ARCH 251 [Min Grade: C-]) or ARCH 170 [Min Grade: C-] or INTR 351 [Min Grade: C-],) and ARCH 281 [Min Grade: C] and (ARCH 224 [Min Grade: C] or INTR 341 [Min Grade: C-])

ARCH 283 Architecture Studio 2C 4.0 Credits

Explores architectural design problems that introduce the full range of challenges in the areas of organization, program, context, systems and formal expression.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 222 [Min Grade: C-] and ARCH 252 [Min Grade: C-]) or ARCH 170 [Min Grade: C-]) and ARCH 282 [Min Grade: C] and ARCH 225 [Min Grade: C]

ARCH 291 Building Systems I 1.5 Credit

Introduction to architectural technology with a focus on application of analysis pertaining to environmental systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 292 Building Systems II 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to water within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 293 Building Systems III 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to lighting within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 315 Sustainable Built Environment I 3.0 Credits

Provides an overview of contemporary sustainable design principles and systems involved to posit novel solutions to various design challenges. Combining theoretical knowledge, field trips and case studies enabling students to critically assess sustainability as it relates to the built environment through five key subsystems: materials, air, water, energy and life.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARCH 320 Sustainable Built Environment II 3.0 Credits

Students will examine the work of scientists, designers, authors, artists, architects, engineers, planners, etc to gain a deeper conceptual understanding of current and emerging strategies in sustainability and the complex and integrated systems approach to the built environment in the present and near future.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ARCH 315 [Min Grade: C-]

ARCH 324 Materials & Methods IV 1.5 Credit

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 223 [Min Grade: C-]

ARCH 325 Materials & Methods V 1.5 Credit

Further exploration of advanced building technology concepts through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 324 [Min Grade: C-]

ARCH 326 Materials & Methods VI 1.5 Credit

Advanced integration of building technology concepts through design problems and examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 325 [Min Grade: C-]

ARCH 335 Professional Practice I 3.0 Credits

This seminar is the first of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Community and Social Responsibility, Leadership, Ethics & Professional Judgment, Client Role in Architecture, Basic Principles of Architectural Practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 243 [Min Grade: C-] or ARCH 383 [Min Grade: C-]

ARCH 336 Professional Practice II 3.0 Credits

This seminar is the second of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Practice Management, Project Management, Financial Considerations, Legal Responsibilities, Ethics & Professional Judgment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 335 [Min Grade: C-]

ARCH 340 American Architecture & Urbanism 3.0 Credits

Surveys the development of American architecture and urbanism from its Native American origins through the arrival of early Modernism in the 1930s and 1940s.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 341 [WI] Theories of Architecture I 3.0 Credits

Seminar that examines theories and principles of Western architecture before 1700. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 342 [WI] Theories of Architecture II 3.0 Credits

Continues ARCH 341. Seminar that examines theories and principles of Western architecture from the Baroque era of the 17th century to the beginning of Modernism in the 20th century. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 343 Theories of Architecture III 3.0 Credits

Seminar that examines 20th-century theories of architecture, including analysis and discussion of current theoretical positions. History/theory elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 346 [WI] History of Philadelphia Architecture 3.0 Credits

Covers the architecture of the city of Philadelphia from 1682, examining its architects, styles, and sources through lectures, walking tours, and student reports. History/theory elective. Fall. Alternate years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 347 [WI] Intensive Architectural Studies 1.0-6.0 Credit

An intensive study tour of selected domestic and foreign destinations focusing on architecture and related design disciplines. Combines lecture, site visits, sketching and individual research. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C-] or INTR 200 [Min Grade: C-] or ARTH 103 [Min Grade: C-]

ARCH 348 [WI] Studies in Vernacular Architecture 3.0 Credits

A topical survey of world traditions of vernacular architecture, with emphasis on houses and dwelling environments. The survey topics include basics of shelter, construction methods, response to climate, patterns of settlement, social and economic organization, cultural expression, and methods of research and analysis.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 350 Contemporary Architecture 3.0 Credits

Survey and analysis of significant developments in architecture and urbanism over the past 50+ years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 354 Structural Systems IV 1.5 Credit

Intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 253 [Min Grade: C-]

ARCH 355 Structural Systems V 1.5 Credit

Intermediate structural analysis for architectural design. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 354 [Min Grade: C-]

ARCH 356 Structural Systems VI 1.5 Credit

Intermediate structural analysis for architectural design with a focus on composite systems. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 355 [Min Grade: C-]

ARCH 377 Architectural Technology VII 3.0 Credits

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 276 [Min Grade: C-]

ARCH 378 Architectural Technology VIII 3.0 Credits

Building technology and analysis are explored through design precedents and sketch problems to develop integrated design and analytical skills.

Focuses on large and small scale elements that can become generative and performative aspects of major design decisions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 377 [Min Grade: C-]

ARCH 379 Architectural Technology IX 3.0 Credits

Advanced building technology design and analysis is utilized in iterative and integrated design methods to support comprehensive design processes. Materials, structure and systems are developed qualitatively and quantitatively through design and analysis exercises.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 378 [Min Grade: C-]

ARCH 381 Architecture Studio 3A 4.0 Credits

Investigates the design relationship between man-made and the natural environment. Cultivates advanced analysis methods and the development of informed and resolved design solutions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C] and ARCH 226 [Min Grade: C] and ARCH 223 [Min Grade: C] and ARCH 253 [Min Grade: C]

ARCH 382 Architecture Studio 3B 4.0 Credits

Studies the relationship between building, site and context. Architectural design problems emphasize concept development that translates careful analysis into the building ideas with a progressing understanding of architectural concerns.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 381 [Min Grade: C] and ARCH 274 [Min Grade: C-] or (ARCH 291 [Min Grade: C-] and ARCH 354 [Min Grade: C-])

ARCH 383 Architecture Studio 3C 4.0 Credits

Focuses on architectural problems with intermediate complexity. Integrates issues of context, site, program, function, and architectural systems into advanced design proposals.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 382 [Min Grade: C] and ARCH 275 [Min Grade: C-] or (ARCH 292 [Min Grade: C-] and ARCH 355 [Min Grade: C-])

ARCH 394 Building Systems IV 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to mechanical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 291 [Min Grade: C-]

ARCH 395 Building Systems V 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to acoustical design and energy consumption within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 394 [Min Grade: C-]

ARCH 396 Building Systems VI 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to lighting and electrical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 293 [Min Grade: C-]

ARCH 421 [WI] Environmental Psychology and Design Theory 3.0 Credits

Examines the relationship between human behavior and architecture from the perspective of environmental psychology. Topics include aesthetics, environmental experience, social interaction, social organization, and culture. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 431 [WI] Architectural Programming 3.0 Credits

Introduces current techniques of building programming and their relationship to building design.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 353 [Min Grade: C-] or ARCH 483 [Min Grade: C-]

ARCH 432 The Development Process 3.0 Credits

Introduces the process of land development. Explores traditional and emerging development models (the architect as the equity participant and developer) in relation to new construction and rehabilitation. Covers various methods of initiating building projects and financing and tax issues. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARCH 441 Urban Design Seminar 3.0 Credits

Expands the concept of architecture to urban design scale and presents the principles of city planning through a series of case studies. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 451 Advanced Drawing 3.0 Credits

Covers advanced architectural rendering, concentrating on the effects of light, shade, and color using the techniques of water-color rendering. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-] or INTR 341 [Min Grade: C-]

ARCH 455 Computer Applications in Architecture 3.0 Credits

Covers two-dimensional and three-dimensional computer representations and applications. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-]

ARCH 463 Case Studies in Architectural Technology 3.0 Credits

A holistic study of design and construction technology of significant buildings by leading architects through case studies. This course offers a unique opportunity to engage the topic of meaning in architecture through the lenses of spatial understanding and methods of technology and construction.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-] or INTR 451 [Min Grade: C-]

ARCH 464 Building Enclosure Design 3.0 Credits

Examines the integrations of aesthetics, building science, and technology in the design of building enclosures. Professional Elective. Summer.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 465 Energy and Architecture 3.0 Credits

Creates an awareness of the availability of energy resources and their effect on the built environment. Discusses alternative sources of energy. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 466 The Architectural Detail 3.0 Credits

This seminar will explore architectural detail as a key to understanding of the craft and intrinsic nature of time, technology and cultural importance of the building.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 326 [Min Grade: C-] or INTR 350 [Min Grade: C-] or INTR 674 [Min Grade: C-]

ARCH 467 Introduction to Historic Preservation 3.0 Credits

An introduction to historic preservation as it relates to the built environment. The goal of this course is to familiarize the student with the history and the legal, theoretical and policy underpinnings of the historic preservation movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (ARCH 143 [Min Grade: C] or INTR 200 [Min Grade: C]) and (ARCH 283 [Min Grade: C] or INTR 342 [Min Grade: C] or INTR 442 [Min Grade: C])

ARCH 481 Architecture Studio 4A 4.0 Credits

Focuses on more complex architectural challenges through analysis of case studies that address the relationship between the man-made built environment and the natural environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 383 [Min Grade: C] and ARCH 276 [Min Grade: C-] or (ARCH 356 [Min Grade: C-] and ARCH 293 [Min Grade: C-])

ARCH 482 Architecture Studio 4B 4.0 Credits

Further the understanding of context and design and the application of solutions and strategies surrounding more complex architectural and environmental problems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 481 [Min Grade: C] and ARCH 377 [Min Grade: C-] or (ARCH 324 [Min Grade: C-] and ARCH 394 [Min Grade: C-])

ARCH 483 Architecture Studio 4C 4.0 Credits

Challenges to develop and refine architectural solutions through an advanced understanding of the relationship between buildings and environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 482 [Min Grade: C] and ARCH 378 [Min Grade: C-] or (ARCH 325 [Min Grade: C-] and ARCH 395 [Min Grade: C-])

ARCH 484 Specialized Studio 4.0 Credits

This design studio is taught as a vertical studio combining students from multiple years. Sections of this studio focus on a variety of special issues in the broader realm of architecture, urbanism and design and may be taught as an interdisciplinary studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 12 credits

Prerequisites: (ARCH 382 [Min Grade: C] or INTR 342 [Min Grade: C-] or INTR 442 [Min Grade: C-]) and ARCH 482 [Min Grade: C]

ARCH 487 Architecture Studio 5A 4.0 Credits

Addresses the complex relationship through analysis and synthesis of form, site, program, building technology and theory within specific building context.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 483 [Min Grade: C] and ARCH 379 [Min Grade: C-] or (ARCH 326 [Min Grade: C-] and ARCH 356 [Min Grade: C-] and ARCH 396 [Min Grade: C-])

ARCH 488 Architecture Studio 5B 4.0 Credits

Emphasizes complex architectural problems while demonstrating understanding and appropriate application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 487 [Min Grade: C]

ARCH 489 Architecture Studio 5C 4.0 Credits

Integrates in-depth application and coordination of all architectural building criteria in a large scale and complex architectural problem.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 488 [Min Grade: C]

ARCH 490 Capstone Project I 4.0 Credits

This course is the first part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to an introduction to methods applicable to architectural design and research that will lead to the capstone project in the second term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 283 [Min Grade: C-]

ARCH 492 Capstone Project II 4.0 Credits

This course is the second part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to the continued research in architectural theory, technology and/or design and the completion and presentation of a capstone project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 490 [Min Grade: C-]

ARCH 493 Senior Project I 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part one of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: (ARCH 363 [Min Grade: C-] or ARCH 489 [Min Grade: C]) and ARCH 431 [Min Grade: C-]

ARCH 494 Senior Project II 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part two of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 493 [Min Grade: C]

ARCH 495 Senior Project III 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part three of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 494 [Min Grade: C]

ARCH I199 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I299 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I399 Independent Study in Architecture 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I499 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

ARCH T180 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T280 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T380 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T480 Special Topics in Architecture 1.0-6.0 Credit

Covers special topics in architectural history, theory, or technology that satisfy history/theory or professional elective requirements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

Courses

ARCH 118 Architectural Design Foundations I 3.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored through investigation of abstract and applied design projects explored in two and three- dimensional abstract exercises. Exercises incorporate heightened observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 119 Architectural Design Foundations II 3.0 Credits

Investigates basic architectural design principles that emphasize the inter-relationship between the scale of the human body and its movement within three-dimensional space. Design exercises will advance the understanding of the design process, development of a conceptual idea and a higher-level graphic and oral presentation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 118 [Min Grade: C] or ARCH 191 [Min Grade: C]

ARCH 140 Appreciation of Architecture 3.0 Credits

Historical survey of architecture from prehistory through today drawn from around the globe (and from Philadelphia) that considers broadly applicable topics including style, material, construction, and function. Intended for non-majors as an introduction to architecture and urbanism.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 141 Architecture and Society I 3.0 Credits

This survey course examines the evolution of architectural and urban thought, form, space, and structure in light of changing human values and institutions. Particular attention is paid to materials, meaning, and use. It explores global built environments from the prehistoric era through the early Medieval period (9th century CE) in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 142 Architecture and Society II 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global built environments from the early Medieval period (9th century CE) through the 18th century in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 141 [Min Grade: C-]

ARCH 143 Architecture and Society III 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global modern built environments from the 18th century through the 21st century in Europe, the Americas, Asia, Australasia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 142 [Min Grade: C-]

ARCH 170 Architectural Technology I 3.0 Credits

Introduction to the fundamental aspects of building technology with exposure to materials, structure and building systems that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 172 Architectural Technology II 3.0 Credits

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 170 [Min Grade: C-]

ARCH 173 Architectural Technology III 3.0 Credits

Introduction to the technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 172 [Min Grade: C-]

ARCH 181 Architecture Studio 1A 4.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored in two and three dimensional abstract exercises. Exercises incorporate observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 182 Architecture Studio 1B 4.0 Credits

Transitions from abstract design principles to simple architectural exercises, considering function, scale, user and ordering strategies in relation to form-making in three-dimensional space. Exercises heighten observation and graphic skills while developing an architectural vocabulary.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 181 [Min Grade: C]

ARCH 183 Architecture Studio 1C 4.0 Credits

Focuses on a series of basic architectural problems developed around issues of context and material use in relationship to the organization of space and human activity. Design exercises will cultivate the design process through developing a conceptual idea through graphic and oral communication.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 182 [Min Grade: C] or INTR 233 [Min Grade: C-]

ARCH 191 Studio 1-AE 3.0 Credits

Architectural engineering majors only. Covers basic design principles using three-dimensional abstract and applied projects. Exercises heighten observation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

ARCH 192 Studio 2-AE 3.0 Credits

Architectural engineering majors only. Continues ARCH 191. Uses design exercises to emphasize the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

Prerequisites: ARCH 191 [Min Grade: D]

ARCH 211 Architectural Representation I 2.0 Credits

Introductory course that will provide a survey of drawing types with an emphasis on process and visual literacy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 212 Architectural Representation II 2.0 Credits

Emphasis on craft and composition in the architectural representation of the built environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 211 [Min Grade: C]

ARCH 213 Architectural Representation III 2.0 Credits

Exploration of digital representation with an emphasis on making combining process drawing, digital fabrication and analog craft to develop three-dimensional representation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 212 [Min Grade: C]

ARCH 221 Materials & Methods I 1.5 Credit

Introduction to the fundamental aspects of building technology with exposure to materials and methods that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-]

ARCH 222 Materials & Methods II 1.5 Credit

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 221 [Min Grade: C-]

ARCH 223 Materials & Methods III 1.5 Credit

Introduction to technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 222 [Min Grade: C-]

ARCH 224 Architectural Representation IV 2.0 Credits

Emphasizes the communication of design through perspective, view-making and rendering. Through the use of digital and analog techniques, the ability to select the proper media to visually convey a design concept will be developed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 213 [Min Grade: C] and ARCH 183 [Min Grade: C]

ARCH 225 Architectural Representation V 2.0 Credits

Emphasizes the tools to complete a final quality architectural presentation in a variety of venues including portfolios, digital representations and online media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 224 [Min Grade: C] and ARCH 281 [Min Grade: C]

ARCH 226 Architectural Representation VI 2.0 Credits

Explores parametric thinking and the iterative design process while reinforcing critical skills in detailing and design development through various software programs.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 225 [Min Grade: C] and ARCH 282 [Min Grade: C]

ARCH 251 Structural Systems I 1.5 Credit

Introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 252 Structural Systems II 1.5 Credit

Further introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 251 [Min Grade: C-]

ARCH 253 Structural Systems III 1.5 Credit

Introduction and intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 252 [Min Grade: C-]

ARCH 274 Architectural Technology IV 3.0 Credits

Intermediate development of architectural technology with a focus on application of analysis of primary materials, structure and systems. Depth and range of analytical tools are addressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 173 [Min Grade: C-] and PHYS 183 [Min Grade: C-]

ARCH 275 Architectural Technology V 3.0 Credits

Further development of analytical skills for building technology. Case studies and real world precedents examine materials, structure and systems in the support of larger architectural objectives.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 274 [Min Grade: C-]

ARCH 276 Architectural Technology VI 3.0 Credits

Examination of technical analysis and design in support of iterative architectural concepts. Materials, structure and systems are utilized to develop strong design synergies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 275 [Min Grade: C-]

ARCH 281 Architecture Studio 2A 4.0 Credits

Introduces issues of architectural form, site and programmatic concerns. Design exercises will explore simple issues of structure, building and material systems and sustainability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 183 [Min Grade: C] and (ARCH 213 [Min Grade: C] or INTR 245 [Min Grade: C-])

ARCH 282 Architecture Studio 2B 4.0 Credits

Covers architectural design problems of incremental complexity that emphasizes the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 221 [Min Grade: C-] and ARCH 251 [Min Grade: C-]) or ARCH 170 [Min Grade: C-] or INTR 351 [Min Grade: C-],) and ARCH 281 [Min Grade: C] and (ARCH 224 [Min Grade: C] or INTR 341 [Min Grade: C-])

ARCH 283 Architecture Studio 2C 4.0 Credits

Explores architectural design problems that introduce the full range of challenges in the areas of organization, program, context, systems and formal expression.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 222 [Min Grade: C-] and ARCH 252 [Min Grade: C-]) or ARCH 170 [Min Grade: C-]) and ARCH 282 [Min Grade: C] and ARCH 225 [Min Grade: C]

ARCH 291 Building Systems I 1.5 Credit

Introduction to architectural technology with a focus on application of analysis pertaining to environmental systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 292 Building Systems II 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to water within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 293 Building Systems III 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to lighting within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 315 Sustainable Built Environment I 3.0 Credits

Provides an overview of contemporary sustainable design principles and systems involved to posit novel solutions to various design challenges. Combining theoretical knowledge, field trips and case studies enabling students to critically assess sustainability as it relates to the built environment through five key subsystems: materials, air, water, energy and life.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARCH 320 Sustainable Built Environment II 3.0 Credits

Students will examine the work of scientists, designers, authors, artists, architects, engineers, planners, etc to gain a deeper conceptual understanding of current and emerging strategies in sustainability and the complex and integrated systems approach to the built environment in the present and near future.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ARCH 315 [Min Grade: C-]

ARCH 324 Materials & Methods IV 1.5 Credit

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 223 [Min Grade: C-]

ARCH 325 Materials & Methods V 1.5 Credit

Further exploration of advanced building technology concepts through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 324 [Min Grade: C-]

ARCH 326 Materials & Methods VI 1.5 Credit

Advanced integration of building technology concepts through design problems and examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 325 [Min Grade: C-]

ARCH 335 Professional Practice I 3.0 Credits

This seminar is the first of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Community and Social Responsibility, Leadership, Ethics & Professional Judgment, Client Role in Architecture, Basic Principles of Architectural Practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 243 [Min Grade: C-] or ARCH 383 [Min Grade: C-]

ARCH 336 Professional Practice II 3.0 Credits

This seminar is the second of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Practice Management, Project Management, Financial Considerations, Legal Responsibilities, Ethics & Professional Judgment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 335 [Min Grade: C-]

ARCH 340 American Architecture & Urbanism 3.0 Credits

Surveys the development of American architecture and urbanism from its Native American origins through the arrival of early Modernism in the 1930s and 1940s.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 341 [WI] Theories of Architecture I 3.0 Credits

Seminar that examines theories and principles of Western architecture before 1700. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 342 [WI] Theories of Architecture II 3.0 Credits

Continues ARCH 341. Seminar that examines theories and principles of Western architecture from the Baroque era of the 17th century to the beginning of Modernism in the 20th century. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 343 Theories of Architecture III 3.0 Credits

Seminar that examines 20th-century theories of architecture, including analysis and discussion of current theoretical positions. History/theory elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 346 [WI] History of Philadelphia Architecture 3.0 Credits

Covers the architecture of the city of Philadelphia from 1682, examining its architects, styles, and sources through lectures, walking tours, and student reports. History/theory elective. Fall. Alternate years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 347 [WI] Intensive Architectural Studies 1.0-6.0 Credit

An intensive study tour of selected domestic and foreign destinations focusing on architecture and related design disciplines. Combines lecture, site visits, sketching and individual research. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C-] or INTR 200 [Min Grade: C-] or ARTH 103 [Min Grade: C-]

ARCH 348 [WI] Studies in Vernacular Architecture 3.0 Credits

A topical survey of world traditions of vernacular architecture, with emphasis on houses and dwelling environments. The survey topics include basics of shelter, construction methods, response to climate, patterns of settlement, social and economic organization, cultural expression, and methods of research and analysis.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 350 Contemporary Architecture 3.0 Credits

Survey and analysis of significant developments in architecture and urbanism over the past 50+ years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 354 Structural Systems IV 1.5 Credit

Intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 253 [Min Grade: C-]

ARCH 355 Structural Systems V 1.5 Credit

Intermediate structural analysis for architectural design. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 354 [Min Grade: C-]

ARCH 356 Structural Systems VI 1.5 Credit

Intermediate structural analysis for architectural design with a focus on composite systems. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 355 [Min Grade: C-]

ARCH 377 Architectural Technology VII 3.0 Credits

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 276 [Min Grade: C-]

ARCH 378 Architectural Technology VIII 3.0 Credits

Building technology and analysis are explored through design precedents and sketch problems to develop integrated design and analytical skills. Focuses on large and small scale elements that can become generative and performative aspects of major design decisions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 377 [Min Grade: C-]

ARCH 379 Architectural Technology IX 3.0 Credits

Advanced building technology design and analysis is utilized in iterative and integrated design methods to support comprehensive design processes. Materials, structure and systems are developed qualitatively and quantitatively through design and analysis exercises.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 378 [Min Grade: C-]

ARCH 381 Architecture Studio 3A 4.0 Credits

Investigates the design relationship between man-made and the natural environment. Cultivates advanced analysis methods and the development of informed and resolved design solutions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C] and ARCH 226 [Min Grade: C] and ARCH 223 [Min Grade: C] and ARCH 253 [Min Grade: C]

ARCH 382 Architecture Studio 3B 4.0 Credits

Studies the relationship between building, site and context. Architectural design problems emphasize concept development that translates careful analysis into the building ideas with a progressing understanding of architectural concerns.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 381 [Min Grade: C] and ARCH 274 [Min Grade: C-] or (ARCH 291 [Min Grade: C-] and ARCH 354 [Min Grade: C-])

ARCH 383 Architecture Studio 3C 4.0 Credits

Focuses on architectural problems with intermediate complexity. Integrates issues of context, site, program, function, and architectural systems into advanced design proposals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 382 [Min Grade: C] and ARCH 275 [Min Grade: C-] or (ARCH 292 [Min Grade: C-] and ARCH 355 [Min Grade: C-])

ARCH 394 Building Systems IV 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to mechanical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 291 [Min Grade: C-]

ARCH 395 Building Systems V 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to acoustical design and energy consumption within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 394 [Min Grade: C-]

ARCH 396 Building Systems VI 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to lighting and electrical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 293 [Min Grade: C-]

ARCH 421 [WI] Environmental Psychology and Design Theory 3.0 Credits

Examines the relationship between human behavior and architecture from the perspective of environmental psychology. Topics include aesthetics, environmental experience, social interaction, social organization, and culture. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 431 [WI] Architectural Programming 3.0 Credits

Introduces current techniques of building programming and their relationship to building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 353 [Min Grade: C-] or ARCH 483 [Min Grade: C-]

ARCH 432 The Development Process 3.0 Credits

Introduces the process of land development. Explores traditional and emerging development models (the architect as the equity participant and developer) in relation to new construction and rehabilitation. Covers various methods of initiating building projects and financing and tax issues. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 441 Urban Design Seminar 3.0 Credits

Expands the concept of architecture to urban design scale and presents the principles of city planning through a series of case studies. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 451 Advanced Drawing 3.0 Credits

Covers advanced architectural rendering, concentrating on the effects of light, shade, and color using the techniques of water-color rendering. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-] or INTR 341 [Min Grade: C-]

ARCH 455 Computer Applications in Architecture 3.0 Credits

Covers two-dimensional and three-dimensional computer representations and applications. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-]

ARCH 463 Case Studies in Architectural Technology 3.0 Credits

A holistic study of design and construction technology of significant buildings by leading architects through case studies. This course offers a unique opportunity to engage the topic of meaning in architecture through the lenses of spatial understanding and methods of technology and construction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-] or INTR 451 [Min Grade: C-]

ARCH 464 Building Enclosure Design 3.0 Credits

Examines the integrations of aesthetics, building science, and technology in the design of building enclosures. Professional Elective. Summer.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 465 Energy and Architecture 3.0 Credits

Creates an awareness of the availability of energy resources and their effect on the built environment. Discusses alternative sources of energy. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 466 The Architectural Detail 3.0 Credits

This seminar will explore architectural detail as a key to understanding of the craft and intrinsic nature of time, technology and cultural importance of the building.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 326 [Min Grade: C-] or INTR 350 [Min Grade: C-] or INTR 674 [Min Grade: C-]

ARCH 467 Introduction to Historic Preservation 3.0 Credits

An introduction to historic preservation as it relates to the built environment. The goal of this course is to familiarize the student with the history and the legal, theoretical and policy underpinnings of the historic preservation movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (ARCH 143 [Min Grade: C] or INTR 200 [Min Grade: C]) and (ARCH 283 [Min Grade: C] or INTR 342 [Min Grade: C] or INTR 442 [Min Grade: C])

ARCH 481 Architecture Studio 4A 4.0 Credits

Focuses on more complex architectural challenges through analysis of case studies that address the relationship between the man-made built environment and the natural environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 383 [Min Grade: C] and ARCH 276 [Min Grade: C-] or (ARCH 356 [Min Grade: C-] and ARCH 293 [Min Grade: C-])

ARCH 482 Architecture Studio 4B 4.0 Credits

Further the understanding of context and design and the application of solutions and strategies surrounding more complex architectural and environmental problems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 481 [Min Grade: C] and ARCH 377 [Min Grade: C-] or (ARCH 324 [Min Grade: C-] and ARCH 394 [Min Grade: C-])

ARCH 483 Architecture Studio 4C 4.0 Credits

Challenges to develop and refine architectural solutions through an advanced understanding of the relationship between buildings and environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 482 [Min Grade: C] and ARCH 378 [Min Grade: C-] or (ARCH 325 [Min Grade: C-] and ARCH 395 [Min Grade: C-])

ARCH 484 Specialized Studio 4.0 Credits

This design studio is taught as a vertical studio combining students from multiple years. Sections of this studio focus on a variety of special issues in the broader realm of architecture, urbanism and design and may be taught as an interdisciplinary studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 12 credits

Prerequisites: (ARCH 382 [Min Grade: C] or INTR 342 [Min Grade: C-] or INTR 442 [Min Grade: C-]) and ARCH 482 [Min Grade: C]

ARCH 487 Architecture Studio 5A 4.0 Credits

Addresses the complex relationship through analysis and synthesis of form, site, program, building technology and theory within specific building context.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 483 [Min Grade: C] and ARCH 379 [Min Grade: C-] or (ARCH 326 [Min Grade: C-] and ARCH 356 [Min Grade: C-] and ARCH 396 [Min Grade: C-])

ARCH 488 Architecture Studio 5B 4.0 Credits

Emphasizes complex architectural problems while demonstrating understanding and appropriate application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 487 [Min Grade: C]

ARCH 489 Architecture Studio 5C 4.0 Credits

Integrates in-depth application and coordination of all architectural building criteria in a large scale and complex architectural problem.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 488 [Min Grade: C]

ARCH 490 Capstone Project I 4.0 Credits

This course is the first part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to an introduction to methods applicable to architectural design and research that will lead to the capstone project in the second term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 283 [Min Grade: C-]

ARCH 492 Capstone Project II 4.0 Credits

This course is the second part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to the continued research in architectural theory, technology and/or design and the completion and presentation of a capstone project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 490 [Min Grade: C-]

ARCH 493 Senior Project I 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part one of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: (ARCH 363 [Min Grade: C-] or ARCH 489 [Min Grade: C]) and ARCH 431 [Min Grade: C-]

ARCH 494 Senior Project II 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part two of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 493 [Min Grade: C]

ARCH 495 Senior Project III 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part three of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 494 [Min Grade: C]

ARCH I199 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I299 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I399 Independent Study in Architecture 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I499 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

ARCH T180 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T280 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T380 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T480 Special Topics in Architecture 1.0-6.0 Credit

Covers special topics in architectural history, theory, or technology that satisfy history/theory or professional elective requirements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

Courses

ARCH 118 Architectural Design Foundations I 3.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored through investigation of abstract and applied design projects explored in two and three-dimensional abstract exercises. Exercises incorporate heightened observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 119 Architectural Design Foundations II 3.0 Credits

Investigates basic architectural design principles that emphasize the inter-relationship between the scale of the human body and its movement within three-dimensional space. Design exercises will advance the understanding of the design process, development of a conceptual idea and a higher-level graphic and oral presentation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 118 [Min Grade: C] or ARCH 191 [Min Grade: C]

ARCH 140 Appreciation of Architecture 3.0 Credits

Historical survey of architecture from prehistory through today drawn from around the globe (and from Philadelphia) that considers broadly applicable topics including style, material, construction, and function. Intended for non-majors as an introduction to architecture and urbanism.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 141 Architecture and Society I 3.0 Credits

This survey course examines the evolution of architectural and urban thought, form, space, and structure in light of changing human values and institutions. Particular attention is paid to materials, meaning, and use. It explores global built environments from the prehistoric era through the early Medieval period (9th century CE) in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 142 Architecture and Society II 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global built environments from the early Medieval period (9th century CE) through the 18th century in Europe, the Americas, Asia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 141 [Min Grade: C-]

ARCH 143 Architecture and Society III 3.0 Credits

This survey course examines the evolution of architectural and urban thought and form in light of changing human values and institutions, with particular attention paid to materials, technology, meaning, and use. It explores global modern built environments from the 18th century through the 21st century in Europe, the Americas, Asia, Australasia, and Africa.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 142 [Min Grade: C-]

ARCH 170 Architectural Technology I 3.0 Credits

Introduction to the fundamental aspects of building technology with exposure to materials, structure and building systems that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 172 Architectural Technology II 3.0 Credits

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 170 [Min Grade: C-]

ARCH 173 Architectural Technology III 3.0 Credits

Introduction to the technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 172 [Min Grade: C-]

ARCH 181 Architecture Studio 1A 4.0 Credits

Introduces basic architectural design principles. Elementary concepts of space, surface and form will be explored in two and three dimensional abstract exercises. Exercises incorporate observational analysis and graphic skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 182 Architecture Studio 1B 4.0 Credits

Transitions from abstract design principles to simple architectural exercises, considering function, scale, user and ordering strategies in relation to form-making in three-dimensional space. Exercises heighten observation and graphic skills while developing an architectural vocabulary.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 181 [Min Grade: C]

ARCH 183 Architecture Studio 1C 4.0 Credits

Focuses on a series of basic architectural problems developed around issues of context and material use in relationship to the organization of space and human activity. Design exercises will cultivate the design process through developing a conceptual idea through graphic and oral communication.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 182 [Min Grade: C] or INTR 233 [Min Grade: C-]

ARCH 191 Studio 1-AE 3.0 Credits

Architectural engineering majors only. Covers basic design principles using three-dimensional abstract and applied projects. Exercises heighten observation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

ARCH 192 Studio 2-AE 3.0 Credits

Architectural engineering majors only. Continues ARCH 191. Uses design exercises to emphasize the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE.

Prerequisites: ARCH 191 [Min Grade: D]

ARCH 211 Architectural Representation I 2.0 Credits

Introductory course that will provide a survey of drawing types with an emphasis on process and visual literacy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

ARCH 212 Architectural Representation II 2.0 Credits

Emphasis on craft and composition in the architectural representation of the built environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 211 [Min Grade: C]

ARCH 213 Architectural Representation III 2.0 Credits

Exploration of digital representation with an emphasis on making combining process drawing, digital fabrication and analog craft to develop three-dimensional representation skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 212 [Min Grade: C]

ARCH 221 Materials & Methods I 1.5 Credit

Introduction to the fundamental aspects of building technology with exposure to materials and methods that are frequently used in building construction. Provides a framework for the exploration of construction in the context of design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-]

ARCH 222 Materials & Methods II 1.5 Credit

Further exploration of materials, structure and building systems and their influence on passive systems and sustainable design principles. Begins the development of systematic thinking regarding architectural technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 221 [Min Grade: C-]

ARCH 223 Materials & Methods III 1.5 Credit

Introduction to technical building analysis including the organizing principles for materials, structure and systems. Includes envelope assembly, thermal comfort, structural and passive building systems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 222 [Min Grade: C-]

ARCH 224 Architectural Representation IV 2.0 Credits

Emphasizes the communication of design through perspective, view-making and rendering. Through the use of digital and analog techniques, the ability to select the proper media to visually convey a design concept will be developed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 213 [Min Grade: C] and ARCH 183 [Min Grade: C]

ARCH 225 Architectural Representation V 2.0 Credits

Emphasizes the tools to complete a final quality architectural presentation in a variety of venues including portfolios, digital representations and online media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 224 [Min Grade: C] and ARCH 281 [Min Grade: C]

ARCH 226 Architectural Representation VI 2.0 Credits

Explores parametric thinking and the iterative design process while reinforcing critical skills in detailing and design development through various software programs.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 225 [Min Grade: C] and ARCH 282 [Min Grade: C]

ARCH 251 Structural Systems I 1.5 Credit

Introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 183 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 252 Structural Systems II 1.5 Credit

Further introduction to the fundamental aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 251 [Min Grade: C-]

ARCH 253 Structural Systems III 1.5 Credit

Introduction and intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 252 [Min Grade: C-]

ARCH 274 Architectural Technology IV 3.0 Credits

Intermediate development of architectural technology with a focus on application of analysis of primary materials, structure and systems. Depth and range of analytical tools are addressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 173 [Min Grade: C-] and PHYS 183 [Min Grade: C-]

ARCH 275 Architectural Technology V 3.0 Credits

Further development of analytical skills for building technology. Case studies and real world precedents examine materials, structure and systems in the support of larger architectural objectives.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 274 [Min Grade: C-]

ARCH 276 Architectural Technology VI 3.0 Credits

Examination of technical analysis and design in support of iterative architectural concepts. Materials, structure and systems are utilized to develop strong design synergies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 275 [Min Grade: C-]

ARCH 281 Architecture Studio 2A 4.0 Credits

Introduces issues of architectural form, site and programmatic concerns. Design exercises will explore simple issues of structure, building and material systems and sustainability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 183 [Min Grade: C] and (ARCH 213 [Min Grade: C] or INTR 245 [Min Grade: C-])

ARCH 282 Architecture Studio 2B 4.0 Credits

Covers architectural design problems of incremental complexity that emphasizes the nature of function, structure, and material and their impact on the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 221 [Min Grade: C-] and ARCH 251 [Min Grade: C-]) or ARCH 170 [Min Grade: C-] or INTR 351 [Min Grade: C-],) and ARCH 281 [Min Grade: C] and (ARCH 224 [Min Grade: C] or INTR 341 [Min Grade: C-])

ARCH 283 Architecture Studio 2C 4.0 Credits

Explores architectural design problems that introduce the full range of challenges in the areas of organization, program, context, systems and formal expression.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ((ARCH 222 [Min Grade: C-] and ARCH 252 [Min Grade: C-]) or ARCH 170 [Min Grade: C-]) and ARCH 282 [Min Grade: C] and ARCH 225 [Min Grade: C]

ARCH 291 Building Systems I 1.5 Credit

Introduction to architectural technology with a focus on application of analysis pertaining to environmental systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 292 Building Systems II 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to water within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 293 Building Systems III 1.5 Credit

Introduction to architectural technology with a focus on design impacts and analysis related to lighting within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C-] and PHYS 182 [Min Grade: C-] and (MATH 102 [Min Grade: C-] or MATH 173 [Min Grade: C-] or MATH 183 [Min Grade: C-])

ARCH 315 Sustainable Built Environment I 3.0 Credits

Provides an overview of contemporary sustainable design principles and systems involved to posit novel solutions to various design challenges. Combining theoretical knowledge, field trips and case studies enabling students to critically assess sustainability as it relates to the built environment through five key subsystems: materials, air, water, energy and life.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARCH 320 Sustainable Built Environment II 3.0 Credits

Students will examine the work of scientists, designers, authors, artists, architects, engineers, planners, etc to gain a deeper conceptual understanding of current and emerging strategies in sustainability and the complex and integrated systems approach to the built environment in the present and near future.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ARCH 315 [Min Grade: C-]

ARCH 324 Materials & Methods IV 1.5 Credit

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 223 [Min Grade: C-]

ARCH 325 Materials & Methods V 1.5 Credit

Further exploration of advanced building technology concepts through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 324 [Min Grade: C-]

ARCH 326 Materials & Methods VI 1.5 Credit

Advanced integration of building technology concepts through design problems and examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 325 [Min Grade: C-]

ARCH 335 Professional Practice I 3.0 Credits

This seminar is the first of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Community and Social Responsibility, Leadership, Ethics & Professional Judgment, Client Role in Architecture, Basic Principles of Architectural Practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 243 [Min Grade: C-] or ARCH 383 [Min Grade: C-]

ARCH 336 Professional Practice II 3.0 Credits

This seminar is the second of a two-course sequence that introduces students to varying topics related to architectural practice in today's society. It addresses the following issues: Practice Management, Project Management, Financial Considerations, Legal Responsibilities, Ethics & Professional Judgment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

Prerequisites: ARCH 335 [Min Grade: C-]

ARCH 340 American Architecture & Urbanism 3.0 Credits

Surveys the development of American architecture and urbanism from its Native American origins through the arrival of early Modernism in the 1930s and 1940s.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 341 [WI] Theories of Architecture I 3.0 Credits

Seminar that examines theories and principles of Western architecture before 1700. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 342 [WI] Theories of Architecture II 3.0 Credits

Continues ARCH 341. Seminar that examines theories and principles of Western architecture from the Baroque era of the 17th century to the beginning of Modernism in the 20th century. History/theory elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 343 Theories of Architecture III 3.0 Credits

Seminar that examines 20th-century theories of architecture, including analysis and discussion of current theoretical positions. History/theory elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 346 [WI] History of Philadelphia Architecture 3.0 Credits

Covers the architecture of the city of Philadelphia from 1682, examining its architects, styles, and sources through lectures, walking tours, and student reports. History/theory elective. Fall. Alternate years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 347 [WI] Intensive Architectural Studies 1.0-6.0 Credit

An intensive study tour of selected domestic and foreign destinations focusing on architecture and related design disciplines. Combines lecture, site visits, sketching and individual research. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C-] or INTR 200 [Min Grade: C-] or ARTH 103 [Min Grade: C-]

ARCH 348 [WI] Studies in Vernacular Architecture 3.0 Credits

A topical survey of world traditions of vernacular architecture, with emphasis on houses and dwelling environments. The survey topics include basics of shelter, construction methods, response to climate, patterns of settlement, social and economic organization, cultural expression, and methods of research and analysis.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 350 Contemporary Architecture 3.0 Credits

Survey and analysis of significant developments in architecture and urbanism over the past 50+ years.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 354 Structural Systems IV 1.5 Credit

Intermediate aspects of structural systems with exposure to materials and methods that are frequently used in building construction. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 173 [Min Grade: C-] or ARCH 253 [Min Grade: C-]

ARCH 355 Structural Systems V 1.5 Credit

Intermediate structural analysis for architectural design. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 354 [Min Grade: C-]

ARCH 356 Structural Systems VI 1.5 Credit

Intermediate structural analysis for architectural design with a focus on composite systems. Develops skills needed for structural integration in building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 355 [Min Grade: C-]

ARCH 377 Architectural Technology VII 3.0 Credits

Advanced building technology concepts are explored through case studies and focused design examples. Materials, construction, methods, structure, systems and envelope are studied as integrated aspect of larger iterative design processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 276 [Min Grade: C-]

ARCH 378 Architectural Technology VIII 3.0 Credits

Building technology and analysis are explored through design precedents and sketch problems to develop integrated design and analytical skills. Focuses on large and small scale elements that can become generative and performative aspects of major design decisions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 377 [Min Grade: C-]

ARCH 379 Architectural Technology IX 3.0 Credits

Advanced building technology design and analysis is utilized in iterative and integrated design methods to support comprehensive design processes. Materials, structure and systems are developed qualitatively and quantitatively through design and analysis exercises.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 378 [Min Grade: C-]

ARCH 381 Architecture Studio 3A 4.0 Credits

Investigates the design relationship between man-made and the natural environment. Cultivates advanced analysis methods and the development of informed and resolved design solutions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 283 [Min Grade: C] and ARCH 226 [Min Grade: C] and ARCH 223 [Min Grade: C] and ARCH 253 [Min Grade: C]

ARCH 382 Architecture Studio 3B 4.0 Credits

Studies the relationship between building, site and context. Architectural design problems emphasize concept development that translates careful analysis into the building ideas with a progressing understanding of architectural concerns.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 381 [Min Grade: C] and ARCH 274 [Min Grade: C-] or (ARCH 291 [Min Grade: C-] and ARCH 354 [Min Grade: C-])

ARCH 383 Architecture Studio 3C 4.0 Credits

Focuses on architectural problems with intermediate complexity. Integrates issues of context, site, program, function, and architectural systems into advanced design proposals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 382 [Min Grade: C] and ARCH 275 [Min Grade: C-] or (ARCH 292 [Min Grade: C-] and ARCH 355 [Min Grade: C-])

ARCH 394 Building Systems IV 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to mechanical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 291 [Min Grade: C-]

ARCH 395 Building Systems V 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to acoustical design and energy consumption within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 394 [Min Grade: C-]

ARCH 396 Building Systems VI 1.5 Credit

Intermediate study of architectural technology with a focus on design impacts and analysis related to lighting and electrical systems within the context of building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 293 [Min Grade: C-]

ARCH 421 [WI] Environmental Psychology and Design Theory 3.0 Credits

Examines the relationship between human behavior and architecture from the perspective of environmental psychology. Topics include aesthetics, environmental experience, social interaction, social organization, and culture. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 431 [WI] Architectural Programming 3.0 Credits

Introduces current techniques of building programming and their relationship to building design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 353 [Min Grade: C-] or ARCH 483 [Min Grade: C-]

ARCH 432 The Development Process 3.0 Credits

Introduces the process of land development. Explores traditional and emerging development models (the architect as the equity participant and developer) in relation to new construction and rehabilitation. Covers various methods of initiating building projects and financing and tax issues. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARCH 441 Urban Design Seminar 3.0 Credits

Expands the concept of architecture to urban design scale and presents the principles of city planning through a series of case studies. History/Theory Elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 143 [Min Grade: C-] or ARCH 144 [Min Grade: C-]

ARCH 451 Advanced Drawing 3.0 Credits

Covers advanced architectural rendering, concentrating on the effects of light, shade, and color using the techniques of water-color rendering. Professional elective. Spring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-] or INTR 341 [Min Grade: C-]

ARCH 455 Computer Applications in Architecture 3.0 Credits

Covers two-dimensional and three-dimensional computer representations and applications. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 226 [Min Grade: C-]

ARCH 463 Case Studies in Architectural Technology 3.0 Credits

A holistic study of design and construction technology of significant buildings by leading architects through case studies. This course offers a unique opportunity to engage the topic of meaning in architecture through the lenses of spatial understanding and methods of technology and construction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-] or INTR 451 [Min Grade: C-]

ARCH 464 Building Enclosure Design 3.0 Credits

Examines the integrations of aesthetics, building science, and technology in the design of building enclosures. Professional Elective. Summer.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 465 Energy and Architecture 3.0 Credits

Creates an awareness of the availability of energy resources and their effect on the built environment. Discusses alternative sources of energy. Professional elective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 253 [Min Grade: C-]

ARCH 466 The Architectural Detail 3.0 Credits

This seminar will explore architectural detail as a key to understanding of the craft and intrinsic nature of time, technology and cultural importance of the building.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARCH 326 [Min Grade: C-] or INTR 350 [Min Grade: C-] or INTR 674 [Min Grade: C-]

ARCH 467 Introduction to Historic Preservation 3.0 Credits

An introduction to historic preservation as it relates to the built environment. The goal of this course is to familiarize the student with the history and the legal, theoretical and policy underpinnings of the historic preservation movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (ARCH 143 [Min Grade: C] or INTR 200 [Min Grade: C]) and (ARCH 283 [Min Grade: C] or INTR 342 [Min Grade: C] or INTR 442 [Min Grade: C])

ARCH 481 Architecture Studio 4A 4.0 Credits

Focuses on more complex architectural challenges through analysis of case studies that address the relationship between the man-made built environment and the natural environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 383 [Min Grade: C] and ARCH 276 [Min Grade: C-] or (ARCH 356 [Min Grade: C-] and ARCH 293 [Min Grade: C-])

ARCH 482 Architecture Studio 4B 4.0 Credits

Further the understanding of context and design and the application of solutions and strategies surrounding more complex architectural and environmental problems.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 481 [Min Grade: C] and ARCH 377 [Min Grade: C-] or (ARCH 324 [Min Grade: C-] and ARCH 394 [Min Grade: C-])

ARCH 483 Architecture Studio 4C 4.0 Credits

Challenges to develop and refine architectural solutions through an advanced understanding of the relationship between buildings and environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 482 [Min Grade: C] and ARCH 378 [Min Grade: C-] or (ARCH 325 [Min Grade: C-] and ARCH 395 [Min Grade: C-])

ARCH 484 Specialized Studio 4.0 Credits

This design studio is taught as a vertical studio combining students from multiple years. Sections of this studio focus on a variety of special issues in the broader realm of architecture, urbanism and design and may be taught as an interdisciplinary studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 12 credits

Prerequisites: (ARCH 382 [Min Grade: C] or INTR 342 [Min Grade: C-] or INTR 442 [Min Grade: C-]) and ARCH 482 [Min Grade: C]

ARCH 487 Architecture Studio 5A 4.0 Credits

Addresses the complex relationship through analysis and synthesis of form, site, program, building technology and theory within specific building context.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 483 [Min Grade: C] and ARCH 379 [Min Grade: C-] or (ARCH 326 [Min Grade: C-] and ARCH 356 [Min Grade: C-] and ARCH 396 [Min Grade: C-])

ARCH 488 Architecture Studio 5B 4.0 Credits

Emphasizes complex architectural problems while demonstrating understanding and appropriate application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 487 [Min Grade: C]

ARCH 489 Architecture Studio 5C 4.0 Credits

Integrates in-depth application and coordination of all architectural building criteria in a large scale and complex architectural problem.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 488 [Min Grade: C]

ARCH 490 Capstone Project I 4.0 Credits

This course is the first part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to an introduction to methods applicable to architectural design and research that will lead to the capstone project in the second term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 283 [Min Grade: C-]

ARCH 492 Capstone Project II 4.0 Credits

This course is the second part of a two-term capstone project consistent with the student's curricular concentration, and relevant to their professional and academic goals. This course is devoted to the continued research in architectural theory, technology and/or design and the completion and presentation of a capstone project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 8 credits

Prerequisites: ARCH 490 [Min Grade: C-]

ARCH 493 Senior Project I 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part one of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: (ARCH 363 [Min Grade: C-] or ARCH 489 [Min Grade: C]) and ARCH 431 [Min Grade: C-]

ARCH 494 Senior Project II 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part two of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 493 [Min Grade: C]

ARCH 495 Senior Project III 4.0 Credits

Students develop a three-term capstone design project to pursue and explore architectural concepts in depth. Students take a project from concept, research, programming to complete design development. Part three of three.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH.

Prerequisites: ARCH 494 [Min Grade: C]

ARCH I199 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I299 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I399 Independent Study in Architecture 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH I499 Independent Study in Architecture 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

ARCH T180 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T280 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T380 Special Topics in Architecture 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARCH T480 Special Topics in Architecture 1.0-6.0 Credit

Covers special topics in architectural history, theory, or technology that satisfy history/theory or professional elective requirements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ARCH 143 [Min Grade: C]

Architectural Engineering

Courses

AE 220 Introduction to HVAC 3.5 Credits

This course includes a review of thermodynamics, moist air properties and processes, basic heat transfer, solar radiation, heating and cooling losses and load calculation, types of air conditioning systems, infiltration and ventilation, air motion and distribution.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (CAEE 202 [Min Grade: D] and CAEE 203 [Min Grade: D]) or ENGR 210 [Min Grade: D] or CHE 206 [Min Grade: D]

AE 340 Architectural Illumination and Electrical Systems 3.0 Credits

This course covers building electrical systems, including power demand, distribution and control; building illumination techniques, including lighting demand, layout and energy analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (CAEE 202 [Min Grade: D] and PHYS 102 [Min Grade: D]) or ENGR 210 [Min Grade: D] or CHE 206 [Min Grade: D]

AE 390 Architectural Engineering Design I 4.0 Credits

This course leads students through the comprehensive building design process. Using a prototype of a moderately sized building, students work in teams to develop the building's program, meet architectural goals, and organize and design components of the structural system. Working for a fictitious client, the teams are faced with unique challenges which will need to be addressed through a whole-building design approach. The teams present their design solutions with a thorough Design Development narrative, professional diagrams, and a verbal presentation to a panel of industry professionals.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ARCH 192 [Min Grade: D] and MEM 202 [Min Grade: D]

AE 391 Architectural Engineering Design II 4.0 Credits

In this course, students will design the mechanical, electrical, and plumbing systems for a mid-sized building located in different climate zones in the United States. The students integrate their design project from the previous term, continuing the work they began in AE390, through a whole-building design approach. The class is organized as a team-based project-based learning pedagogy in which teams present their design solutions with a thorough Design Development narrative, professional diagrams, and a verbal presentation to the class and a jury of experts.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: AE 390 [Min Grade: D] and AE 220 [Min Grade: D] and AE 340 [Min Grade: D]

AE 410 Intelligent Buildings 3.0 Credits

An overview of the present and future role of Information Technology in the construction industry with emphasis on the computer tools used throughout the building life cycle by all stakeholders, primarily Building Information Modeling (BIM) and the role of networked-linked sensors and actuators.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

AE 430 Control Systems for HVAC 3.0 Credits

This course introduces basic control concepts with applications to HVAC systems; direct digital control, control loops; system modeling; transfer functions; selecting and locating sensors and actuators; design and tuning control algorithms; design and programming of HVAC control systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: AE 220 [Min Grade: D] or MEM 413 [Min Grade: D]

AE 440 Responsive Urban Environments 3.0 Credits

This is a real-time Global Classroom that meets simultaneously in Philadelphia and Milan, Italy. The Responsive Urban Environment (RUE) looks at the city through the lens of ecosystem management. RUE considers the city as a complex network of interrelated systems that rely on each other to maintain system balance. RUE helps students understand the close relationship between the engineering design choices that take place at the scale of the building and neighborhood to the environmental impacts that occur at the wider scale of the urban level.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

AE 441 Bio-inspired Design 3.0 Credits

This course introduces bio-informed sciences into engineering design to help students develop engineering strategies for the built environment to promote human health and wellbeing. Topics covered include neuroscience, photobiology, biomimicry, biophilia, and chronobiology.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

AE 444 Building Envelope Systems 3.0 Credits

Science and engineering fundamentals in analysis and design of building envelopes and wall systems. Architectural, structural, and environmental (thermal and moisture) concerns; features of selected cladding systems; air and moisture leakage, thermal deficiency, structural distress and premature deterioration; building envelop construction, condition evaluation, maintenance and retrofit.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is CIVE.

Prerequisites: AE 391 [Min Grade: C] or CIVE 303 [Min Grade: C]

AE 455 Data Acquisition and Analytics in Built Environment 3.0 Credits

Introduce concepts on data acquisition, data storage, and data analytics in the context of the built environment. Students will be learning sensor technology and database design and operation in buildings, as well as novel concepts of leveraging data science for engineering challenges.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

AE I199 Independent Study in Architectural Engineering 0.0-12.0 Credits

Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

AE I299 Independent Study in Architectural Engineering 0.0-12.0 Credits

Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

AE I399 Independent Study in Architectural Engineering 0.0-12.0 Credits

Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

AE I499 Independent Study in Architectural Engineering 0.0-12.0 Credits

Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

AE T180 Special Topics in Architectural Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

AE T280 Special Topics in Architectural Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

AE T380 Special Topics in Architectural Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

AE T480 Special Topics in Architectural Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Art History

Courses

ARTH 101 History of Art I 3.0 Credits

This course explores the history of visual culture from a global perspective from ancient times to the advent of the early modern period, ca. 1400.

Selected cultures from around the world will be examined in terms of their regional traditions as well as their impactful interactions with other cultures. The historical use, value, and meaning of images, buildings, and artifacts will be analyzed in relation to social, political, economic, religious, intellectual, technological, and aesthetic developments. Attention will also be paid to how various cultural constructs affect the ways we interpret art.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 102 History of Art II 3.0 Credits

This course explores the history of visual culture from a global perspective during the early modern period, ca. 1400-1850. Selected cultures from across the world will be examined in terms of their regional traditions as well as their impactful interactions with other cultures. The historical use, value, and meaning of visual images, buildings, and artifacts will be analyzed in relation to social, political, economic, religious, intellectual, technological, and aesthetic developments. Attention will also be placed on how various cultural constructs affect the ways we interpret art.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 103 History of Art III 3.0 Credits

This course explores the history of visual culture from a global perspective from the onset of Modernism, ca. 1850, to the present. Selected cultures from across the world will be examined in terms of their regional traditions as well as their impactful interactions with other cultures. The historical use, value, and meaning of visual images, buildings, and artifacts will be analyzed in relation to social, political, economic, religious, intellectual, technological, and aesthetic developments. Attention will also be placed on how various cultural constructs affect the ways we interpret art.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 150 Building Skills in Object Analysis 3.0 Credits

This course introduces students to hands-on methods of object study and to research methods that guide the physical, contextual and interpretive analysis of fabricated objects and structures.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman or Sophomore .

ARTH 200 Principles and Methods of Art History 3.0 Credits

This course will critically examine the interpretive principles and methods that have been used in the discourse of art history from the Renaissance to the present day.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 300 [WI] History of Modern Design 3.0 Credits

Examines the products of applied design during the past 150 years, including examples of furnishings, industrial design, fashion, and graphic design, in relation to demand, technology and production, standards, fine art, social reform, and the dynamics of consumption.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARTH 301 Asian Art and Culture 3.0 Credits

Explores the diverse visual languages and cultures of Asia including the Buddhist and Hindu traditions from India and Southeast Asia, the imperial art of China with its refined taste for ceramics and painting, and the Japanese.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 302 Art of India 3.0 Credits

This course explores the diverse artistic traditions of the Indian subcontinent from ancient times to the modern period, focusing on the art of the Buddhist, Hindu and Islamic communities. The survey ends with an examination of the colonial, post-colonial and contemporary art scene.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 303 Art of China 3.0 Credits

From the first empires to modern times, this course explores the art of painting ceramics, as well as the sculptural and architectural traditions of China.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 304 Art of Japan 3.0 Credits

This course examines the art of Japan from the Shinto traditional forms to the creation of a Buddhist Japanese idiom, from the courtly and military art to the Zen aesthetics and the establishment of a modern urban culture.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 312 Early Modernism (1850-1900) 3.0 Credits

This course is an introduction to European art of the late nineteenth century, from roughly 1850 to 1900—the decades when modernism exploded. Beginning with a close look at the Realist and Impressionist movements in Paris, we will study the artistic styles, techniques, and materials characteristic of the modern era, as well as the changing social, historical and political circumstances that helped shaped artistic production.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 313 20th Century Modernism (1900-1955) 3.0 Credits

This course will critically examine the development of Modernism in Western art during the first half of the 20th century in light of socio-economic and political factors, philosophical and scientific ideas, technological developments, stylistic movements, and art theories.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 314 Contemporary Art 3.0 Credits

This course will survey current global art production in light of socio-economic and political factors, philosophical and scientific theories, and new approaches to media and technology.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 315 History of African-American Art 3.0 Credits

This course traces the history of African American art, beginning with the African-inspired material culture of slaves, and, later, encompassing the works of formally-trained as well as self-taught painters, sculptors, photographers, and artists working in multimedia up to the present. These works will be situated within the contexts of critical race theory, social and political movements, collectors and patrons, early critics and theorists of the black avant-garde, influential exhibitions, and the opposition between elite and popular cultures.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 316 African Art 3.0 Credits

This course will explore historical and contemporary African sculpture, textiles, painting, drawing, photography and mixed media in relationship to particular themes such as religion, trade, political power and healing. With emphasis on select objects from West and Central Africa, the course will also consider the visual arts in relationship to ideas of improvisation, aesthetics, identity and self-representation.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 318 Latin American Art 3.0 Credits

This course serves as an introduction to modern and contemporary art from Latin America. Throughout the term we chart how artists across the Americas have responded to political catalysts like revolution, imperialism, dictatorship, and globalization.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 321 Material Matters in Contemporary Art 3.0 Credits

This course explores how global artists since 1960 have used distinctive materials toward conceptual, political, and aesthetic purposes. Each class focuses on a material or object—whether newspaper, gold, or mirrors—in order to investigate how artists have harnessed that material's qualities, limitations, and associations.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

ARTH 325 Ancient Greek and Roman Art 3.0 Credits

This course will survey the art produced by the ancient cultures of Greece and Rome, from the archaic period to the fall of the Roman Empire. The art will be considered as an expression of the social, political, economic and intellectual histories of these two civilizations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 326 Medieval Art 3.0 Credits

This course is a survey of Medieval Art between the 3rd and 14th centuries C.E.. Architecture, mural painting, stained glass, sculpture, illuminated manuscripts, enamel, tapestry and other objects of ceremonial and everyday use will be studied as expressions of the political, social, and religious contexts of the time. Emphasis will be placed upon Christian art, but Islamic, Jewish, and secular traditions in the arts will also be examined.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 327 Italian Renaissance Art 3.0 Credits

This course will survey paintings, sculpture, architecture and graphic art from Italy during the 15th and 16th centuries. Artworks will be analyzed not only in terms of their formal characteristics, but also as expressions of concurrent social, political, economic, religious, and philosophical developments.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 328 Northern Renaissance 3.0 Credits

This course will survey paintings, sculpture, and graphic arts from Northern Europe during the 15th and 16th centuries. Artworks will be analyzed not only in terms of their formal characteristics, but also as expressions of concurrent social, political, economic, religious, and philosophical developments.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 331 [WI] Global Material Culture 3.0 Credits

Understanding "global" geographically and as a method of material culture analysis, this class examines how artifacts accrue new meanings, forms, and agencies as they circulate across cultures, and the social, political, and aesthetic implications of these processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARTH 335 [WI] History of Costume I: Preclassical to 1800 3.0 Credits

Traces the rise of Western costume from the ancient world through 1800, including political, economic, and social influence on aesthetic development in dress.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARTH 336 [WI] History of Costume II: 1800-1920 3.0 Credits

Traces the history of costume from 1800 through 1920, including the political, economic, and social influence on aesthetic development in dress.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARTH 337 History of Costume III: 1920 to Present 3.0 Credits

Examines fashion and dress trends from 1920 through the 21st century within their sociocultural, political, and economic contexts. The course also explores how globalization, technology, and mass media impact the aesthetics of dress.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ARTH 340 Women in Art 3.0 Credits

A historical survey of the art created by women in Western civilization, with a special focus upon the art created since the women's movement of the 1970s. Objects are analyzed in relation to the sociopolitical and psychological context of Western, patriarchal culture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

ARTH 400 Art History Senior Thesis 3.0 Credits

An optional research project written during the senior year under the advisement of a thesis director from among the art history faculty. The thesis student will meet at least once every week with the advisor who will provide direction for their research by helping them to develop a topic, identify appropriate resources, discuss interpretive strategies, determine the expository structure of the paper, and provide clarity on specific requirements for bibliography, illustrations, and a citation system.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ARTH 101 [Min Grade: C+] and ARTH 102 [Min Grade: C+] and ARTH 103 [Min Grade: C+] and ARTH 200 [Min Grade: C+]

ARTH 477 Art History Seminar 3.0 Credits

Provides reading, discussion, and research on pertinent topics in art history.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH I199 Independent Study in Art History 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH I299 Independent Study in Art History 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH I399 Independent Study in Art History 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH I499 Independent Study in Art History 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH T180 Special Topics in Art History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH T280 Special Topics in Art History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH T380 Special Topics in Art History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

ARTH T480 Special Topics in Art History 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Arts & Sciences-Interdisp Stud

Courses

AS-I 101 Strategies for Online Learning 3.0 Credits

This course provides an introduction to Drexel University and online learning and is designed for online students. This course will provide students with strategies and skills necessary for successful online learning experiences. Topics covered will include communication, time management, citation, plagiarism as well as Drexel specific skills including how to navigate the library, how to register for classes and how to monitor degree progress. Acquisition of these skills will set the stage for a successful online learning experience.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is COMM or major is PSY.

AS-I 180 Interdisciplinary Study in the Arts & Sciences 1.0-3.0 Credit

Designed for courses that offer a multidisciplinary approach to the study of issues and topics in the Arts and Sciences.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 9 credits

AS-I 265 Special Interdisciplinary Study in Arts & Sciences 0.5-6.0 Credits

Special interdisciplinary studies in the College of Arts and Sciences.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

AS-I 501 Creative Interdisciplinary Team Research: Principles and Practice 3.0 Credits

This course will provide fluency with the foundational principles and processes that demonstrably enhance creative practice and problem-solving skills in interdisciplinary research teams. Students will learn to identify and develop new, useful and high-quality ideas and products while practicing these skills and working as a member of an interdisciplinary team. A strong focus on theoretical principles of group dynamics will provide the framework for participants to understand and experience best practices characteristic of highly productive collaborative research endeavors. Students with complementary interests will work in teams to design an interdisciplinary project with STEM and social/educational components and apply learned concepts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AS-I 502 Enhancing the Creativity of a Research Project 3.0 Credits

This course is designed to facilitate the development of a research idea. Participants will learn proven creative practices to enhance their independent, problem-solving creative ability as practiced through developing a research project such as the selection of a thesis topic, an original research proposal, or the writing of a grant proposal. Students need to have formulated at least one potential research topic that they must be prepared to iterate on, develop, and hone.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

AS-I 599 Independent Study in AS-I 0.0-12.0 Credits

Self-directed study within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AS-I I699 Independent Study in AS-I 0.0-12.0 Credits

Self-directed study within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AS-I I799 Independent Study in AS-I 0.0-12.0 Credits

Self-directed study within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AS-I T180 Special Topic in Arts & Sciences-Interdisp Stud 0.0-12.0 Credits

Special topics in Arts and Sciences interdisciplinary studies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AS-I T280 Special Topic in Arts & Sciences-Interdisp Stud 0.0-12.0 Credits

Special topics in Arts and Sciences interdisciplinary studies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AS-I T380 Special Topic in Arts & Sciences-Interdisp Stud 0.0-12.0 Credits

Special topics in Arts and Sciences interdisciplinary studies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

AS-I T480 Special Topic in Arts & Sciences-Interdisp Stud 0.0-12.0 Credits

Special topics in Arts and Sciences interdisciplinary studies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Behavioral & Addictions Counseling

Courses

BACS 100 Life Span Human Development 3.0 Credits

This course introduces students to the physical, cognitive and psychological aspects of human development from birth through advanced old age. Topics include: environmental influences, perception, gender roles and sexuality, spirituality, motivation, life styles, and psychiatric disorders.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 101 Human Sexuality 3.0 Credits

This course utilizes global perspectives (biological, historical, developmental, psychological, sociological and self-reflexive approaches) to explore the diversity of human sexuality.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 200 Foundation of Behavioral Health Care 3.0 Credits

This course introduces the students to the historical and current contexts of program components that comprise community-based behavioral health systems. Topics include: work-force roles; regulatory policies and program practices; federal, state, and county program organizations; advocacy issues; and managed care systems issues.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D], ENGL 111 [Min Grade: D], ENGL 102 [Min Grade: D], ENGL 112 [Min Grade: D], ENGL 103 [Min Grade: D], ENGL 113 [Min Grade: D] (Can be taken Concurrently)

BACS 211 Introduction to Poetry Therapy 3.0 Credits

This course facilitates an exploration of Biblio-Poetry Therapy process as a way to develop an understanding of self, honing the skills for listening and compassion as we connect with each other through universal experiences. Students will engage in a rich learning experience which is trauma informed and will be able to identify how writing impacts the brain of a trauma survivor.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 212 Therapeutic Gaming 3.0 Credits

This course explores the theory and application of games as related to the fields of therapy, mental health, and development. The purpose of the course is to develop critical understanding of the benefits of gaming as it applies to holistic wellbeing. Students will first examine what the form and function of games are. Students will develop an understanding of what is defined as therapeutic. Specific dimensions of therapy, including cognitive, social, and emotional changes, will be explored. Students will also engage in critical examination of systemic and ethical issues related to the use of games in therapy, such as the presence of racism, sexism, ableism, heterosexism, and other “-ism’s” in-game, in player communities, and in creator communities.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 213 Visual Arts and Community Engagement 3.0 Credits

Students take on the role of art mentor under the guidance of a credentialed, licensed, art therapist in a community setting. Applied practice will integrate knowledge of art, psychology, education, community engagement, and art therapy for applied practice. Students will develop and facilitate responsive art engagements with a local community group. This course culminates with a student-generated portfolio that demonstrates an understanding of the value of civic responsibility through creative activities across the lifespan.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 214 Interpersonal Skills and Group Dynamics 3.0 Credits

This course will assist students in expanding their understanding of interpersonal and communication skills for application in a range of professional contexts. Students will develop an understanding of communication theories, values and ethics and the importance of cultural sensitivity.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 215 Ecological Frameworks of Wellness 3.0 Credits

This course will assist students in expanding their understanding of ecological frameworks for wellness and how environments interact to influence the individual, the family, the community, and society.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 220 Counseling Theory and Practice 3.0 Credits

Surveys major counseling theories with emphasis upon study and practice of basic counseling competencies. Topics include: relationship building, effective communication and helping skills, common stages in counseling process, and helping skills with special populations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 232 Ethics and Professional Responsibility 3.0 Credits

This course discusses the philosophical, legal and moral responsibilities of professionals in behavioral health and human services setting with a strong emphasis on counseling relationships. A wide array of ethical issues are presented and discussed. Moral dilemmas comprised of competing moral obligations are examined.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 234 Introduction to Addictive Disorders 3.0 Credits

This course introduces the nature of addictions and the impairment in individuals who suffer from addictions. It includes a review of theories on substance disorders and approaches to identification, prevention and treatment. Topics include: historical perspectives, diagnosis, types of addictive behaviors, treatment, and current research.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 236 [WI] Psychiatric Rehabilitation Principles and Practices 3.0 Credits

This is an introductory course which orients the student to the principles and practices of Psychiatric Rehabilitation. It provides the student with an understanding of the manner in which Psychiatric Rehabilitation approaches, understands and assists people with serious mental illnesses. The course also surveys the service settings where this practice is applied.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D], ENGL 111 [Min Grade: D], ENGL 102 [Min Grade: D], ENGL 112 [Min Grade: D], ENGL 103 [Min Grade: D], ENGL 113 [Min Grade: D] (Can be taken Concurrently)

BACS 255 Multicultural Counseling 3.0 Credits

This course provides information and practice opportunities for developing cultural competence and socially just practices in behavioral health. Students will develop awareness and skills necessary for establishing therapeutic relationships with clients of diverse cultural backgrounds.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 220 [Min Grade: D] (Can be taken Concurrently)

BACS 300 Poetry and Biblio Peer Group Facilitation 3.0 Credits

This course facilitates an in-depth and experiential understanding of Biblio-Poetry Therapy process as a way to develop an understanding of self, honing the skills for listening and compassion as we connect with each other through universal experiences. Students will engage in a rich learning experience which is trauma informed and will be able to identify how Poetry can be used as a therapeutic modality to help clients manage difficult emotions. Students will also undergo rigorous supervised field work to develop competence in conducting PT groups and sessions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 211 [Min Grade: C]

BACS 301 Group Counseling I 3.0 Credits

This course is an introduction to the theoretical base and skills used in conducting group counseling. Included are theories of group work, facilitation techniques, types and styles of groups and models of group functioning. Students participate in a group as a group member and to act as a group co-leader in order to practice leadership skills.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 220 [Min Grade: D] (Can be taken Concurrently)

BACS 310 Recovery and Relapse Prevention 3.0 Credits

The goal of recovery and relapse preventions is the development personal strategies that will help the person restructure their life in a way that will prevent a return to active addiction. This course helps define the role of professional counselor in understanding the dynamic of recovery from a clinical perspective.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 312 Case Management Methods 3.0 Credits

This course is an in-depth explorations of the definitions and methodologies of case management services. The course is designed to provide students with the most up to date research and clinical applications of services management in the practice of addictions counseling.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 313 Foundations of Art Therapy: Theory and Practice 3.0 Credits

This course facilitates an exploration of the creative process as a way to understand more about self and other. Calling upon the history of materials and strategies informed by psychological, philosophical and applied approaches of therapeutic art and art therapy practices, students will engage in a rich, media- based approach to learning.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 314 Introduction to Music Therapy 3.0 Credits

Music Therapy is a healthcare profession wherein musical experiences are used within a therapeutic relationship to address biopsychosocial goals. During this course, students will be introduced to the primary music therapy methods, goals and outcomes of treatment, and clinical case descriptions through audio and video material.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 315 Introduction to Family Therapy 3.0 Credits

This course is an introduction to classic and contemporary family therapy theory, concepts, models, and methods. Its purpose in the program plan of study is to provide broad knowledge and historical understanding of family therapy approaches.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 320 Crisis and Brief Intervention 3.0 Credits

This course introduces student to the fundamental concepts, theories, strategies, and skills needed to understand and conduct effective crisis and brief intervention counseling. Particular attention is given to several types of crises commonly encountered in working within settings serving people who have long-term disabling psychiatric disorders.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 345 Careers in Behavioral Health 3.0 Credits

There are numerous career choices available within the field of Behavioral Health. In order to help you prepare for the future, this course explores the roles, responsibilities, and healthcare settings associated with careers such as counselor, psychiatric rehabilitation practitioner, social worker, therapist, psychologist, psychiatrist, advocate, and others. We explore opportunities to work with children, adults, and seniors in hospital and community treatments settings as well as in schools and in the community at large. We also examine the educational requirements of different fields of professional practice and review graduate schools options. Students explore their strengths and preferences related to future employment and begin to formulate personal plans for academic and professional success.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 360 Preventing Substance Abuse 3.0 Credits

This course provides a comprehensive overview of prevention theories and prevention programming applications as regards substance use disorders. Course topics include: theories and models basic to prevention, science-based prevention strategies and model programs, strategic planning and outcome evaluation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 368 Addictions Counseling with Special Populations 3.0 Credits

This course involves the student in examinations of challenges for addictions counselors in working with frequently underserved populations represented by adolescents and elderly persons. Effective approaches to assessing and treating both youthful and older adult individuals with addiction disorders are explored and defined.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 380 Trauma-Informed Care 3.0 Credits

This is an introduction to the psychophysiology of complex trauma in children and adolescents, and an overview of assessment and treatment modalities in both youth and adults. The course focuses on neurobiology and how trauma impairs brain development and the life domains of children, adolescents, and adults. It also covers various issues of assessment, diagnosis, and treatment. The stages of stabilization, reprocessing and reintegration, and the multiple models helpers utilize when working with survivors of trauma are explored. Course work will culminate with students reviewing and presenting case studies of assessment and treatment interventions for children and adolescents experiencing traumatic effects.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 400 Poetry and Biblio Facilitation Fieldwork and Supervision 3.0 Credits

This course provides students with field experience and supervision with at least two populations. The course will enable students to accrue hours towards becoming a poetry and biblio facilitator in the community.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 211 [Min Grade: C] and BACS 300 [Min Grade: C]

BACS 401 [WI] Assessment and Treatment Planning 3.0 Credits

The focus of this course is learning the systematic, multi-disciplinary approach for gathering, interpreting, applying and recording data regarding clients in addictions and other behavioral health treatment settings. The most current screening, assessment, treatment planning and documentation approaches are covered.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 220 [Min Grade: D] (Can be taken Concurrently)

BACS 403 Poetry and Biblio Facilitation Fieldwork and Supervision II 3.0 Credits

This course provides students with field experience and supervision with at least two populations. The course will enable students to accrue hours towards becoming a poetry and biblio facilitator in the community.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 400 [Min Grade: C]

BACS 406 Poetry and Biblio Facilitation Fieldwork and Supervision III 3.0 Credits

This course provides students with field experience and supervision with at least two populations. The course will enable students to accrue hours towards becoming a poetry and biblio facilitator in the community.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BACS 400 [Min Grade: C] and BACS 403 [Min Grade: C]

BACS 414 Co-Occurring Disorders 3.0 Credits

This course introduces an integrated treatment approach for working with individuals who have both mental illness and substance use disorders. Topics include: assessment and treatment planning, strategies for coordinating dual interventions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 420 Psychiatric Rehabilitation Competencies 3.0 Credits

The purpose of this advanced course is to help students develop the competencies necessary to implement the principles and practices of Psychiatric Rehabilitation. This is accomplished by engaging the student in an in-depth analysis of the tools and processes used to bring about outcomes related to community integration and the life quality.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS 430 Behavioral Health and Aging 3.0 Credits

Students will explore concepts, issues, and research pertaining to the psycho-social and behavioral health aspects of working with older adults. Students will learn about and practice interventions, competencies, and strategies designed to improve the quality of life of older adults.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

BACS I299 Independent Study in Behavioral & Addictions Counseling 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

BACS I399 Independent Study in Behavioral & Addictions Counseling 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

BACS I499 Independent Study in Behavioral & Addictions Counseling 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

BACS T280 Special Topics in Behavioral & Addictions Counseling 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

BACS T380 Special Topics in Behavioral & Addictions Counseling 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

BACS T480 Special Topics in Behavioral & Addictions Counseling 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Biomedical Engineering & Science

Courses

BMES 101 Introduction to BMES Design I: Defining Medical Problems 2.0 Credits

This course is part one in a two-part series meant to instruct students on the unique challenges of designing solutions for biomedical needs. Part one will focus on defining the problem which includes: 1) understanding the medical need, 2) evaluating existing solutions, 3) defining requirements, identifying constraints and 4) choosing tests to verify requirements have been met.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 102 Introduction to BMES Design II: Evaluating Design Solutions 2.0 Credits

This course is part two in a two-part series meant to instruct students on the unique challenges in designing solutions for biomedical needs. Part two will focus on developing solutions that include: 1) generating multiple solution pathways, 2) refining solution choices based on requirements and constraints, 3) conducting experimental verification tests and 4) finally concluding if the solution was a success.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 101 [Min Grade: D]

BMES 124 Biomedical Engineering Freshman Seminar I 2.0 Credits

This course is intended to introduce freshman biomedical engineering students in the School of biomedical Engineering, Science and Health Systems at Drexel University to academic programs and opportunities, ongoing research projects and University resources to ensure a successful educational experience at Drexel and beyond. Through class discussions and guest lecture presentations, the students are provided with information and contacts necessary to begin a plan of academic study.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 201 Programming and Modeling for Biomedical Engineers I 3.0 Credits

This course aims to introduce students with some fundamental concepts about programming in MATLAB to give the ability to solve basic bioengineering problems. The course introduces the basics of programming using MATLAB, including programming environment and tools. Fundamental programming techniques and concepts such as loops, switches and logical operators, functions and file handling are covered. Applications in bioengineering for basic numerical problem solving are discussed.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 202 Programming and Modeling for Biomedical Engineers II 3.0 Credits

The course aims to introduce students to advanced programming concepts and tools to solve numerical problems in bioengineering. It provides the foundation for biosimulation and biocomputation classes. This course introduces advanced programming methods and computational tools for numerical analysis, model design and graphics. Higher-level functionality in MATLAB such as SIMULINK, symbolic processing and CAD related tools are discussed.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 201 [Min Grade: D]

BMES 212 The Body Synthetic 3.0 Credits

The Body Synthetic introduces concepts underlying biological and engineering principles involved in the design of biomedical devices used to treat diseases or interface with the human body.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BMES 238 Dynamics of Biomedical Systems 4.0 Credits

Covers kinematic (linear and angular momentum) and kinetic (forces and moments) analysis of biomedical systems in two and three dimensional space with rotating coordinate systems.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: MATH 201 [Min Grade: D], ENGR 231 [Min Grade: D], MATH 261 [Min Grade: D], CAEE 231 [Min Grade: D], ECE 231 [Min Grade: D] (Can be taken Concurrently) and MEM 202 [Min Grade: D]

BMES 241 Modeling in Biomedical Design I 2.0 Credits

This course is part 1 in a 2 part series meant to instruct students on how to leverage year appropriate skills while designing solutions to biomedical problems. Students will: a) evaluate mathematical model(s) meant to solve biomedical problem(s), b) write software to simulate these solution(s), c) construct a solution based on simulation specifications, d) employ laboratory standards to verification testing, e) review test results and propose further refinement (written document and oral presentation).

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D] and BMES 202 [Min Grade: D] and (BMES 102 [Min Grade: D] or ENGR 113 [Min Grade: D])

BMES 301 Laboratory I: Experimental Biomechanics 2.0 Credits

This course deals with experimental aspects of biomechanics, specifically with the testing mechanical properties of biological tissues.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BMES 345 [Min Grade: D] (Can be taken Concurrently) or (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D] or CAEE 231 [Min Grade: D] or ECE 231 [Min Grade: D])

BMES 302 [WI] Laboratory II: Biomeasurements 2.0 Credits

This course introduces students to the measurement of physiological/biological/functional signals. Four specific signals will be collected and analyzed. Students are expected to analyze type of signal to be collected, possible measurement techniques and potential data analysis and then collect and analyze each signal.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: ECE 201 [Min Grade: D] (Can be taken Concurrently) and BIO 201 [Min Grade: D]

BMES 303 Laboratory III: Biomedical Electronics 2.0 Credits

This course introduces students to the widespread application of electronics and electronic devices in biomedical engineering. The course reinforces concepts learned in ECE 201 with hands-on experimentation related to biomedical applications such as telemedicine and medical devices.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 201 [Min Grade: D] and (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 304 Laboratory IV: Ultrasound Images 2.0 Credits

This course introduces students to the engineering principles of acoustical measurements by combining hands-on laboratory experiences with lectures. Students will learn the engineering/physical principles of measuring sound velocity in different materials, attenuation, and directivity of a circular transducers.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: BIO 201 [Min Grade: D] and ECE 201 [Min Grade: D]

BMES 305 Laboratory V: Musculoskeletal Anatomy for Biomedical Engineers 2.0 Credits

This course provides an opportunity for students to study the anatomy and biomechanics of select articulations of the human body. While the main emphasis will be on the musculoskeletal structures associated with each articulation, major neural and vascular structures will be studied as well.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: (BIO 201 [Min Grade: D] or BMES 235 [Min Grade: D]) and MEM 202 [Min Grade: D]

BMES 310 Biomedical Statistics 4.0 Credits

This course is designed to introduce biomedical engineering students to the fundamentals of biostatistics necessary for medical research. Topics covered include measurements, sampling, basic hypothesis testing, analysis of variance and regression. Medical applications are emphasized.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 231 [Min Grade: D] or MATH 261 [Min Grade: D] or MATH 201 [Min Grade: D] or MATH 239 [Min Grade: D] or CAEE 231 [Min Grade: D] or ECE 231 [Min Grade: D]

BMES 315 Experimental Design in Biomedical Research 4.0 Credits

This course is designed to introduce students to the fundamental principles of experimental design and statistical analysis as applied to biomedical research with animals and humans. Topics to be covered include experimental design, clinical design, and protocol submission and review.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 310 [Min Grade: D]

BMES 325 Principles of Biomedical Engineering I 3.0 Credits

This course is the first part of a two-term sequence which introduces biomedical engineering students to engineering principles applied to biological and physiological systems. This course focuses on bioethical questions, biomechanics, human performance engineering, biomaterials and tissue engineering.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: MEM 202 [Min Grade: D] (Can be taken Concurrently) and BIO 122 [Min Grade: D] and (ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or MATH 210 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 326 Principles of Biomedical Engineering II 3.0 Credits

This course is the second part of a two-term sequence which introduces biomedical engineering students to engineering principles applied to biological and physiological systems. This course focuses on bioinformatics, neuroengineering, biosignal processing, biosensors, and medical imaging.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: ECE 201 [Min Grade: D] (Can be taken Concurrently) and BMES 325 [Min Grade: D]

BMES 337 Introduction to Physiological Control Systems 3.0 Credits

Introduces the basic concepts of control theory as it is applied to biomedical systems including electrical, mechanical, physiological and cellular systems.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D]) and (BMES 432 [Min Grade: D] or ECES 302 [Min Grade: D]) and BMES 375 [Min Grade: D] and BIO 201 [Min Grade: D] and BMES 451 [Min Grade: D] and (BMES 238 [Min Grade: D] or MEM 238 [Min Grade: D])

BMES 338 Biomedical Ethics and Law 3.0 Credits

Introduces the wide spectrum of ethical, regulatory, and legal issues facing health care practitioners and health-related research workers. Helps students become aware of the ethical and legal issues involved in their work. Helps students understand how legal and ethical decisions should be made in health-related matters, as well as what sources of help and guidance are available.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BMES 341 Modeling in Biomedical Design II 2.0 Credits

This course is part 2 in a 2 part series meant to instruct students on how to leverage year appropriate skills while designing solutions to biomedical problems. Students will: a) develop mathematical model(s) to solve a biomedical problem(s), b) write software to simulate these solution(s), c) fabricate a solution based on simulation specifications, d) verify design solution according to identified engineering standards, f) review test results and propose further refinement (written document and oral presentation).

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 241 [Min Grade: D] and (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 345 Mechanics of Biological Systems 3.0 Credits

This course introduces the fundamentals of mechanics of deformable bodies relevant to biological tissues and biomaterials. Major topics include stress and strain, mechanical properties of biological tissues and biomaterials, axial loading, torsion, bending, and viscoelasticity. These concepts will be applied to biological examples such as long bones, the heart, blood vessels, and orthopaedic implants.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] (Can be taken Concurrently) and MEM 202 [Min Grade: D] and (ENGR 220 [Min Grade: D] or MATE 220 [Min Grade: D])

BMES 353 Computational Neuroscience and Neuroengineering 3.0 Credits

This course provides an introduction to the concepts, methods and applications in the fields of computational neuroscience and neuroengineering. Topics presented include basic electrophysiology, development of models of neurons, neural systems, neural signals and survey of traditional and emerging neurotechnologies for recording and altering brain activity.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 201 [Min Grade: D] and (MATH 201 [Min Grade: D] or MATH 239 [Min Grade: D]) and (BIO 201 [Min Grade: D] or BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 348 [Min Grade: D] or BIO 349 [Min Grade: D])

BMES 372 Biosimulation 3.0 Credits

This course provides the foundation for the mathematical analysis of biomedical engineering systems. It focuses on the essential mathematical methods necessary for further development of modeling and simulation skills in other courses (materials, mechanics, fluids/transport, signals/control system, etc). The course applies calculus, differential equations and linear algebra to developing analytical techniques for biomedical applications.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] and (ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or MATH 210 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D]) and BMES 202 [Min Grade: D]

BMES 375 Computational Bioengineering 4.0 Credits

This course introduces undergraduate students to the mathematical and computational analysis of biological systems. The systems analyzed include the genome, protein and gene networks, cell division cycles, and cellular level disease. Mathematical tools include matrix algebra, differential equations, cellular automata, cluster analysis, etc.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] and BMES 202 [Min Grade: D] and (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 381 Junior Design I 2.0 Credits

This is the first course in a two-course sequence intended to present the basics of engineering design, project management, product development and translational research. This first course focuses on engineering design and product development. A case-study approach is used to illustrate best practices and common mistakes in engineering design.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: BMES 341 [Min Grade: D]

BMES 382 Junior Design II 2.0 Credits

This is the second course in a two-course sequence intended to present the basics of engineering design, project management, product development and translational research. This second course focuses on project management and quality control. A case-study approach is used to illustrate best practices and common mistakes in management and evaluation of engineering projects.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: BMES 381 [Min Grade: D]

BMES 391 Biomedical Instrumentation I 3.0 Credits

This course introduces the student to the medical instrumentation and provides background on the physical, chemical, electronic and computational fundamentals by which medical instrumentation operates. It is an analytical course exploring the design, operation, safety aspects and calibration of primary electronic instruments.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 201 [Min Grade: D] and (ENGR 210 [Min Grade: D] or CHEM 253 [Min Grade: D]) and (ENGR 232 [Min Grade: D] or MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D]) and BIO 201 [Min Grade: D]

BMES 392 Biomedical Instrumentation II 3.0 Credits

Continues BMES 391. Explores the operation, safety aspects, and calibration of primarily optical and acoustical instruments, as well as those involving ionizing radiation. Also examines instrumentation primarily intended for particular departments and areas, such as anesthesia and infusion.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: BMES 391 [Min Grade: D]

BMES 401 Biosensors 4.0 Credits

Introduces the general topic of microsensors, discusses basic sensing mechanisms for microsensors, and presents various types of conductometric, acoustic, silicon, and optical microsensors. Uses two case studies that include an acoustic immunosensor and silicon glucose sensor to provide students with in-depth knowledge and hands-on experience. Provides additional experience through three laboratory sessions that support the lectures and familiarize students with practical aspects of microsensors. Also discusses applications of microsensors in the medical, chemical, pharmaceutical, environmental, aeronautical, and automotive industries.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: (CHEM 253 [Min Grade: D] or ENGR 210 [Min Grade: D]) and ECE 201 [Min Grade: D] and (ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or MATH 210 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 405 Physiological Control Systems 3.0 Credits

Introduces the basic concepts of feedback and feed forward controls systems, including characterizations in terms of prescribed constraints, study of input and output relationships for various types of physiological systems, and stability and time-delay problems. Covers mathematical models of physiological systems, with emphasis on non-linear and adaptive systems study.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] and BMES 202 [Min Grade: D] and (BMES 337 [Min Grade: D] or ECES 356 [Min Grade: D])

BMES 407 Techniques in Biomaterials and Tissue Engineering 1.0 Credit

This course provides training and experiences for skills relating to Biomaterials and Tissue Engineering in a hands-on laboratory setting. The course addresses cellular work in 3D scaffolds and histological techniques, as well as assays and experience quantifying experimental data in the field.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 409 Entrepreneurship for BMES 3.0 Credits

This course serves as the foundation course in entrepreneurship and is designed to provide students with a complete working knowledge of the modern entrepreneurial and business planning process.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 411 Chronoengineering I: Biological Rhythms in Health and Performance 3.0 Credits

Introduces students to the concepts of biological, and especially circadian, rhythmicity. Advances students' knowledge of biological time-keeping and adaptive functions of biological clocks. Topics include biochemical and physiological models of biological clocks, adjustment to environmental cycles, rhythms in behavior and physiological functions, sleep-wake cyclicity, adaptability of circadian systems, and influences of rhythms on human physiology and behavior. Designed to give students a thorough understanding of the role rhythms play in animal and human behavior, physiology, and medicine.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: BIO 201 [Min Grade: D]

BMES 412 Chronoengineering II: Sleep Functions in Health and Performance 3.0 Credits

Continues BMES 411. Enhances students' education in the concepts of biological, and especially circadian, rhythmicity. Focuses on sleep patterns, rhythms, evolution, neurology, psychology, and overall function.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: BMES 411 [Min Grade: D]

BMES 415 Systems Neuroscience and its Applications in Medicine and Engineering 3.0 Credits

Our perception and behavior are a result of computations performed by an astronomical number of densely connected neurons. Problems in these computations underlie many neurological diseases. Until recently it has been very difficult to understand neural computations at the level of single neurons. Recent progress in computation and breakthroughs in genetics and engineering has made it possible to understand macroscopic phenomenon like perception and behavior at the level of microscopic properties of single neurons. This course introduces students to the neuronal and circuit basis underlying sensory processing and perception, to neurological disorders that are result of incorrect neuronal processing, and to the application of these circuits to devices around us.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D] and BMES 201 [Min Grade: D]

BMES 418 Brain Computer Interfaces 3.0 Credits

Brain Computer Interface (BCI) is defined as a combination of neurotechnologies that can capture or modulate brain activities related mental tasks, process and classify these brain signals in order to communicate, control or interact with external devices such as computers and robots. The goal of this course is to provide an introduction to the state of the art brain computer interface technologies, current approaches, limitations, potentials and various types of applications.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 201 [Min Grade: D]

BMES 421 Biomedical Imaging Systems I: Images 4.0 Credits

This course gives an introduction into modern bioimaging methods used for biological research and clinical diagnostic imaging. Students will have the opportunity for hands-on experiences by working with advanced light microscopes. This course will also review and apply complementary image processing methods which have been developed to process, render, display and store multi-dimensional images. The relation between the image quality achieved by the imaging apparatus, the appropriate methods for image enhancement and subsequent analyzing procedures will be highlighted.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: (PHYS 153 [Min Grade: D] or PHYS 201 [Min Grade: D]) and (BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 215 [Min Grade: D] or BIO 219 [Min Grade: D])

BMES 422 Biomedical Imaging Systems II: Ultrasound 4.0 Credits

Intended for students who would like to gain an adequate understanding of diagnostic ultrasound imaging principles and become familiar with developments in this rapidly expanding field. Introduces medical visualization techniques based on ultrasound propagation in biological tissues. Topics include generation and reception of ultrasound, imaging techniques (A-mode, B-mode, M-mode, and Doppler), typical and emerging diagnostic applications, elements of ultrasound exosimetry, and safety aspects from the clinical point of view.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 421 [Min Grade: D]

BMES 423 Biomedical Imaging Systems III 4.0 Credits

Covers volumetric and functional imaging systems. Discusses the principles and algorithms of projection tomography, XCAT, SPECT, PET; the principles of MRI: Bloch equation, slice selection, K-space scanning, volumetric MRI; biochemical imaging; chemical equilibrium equations and Scatchard plots, specific and nonspecific labeling; autoradiography; and flow and dynamical systems: Doppler, mass transport, and phase (MRI) measurement of flow.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 422 [Min Grade: D]

BMES 424 Principles of Neuroimaging 3.0 Credits

This course introduces types and categories of neuroimaging methods that can measure brain anatomy as well as brain activity including MRI, PET, CT, SPECT, EEG and NIRS. For each modality, basic principles, technical foundations of its operation, neural signals, visualization and analysis of multidimensional data, relevant standards will be provided as well as an overview of the clinical and translational applications.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 353 [Min Grade: D] or BMES 421 [Min Grade: D]

BMES 430 Neural Aspects of Posture and Locomotion 3.0 Credits

Students will study the physiology of sensory/motor systems, with emphasis on modeling of neural systems and biomechanical aspects of functional tasks. Combines information on basic nerve cell activities, synaptic communication and structure/function relationships of skeletal muscle with basic mechanics to study spinal, vestibular and ocular reflexes. Culminates with the study of the control of motor systems with respect to bipedal motion.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] and BMES 202 [Min Grade: D] and MEM 202 [Min Grade: D]

BMES 432 Biomedical Systems and Signals 3.0 Credits

Introduces various aspects of biomedical signals, systems, and signal processing. Covers topics in the origin and acquisition of biomedical signals; discrete-time signals and linear systems; frequency analysis of discrete-time signals, spectral estimation, data records and digital filters; and compression of biomedical signals through time-domain and frequency-domain coding.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D]

BMES 440 Introduction to Biodynamics 3.0 Credits

The objective of the course is to prepare students for biomechanical modeling, modeling methods, formulation of equations of motion and methods of determination of strength will be applied to human body dynamics. Particular emphasis is placed on the use of Rigid Body and Multi-Body Dynamics.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] and (MEM 238 [Min Grade: D] or BMES 238 [Min Grade: D]) and (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 441 Biomechanics I: Introduction to Biomechanics 4.0 Credits

Teaches students to use mechanical tools to get an introductory appreciation for solving biomechanical problems. Models human performance by using static, quasi-static, and dynamic approaches. Assesses overall loading of the musculoskeletal system during functional activities. Demonstrates introductory methods of estimation of forces in the joints and muscles and evaluates the endurance of the human tissues under traumatic loading conditions. Builds on existing knowledge in mechanics to illustrate the practical application of mechanical tools in the determination of human systems performance.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: (MEM 230 [Min Grade: D] or BMES 345 [Min Grade: D] or MATE 370 [Min Grade: D]) and (MEM 238 [Min Grade: D] or BMES 238 [Min Grade: D]) and BIO 201 [Min Grade: D]

BMES 442 Biomechanics II: Musculoskeletal Modeling and Human Performance 4.0 Credits

Teaches students to think biomechanically. Reviews and categorizes the various functional components (tissues) of the musculoskeletal system. Considers constraints of the joints and action of the soft and hard tissues, along with corresponding models. Computes joint and muscle forces. Discusses some aspect of postural stability of the whole musculoskeletal structure and reviews various methods of task performance.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 441 [Min Grade: D]

BMES 444 Biofluid Mechanics 3.0 Credits

This course introduces flow-related anatomy and pathophysiology, and biomedical flow devices and their design challenges. Analysis methods to solve biological fluid mechanics design problems will be introduced and several interdisciplinary team projects will be assigned to apply fluid mechanics to practical biological or medical problems.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 451 [Min Grade: D] and BIO 201 [Min Grade: D]

BMES 451 Transport Phenomena in Living Systems 4.0 Credits

Introduces students to applications of chemical engineering concepts in biological systems. Shows that chemical engineering approaches to problem solving are ideally suited to investigation of biology. Approaches include material and energy balances, transport phenomena, and kinetics.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 253 [Min Grade: D], ENGR 210 [Min Grade: D] (Can be taken Concurrently) and BIO 201 [Min Grade: D] and (ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or MATH 210 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D])

BMES 455 Medical Technology Innovation: Devices 3.0 Credits

The Medical Technology (MedTech) Innovation series of courses aim to take students on an international innovation journey from 'concept to commercialization' starting from R&D bench all the way to the healthcare trench. Undergraduates enrolled in MedTech I are introduced to fundamental concepts and established practices that underlie medical technology innovation in general, and technology assessment and due diligence in particular. This course is offered as part of the Global Innovation Partnership (GIP) curriculum.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 456 Medical Technology Innovation: Biologics 3.0 Credits

The Medical Technology Innovation (MedTech) series of courses aim to take students on an international innovation journey from 'concept to commercialization,' starting from the R&D bench to the healthcare trench. The series deepen understanding of medtech innovation by introducing learners to the brave world of startups, ecosystems that sustain them as well as the array of actors, players and stakeholders who nurture them. Medical Technology Innovation II is focused on biologics, in particular, emerging fronts in medical biotechnologies including biosensing, gene, cell, tissue and immune technologies.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 457 Brain Technology Convergence 3.0 Credits

Starts with primer on natural (human) and artificial (computational) intelligence followed by an intro to emerging neuro-technologies including brain-computer interfaces, neuroimaging, neurostimulation/neuromodulation, neuroergonomics, brain-in-the-loop systems, human-robot teaming, humanoid robots and 'human autonomy' in context of rapidly emerging digital trends. Course proceeds to application domains such as gaming, entertainment, health, aerospace, learning & behavioral economics in the global context. Content emphasizes responsible brain-technology convergence respectful of neurorights and responsive to potential social, professional, legal and ethical implications. Foresight, Cyber-Brain Security, Complexity, Immersive Experiential Virtual Environments (aka Metaverse), Generative AI are running threads.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

BMES 460 Biomaterials I 4.0 Credits

First course in a three-quarter sequence designed to acquaint students with the behavior of materials used in biomedical application under load (i.e., mechanical properties), their modes of failure and as a function of their environment. This course provides students with the fundamentals needed to proceed with Biomaterials II.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CHEM 241 [Min Grade: D] and (BMES 345 [Min Grade: D] or MEM 230 [Min Grade: D] or MATE 370 [Min Grade: D])

BMES 461 Biomaterials II 4.0 Credits

Second course in a three-quarter sequence in biomaterials. The goal of this course is with an understanding of, and ability to select, appropriate materials for specific applications taking into account mechanical, thermal, and rheological properties taught in Biomaterials I and combining them with the biocompatibility issues covered in the present course.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 460 [Min Grade: D]

BMES 471 Cellular and Molecular Foundations of Tissue Engineering 4.0 Credits

Course is designed to familiarize students with the advanced concepts of cellular and molecular biology and physiology relevant to tissue engineering. The initial part of a two-quarter sequence combining material from cellular/molecular biology, evolutionary/developmental biology with engineering design and biomaterials to educate students in the principles, methods, and technology of tissue engineering.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BIO 218 [Min Grade: D] and BIO 219 [Min Grade: D] and (MEM 230 [Min Grade: D] or BMES 345 [Min Grade: D] or MATE 370 [Min Grade: D])

BMES 472 Developmental and Evolutionary Foundations of Tissue Engineering 4.0 Credits

Familiarizes students with advanced concepts of developmental and evolutionary biology relevant to tissue engineering. This second part of the two-quarter sequence combines material from cellular/molecular biology and evolutionary design and biomaterials to educate students in the principles, methods, and technology of tissue engineering.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 471 [Min Grade: D]

BMES 475 Biomaterials and Tissue Engineering III 4.0 Credits

This course provides students with in-depth knowledge of factor-mediated tissue engineering and regenerative medicine. Students learn about fundamental repair and regenerative processes and gain an understanding of specific biomaterials being used to mimic and/or enhance such processes. Students also learn about the delivery methods of agents which promote the proper functional development of specialized tissues.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 461 [Min Grade: D] and BMES 472 [Min Grade: D]

BMES 477 Neuroengineering I: Neural Signals 3.0 Credits

Introduces the theory of neural signaling. Students will learn the fundamental theory of cellular potentials and chemical signaling, the Hodgkin-Huxley description of action potential generation, circuit representations of neurons and be able to derive and integrate equations describing the circuit as well as design computer models.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BIO 201 [Min Grade: D] and (BIO 462 [Min Grade: D] or BMES 430 [Min Grade: D] or BIO 348 [Min Grade: D]) and (BMES 337 [Min Grade: D] or BMES 375 [Min Grade: D] or BMES 372 [Min Grade: D])

BMES 478 Neuroengineering II: Principles of Neuroengineering 3.0 Credits

This course investigates cutting edge technologies in neuroengineering in a seminar-style format with faculty from the School of Biomedical Engineering and College of Medicine. Three modules cover topics, which vary from year to year. Students are expected to submit written and oral presentations covering each topic.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 477 [Min Grade: D] or BMES 353 [Min Grade: D]

BMES 480 Introduction to Immune Engineering 3.0 Credits

This course introduces students to the fundamentals of immune engineering, including the major cell types of the innate and adaptive immune systems and the major tools and techniques that are used to modulate the immune system for therapeutic or diagnostic benefit.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: (BIO 211 [Min Grade: D] or BIO 214 [Min Grade: D]) and CHEM 102 [Min Grade: D]

BMES 481 Advanced Topics in Immune Engineering 3.0 Credits

This course exposes students to cutting edge topics in immune engineering, including novel targets, new tools and techniques, and special applications.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 480 [Min Grade: D]

BMES 483 Quantitative Systems Biology 4.0 Credits

This course uses a data-driven systems engineering approach to provide a foundation in systems biology. Topics covered include the organization of robust networks of genes and proteins; intercellular communication; and cells as basic units of life.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 375 [Min Grade: D] and BIO 218 [Min Grade: D]

BMES 484 Genome Information Engineering 4.0 Credits

This course is designed to provide students with hands-on experience in the application of genomic, proteomic, and other large-scale information to biomedical engineering. The underlying goal is to develop an understanding of high-throughput technologies, biological challenges, and key mathematical and computational methods relevant to biomedical engineering.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 375 [Min Grade: D] and BIO 218 [Min Grade: D]

BMES 485 Brain Computer Interface Laboratory 2.0 Credits

This course explores an exciting aspect of neuroengineering, brain computer interfaces (BCI), in a hands-on laboratory setting. The course addresses both the human and computational elements of the technology emphasizing an engineering perspective while utilizing and modifying common paradigms in electroencephalogram (EEG)-based BCIs.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Prerequisites: BMES 412 [Min Grade: D] or BMES 430 [Min Grade: D] or BMES 432 [Min Grade: D] or BMES 418 [Min Grade: D]

BMES 488 Medical Device Development 3.0 Credits

Medical device product development must take into account a diverse set of disciplines to achieve a safe and successful product. This course exposes the student to several of these disciplines with the objective of raising the student's awareness of safety throughout the product development life cycle. Students will learn to appreciate the complex engineering decisions that support development of a safe medical device through an examination of risk management, regulatory processes, human factors and clinical studies.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

BMES 490 Senior Thesis: Capstone Design Experience 2.0-3.0 Credits

This course is for BS / MS seniors in biomedical engineering who are completing a thesis as their capstone design experience.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: BMES 382 [Min Grade: D]

BMES 491 [WI] Senior Design Project I 3.0 Credits

This is the first course in a three-quarter capstone design experience for senior biomedical engineering students.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BMES 382 [Min Grade: D]

BMES 492 Senior Design Project II 2.0 Credits

Continues senior design activities begun in BMES 492.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

BMES 493 Senior Design Project III 3.0 Credits

Continues the design project begun in BMES 491 and continued through BMES 492.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

BMES 496 Clinical Practicum 3.0 Credits

This course provides biomedical engineering students with an opportunity to observe basic operative and postoperative procedures with the idea of both learning about such procedures and identifying the role of biomedical engineering in these clinical settings.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if major is BME.

BMES 497 Research in Biomedical Engineering 1.0-3.0 Credit

Provides guided research in biomedical engineering.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated 1 times for 6 credits

BMES I199 Independent Study in BMES 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES I299 Independent Study in BMES 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES I399 Independent Study in BMES 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES I499 Independent Study in BMES 0.5-6.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES T180 Special Topics in Biomedical Engineering & Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES T280 Special Topics in Biomedical Engineering & Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES T380 Special Topics in Biomedical Engineering & Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

BMES T480 Special Topics in Biomedical Engineering & Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Biomedical Engineering, Science Health Systems

Repeat Status: Can be repeated multiple times for credit

Biomedical Engineering Tech

Courses

BET 301 Healthcare Technology 3.0 Credits

An overview of medical equipment used in hospitals and other medical environments to diagnose and treat patients. Sensors and physiological signals will be explained. Equipment found in various hospital departments and medical specialties will also be discussed. Patient safety and regulations will be emphasized.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D] and EET 202 [Min Grade: D]

BET 302 Biomedical Electronics 4.0 Credits

This course is an introduction to the fundamentals of analog electronics with an emphasis on biomedical applications. Students will be introduced to solid state devices including diodes, transistors, operational amplifiers, oscillators, and mixers and their use in power supplies, amplifiers and active filters.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D] and EET 202 [Min Grade: D]

BET 303 Medical Imaging Systems 3.0 Credits

The fundamentals of medical imaging equipment will be explored. The principles of x-ray, computed tomography, ultrasonic, and magnetic resonance imaging systems will be discussed. Focus will be on principles of operation, applications, safety, and quality.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: BET 301 [Min Grade: D]

BET 305 Clinical Laboratory Equipment 3.0 Credits

Clinical laboratory instrumentation and automation is described with emphasis on the demands of clinicians for diagnostic information. Special attention is given to reliability, ease of training, and cost effectiveness.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D] and EET 202 [Min Grade: D] and BET 301 [Min Grade: D]

BET 307 Applied Biomedical Instrumentation 3.0 Credits

The course introduces students to the engineering design process and provides design experience through hands-on design and implementation of biomedical instruments. Using a generalized step-by-step approach that consists of (1) understanding the physiological sources, (2) selecting appropriate transducers, (3) designing analog processing electronics, and (4) implementing digital signal processing, student will gain extensible knowledge and skills to design and implement various biomedical instruments.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D] and EET 202 [Min Grade: D] and BET 301 [Min Grade: D] and BMES 391 [Min Grade: D]

BET I199 Independent Study in Biomedical Engineering Tech 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET I299 Independent Study in Biomedical Engineering Tech 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET I399 Independent Study in Biomedical Engineering Tech 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET I499 Independent Study in Biomedical Engineering Tech 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET T180 Special Topics in Biomedical Engineering Tech 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET T280 Special Topics in Biomedical Engineering Tech 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET T380 Special Topics in Biomedical Engineering Tech 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

BET T480 Special Topics in Biomedical Engineering Tech 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Bioscience & Biotechnology

Courses

BIO 100 Applied Cells, Genetics & Physiology 3.0 Credits

This course is designed to provide a topical and interactive introduction to biology for non-majors. Students will learn how trillions of tiny cells of our bodies work together in organ systems to use food for energy, to keep us alive, moving and healthy, and how information passes to subsequent generations. This course is identical to BIO 107.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Corequisite: EXAM 080

BIO 101 Applied Biological Diversity, Ecology & Evolution 3.0 Credits

An interactive course for the non-major that discusses the variety of living things and how we ended up with them and what makes them unique.

This course also explores how living things affect each other and the world as well as the impacts that humans have on the living world. This course is identical to BIO 109.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Corequisite: EXAM 080

BIO 107 Cells, Genetics & Physiology 3.0 Credits

This course is designed to provide a topical and interactive introduction to biology for non-majors. Students will learn how trillions of tiny cells of our bodies work together in organ systems to use food for energy, to keep us alive, moving and healthy, and how information passes to subsequent generations. This course is identical to BIO 100.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Corequisites: BIO 108, EXAM 080

BIO 108 Cells, Genetics and Physiology Laboratory 1.0 Credit

This course is designed to be a companion course to the BIO 107 lecture. Labs are focused on providing students with a hands-on approach to science. Topics include how cells generate energy from food, how certain characteristics are genetically encoded and the physiology of human systems and diseases.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Corequisite: BIO 107

BIO 109 Biological Diversity, Ecology & Evolution 3.0 Credits

An interactive course for the non-major that discusses the variety of living things and how we ended up with them and what makes them unique.

This course also explores how living things affect each other and the world as well as the impacts that humans have on the living world. This course is identical to BIO 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Corequisites: BIO 110, EXAM 080

BIO 110 Biological Diversity, Ecology and Evolution Laboratory 1.0 Credit

A companion course to BIO 109 that provides a hands on exploration of the diversity of life including microbes, plants and animals as well as the processes that give rise to this diversity. The labs also provide practical exploration of the impacts of human beings on the planet.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Corequisite: BIO 109

BIO 114 Climate Change and Human Health 3.0 Credits

This inquiry based open enrollment course is designed to provide a topical and interactive exposure to the human health hazards associated with global climate change. Despite the burden of evidence of global climate change, it is not uncommon for the members of the general public to express apathy because the consequences seem so far removed in distance and time. The goal of this course is to bring climate change closer to home through a discussion of the imminent threat posed to human health.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 116 How Your Body Works-Or Not 3.0 Credits

How Your body Works-or Not is geared for non-major students hoping to explore the workings of their bodies. Students will explore why we evolved to have various organ systems, and how some systems accomplish their roles. We will explore how these systems can malfunction or fail, resulting in disease.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO or major is BME or major is CHEM or major is ENVS or major is HSCI

BIO 118 Basics of Cancer 3.0 Credits

This course provides an opportunity for students with little or no biology background to learn about cancer. Students can expect to learn what cancer is from a biological perspective, and how it is caused and treated. Students will also gain a basic understanding of how tumors form, and metastasize.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO or major is BME

BIO 120 Phage Phinder's Research 1.0 Credit

This supplemental discovery based lab course has been designed to discover and analyze new bacteriophage viruses. Students will isolate unique bacteriophages, annotate the genes of selected bacteriophage genomes, and develop independent projects using hypothesis driven experimental planning.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO 122 Cells and Genetics 4.5 Credits

An introduction to the concepts of cell and function, cell and reproduction, cell communication, genetic inheritance, and population genetics. The relevance of genetics to society and ethical issues are included.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

BIO 128 Bacteriophage Discovery Laboratory 2.0 Credits

In this course, students will design and perform independent research projects in order to learn more about bacteriophages. Students can work independently or in groups to develop a research question and hypothesis, and to perform either wet-lab experiments or bioinformatics analysis to draw conclusions about a novel aspect of bacteriophage biology. At the end of this course, students will present their results in the form of a poster presentation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D]

BIO 131 Cells and Biomolecules 4.0 Credits

The course provides students with a basic understanding of the smallest unit of life, the cell, how cells function and reproduce to make new cells and gametes, and how cells communicate with one another within tissues and organs. The course describes the basics of energy capture and utilization. It will introduce students to molecular mechanisms of gene expression and perpetuation and inheritance of cellular information. This course has a lecture and recitation component.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

BIO 132 Genetics and Evolution 4.0 Credits

Students will learn about evolution, genetic inheritance (including Mendelian and non-Mendelian patterns of inheritance), and the mechanisms of how populations and species change over time, highlighting key evolutionary events. We will also explore the development of individual organisms, connecting developmental processes with evolutionary trends. This course has a lecture and recitation component.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

BIO 133 Physiology and Ecology 4.0 Credits

The course will survey physiological systems, including the respiratory, circulatory, homeostatic, excretory, digestive, immune, and reproductive systems in animals. In addition, students will learn about the relationships between organisms and the environment, including how humans impact ecosystems and the biosphere. This course has a lecture and recitation component.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

BIO 134 Cells and Biomolecules Lab 1.0 Credit

This lab course provides students with the opportunity to do hands-on experimentation and data analyses to help develop a basic understanding of the smallest unit of life, cells, how cells function and reproduce to make new cells and gametes, and how cells communicate with one another within tissues and organs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 135 Genetics and Evolution Lab 1.0 Credit

This lab course provides students with the opportunity to learn laboratory techniques to explore genetic and evolutionary concepts. Students will have the opportunity to conduct experiments using genetic techniques while developing their scientific skills in data interpretation and critical thinking. Computer simulations and data analysis will also allow students to apply their understanding of evolutionary concepts to real data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 136 Anatomy and Ecology Lab 1.0 Credit

This lab course will survey anatomical systems in different classes of animals in order to compare the ways in which these animals obtain oxygen and other nutrients from the environment, transport these materials throughout the body, maintain homeostasis, and collect and eliminate waste products. Additionally, the course will emphasize relationships between living organisms and their environments. Lab exercises in this course will explore anatomical systems, demonstrate major themes in ecology, and model how humans impact ecosystems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 141 Essential Biology 4.5 Credits

Introduces essential biological concepts to engineering students. Content covers five core topics: cells, genetics, evolution, ecology and physiology with application to societal concerns about biotechnology, health, conservation biodiversity and bioethics. Evolution will be woven throughout the course as a unifying theme in understanding all aspects of biology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is CS

Prerequisites: CHEM 101 [Min Grade: D]

Corequisite: EXAM 080

BIO 142 SEA-PHAGES I 2.0 Credits

Drexel University is one of over 100 institutions associated with the Science Education Alliance – Phage Hunters Advancing Genomics and Evolutionary Science (SEA-PHAGES) program funded through the Howard Hughes Medical Institute (HHMI). This means that in the Honors section of Introductory Biology, we have a new scientific discovery-driven research based lab component to discover and analyze new bacteriophage viruses. There are approximately 1031 bacteriophages in the world and we can help understand their evolution, their diversity, and their functional roles (medical, environmental, ecological) through contributing the data on the phage we discover to this growing database. This laboratory course is part of a sequence of three introductory courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 143 SEA-PHAGES II 2.0 Credits

This course will allow students to experience scientific discovery-driven research, using bioinformatics to annotate bacteriophage genomes. Student will examine phage genomes to identify gene start sites, assign gene functions to individual phages. Phage genomes will be compared to investigate shared and unique regions of the genomes and shared and unique gene functions. As a result of this course, the bacteriophage annotations will be made available through the open access database GenBank. This laboratory course is part of a sequence of three introductory courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 142 [Min Grade: D]

BIO 144 SEA-PHAGES III 2.0 Credits

In this course students will develop and implement hypothesis-driven experimental plans, to expand our knowledge of bacteriophages. In groups students will work collaboratively in lab to collecting data, interpreting results and drawing conclusions. The projects will be presented at the end of term to other students in the form of a poster presentation. This laboratory course is part of a sequence of three introductory courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 143 [Min Grade: D]

BIO 161 General Biology I 3.0 Credits

Covers structure and function of the cell and the organ-system plan of organization of the human body.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO or classification is Freshman

BIO 162 General Biology II 3.0 Credits

Continues BIO 161. Covers the mechanics of heredity, including growth, differentiation, and development. Winter.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 161 [Min Grade: D]

BIO 163 General Biology III 3.0 Credits

Continues BIO 162. Covers the plant and animal kingdoms, radiobiology, evolution, and ecology. Spring.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 162 [Min Grade: D]

BIO 164 General Biology Laboratory I 1.0 Credit

In this course students will perform computer simulations of laboratory exercises related to photosynthesis, enzyme activity and kinetics, the cardiovascular, muscle and bone systems, regulation of human organ systems as well as plant growth and development.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: BIO 161

BIO 165 General Biology Laboratory II 1.0 Credit

In this course students will perform computer simulations of laboratory exercises related to cell division, mendelian genetics, DNA replication, translation and mutations. They will work with simulated microscopes to observe viral and microbial specimens. Additionally, students will learn and simulate biotechnology techniques such as DNA fingerprinting.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 161 [Min Grade: D]

Corequisite: BIO 162

BIO 177 Mentorship in STEM 0-1 Credits

This course is designed to develop and enhance student mentorship and leadership skills, emphasizing communication among undergraduate peers in STEM disciplines. The course will focus on the mentor-mentee relationship, professionalism, respect for diversity, and mentorship skill development.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO 200 Connections in Biology 3.0 Credits

Connections in Biology is an open enrollment course which will give students the opportunity to make exactly that: connections. Building upon a new theme in biology each week, students will connect that material to their current Philadelphia community as well as to their future professional and personal pursuits. The course is designed on the Community Based Learning platform (CBL) and is scheduled to meet twice a week: one meeting will be a formal lecture on campus and one meeting will be at a partnered middle school with the instructor and Drexel students leading an 9 week after school science club. Students will gain volunteer hours, get an introduction to civic engagement, benefit from community based learning practices and connect their Drexel course material to the bigger picture in their lives.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO 201 Human Physiology I 4.0 Credits

Intensive survey of the basic physiological mechanisms of cellular and human electrophysiology and the physiology of the muscular, cardiovascular, respiratory, renal, and gastrointestinal systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 141 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 202 Human Physiology Laboratory 2.0 Credits

Laboratory course in human physiology. Designed to accompany BIO 201 and 203 Human Physiology I and II. Uses simulation, experimenters and data acquisition techniques to provide practical experience in the design and execution of physiological experiments and analysis of physiological data. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] (Can be taken Concurrently)

BIO 203 Human Physiology II 4.0 Credits

Intensive survey of the control mechanisms of cellular and human physiology including introductions to control theory, neurophysiology, endocrine control, and control mechanisms in locomotion, cardiovascular, respiratory, renal, acid/base, gastrointestinal, and reproductive physiology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D]

BIO 204 The Privilege of Aging 3.0 Credits

The Privilege of Aging is a Hybrid Community-Based Course that is open to students that have completed BIO 122. Aging is often thought of as a negative process, however there are important benefits that are largely uncelebrated. Students in this course will explore the privilege of aging and ways to do it well with senior members of the Philadelphia community. There will be 2 class meetings each week, one on campus and one at a designated senior citizen facility. In addition to the academic underpinnings of the biology of aging, the course will provide the students with intergenerational interactions, as well as opportunities to connect the experience with their academic path at Drexel and their future professional plans.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 207 Applications in Biology I 1.0 Credit

The aim of this course is to allow students to apply knowledge from biology courses to understand important articles from the frontiers of biology research, in order to develop critical thinking and problem solving skills. Students will learn to read primary research, to think critically about research and interpret data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 208 Applications in Biology II 1.0 Credit

In this course, students will further develop and practice skills introduced in the Applications in Biology I course by reading and interpreting research from primary articles. This will include historical experiments and controversial research. This will help students develop critical thinking, scientific reasoning and problem solving skills.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 207 [Min Grade: D]

BIO 209 Cell, Molecular & Developmental Biology I 4.0 Credits

In this course, students will cover essential topics in cell, molecular, and developmental biology. Topics, such as protein structure function relationships, enzymes, structural & functional properties of nucleic acids, transcription & translation, regulation of gene expression, eukaryotic cell structure, cell membranes and membrane transport. Commonly used techniques in biochemistry, molecular & cellular biology will be discussed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 211 Cell, Molecular & Developmental Biology II 4.0 Credits

In this course, students will learn about molecular, cellular and developmental biology at a higher level than in introductory coursework. This second course in the sequence will focus on cell biological processes such as: vesicular trafficking, signaling, cytoskeletal dynamics, cell cycle, cell death, tissue organization, stem cells and development. At the end of this course, students should have a strong foundation in cell and developmental biology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 209 [Min Grade: D]

BIO 212 Biotechnology 3.0 Credits

Covers the use of recombinant DNA techniques in biotechnology.

Explores the many uses of biotechnology in the biological, agricultural and medical field. Also covers the social, ethical and environmental issues involved in this discipline.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 213 Drosophila Neural Research 3.0 Credits

In this course, you will be introduced to the basics of performing directed research in Drosophila genetics and neurobiology. This research will be informed by its relevance to disease. You will be working on one of a variety of diseases that is related to neurodevelopmental and/or neurodegenerative diseases. Diseases include (but are not limited to) CHARGE syndrome, Alzheimer's disease, Pitt-Hopkins disease, and schizophrenia. In this course, you will be testing for potential genetic modifiers and/or drugs that modify disease phenotypes associated with an established models of these diseases.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman or Sophomore .

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 214 Principles of Cell Biology 4.0 Credits

The course familiarizes students with the basic fundamentals and principles of cell biology. Topics include protein and enzymes as metabolic facilitators, the source and function of cellular energy, cell structure and function, cellular protein transport, cell communication, cell cycle control, apoptosis, and cell differentiation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 100 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 215 Techniques in Cell Biology 3.0 Credits

A course designed to introduce students to the lab techniques used by cell biologists. The lab is project-based focusing on various assays to assess cell viability/survival and fluorescence microscopy is used for cell structure and their organelles, apoptosis, cytoskeletal structure, muscle contraction and cell motility. Other topics include protein separation and quantification, and gel electrophoresis. Analytical thinking and data analysis are emphasized to help foster the development of a project built on multiple experiments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 218 Principles of Molecular Biology 4.0 Credits

The course is designed to familiarize students with the details and concepts revolving around molecular biology's "central dogma." Specifically the chemical nature of DNA and RNA, the molecular structure of DNA and chromosomes, the definition of a gene, how DNA is replicated, and how genes are expressed and regulated.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 219 [WI] Techniques in Molecular Biology 3.0 Credits

Designed to familiarize student with laboratory techniques utilized in molecular biology, specifically DNA isolation, characterization, and manipulation. Students work in teams to collect and analyze data and explain results in laboratory reports. Weekly recitations preview and review theory and techniques used in the lab. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 220 Essential Microbiology 3.0 Credits

Covers morphological, physiological, and biochemical characteristics of bacteria, fungi, algae, and protozoa, and viruses. Introduces the principles of microbial genetics, disease, and control of microorganisms. This course is identical to BIO 221.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 221 Microbiology 3.0 Credits

Covers morphological, physiological, and biochemical characteristics of bacteria, fungi, algae, protozoa, and viruses. Introduces the principles of microbial genetics, disease, and control of microorganisms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

Corequisite: BIO 222

BIO 222 Microbiology Laboratory 2.0 Credits

An introduction to microbiological techniques, and culture of prokaryotic and eukaryotic organisms. Includes sterile techniques, and use of specialized microscopic techniques. Classical and molecular techniques of microbial identification are also covered.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

Corequisite: BIO 221

BIO 224 Form, Function & Evolution of Vertebrates 4.0 Credits

This course is an introduction to principles of organismal biology from the perspective of form, function and evolution of fish, amphibians, reptiles, mammals and birds. Many biological principles are well known in this group of animals. Data from areas as diverse as paleontology, ecology and molecular biology will be presented.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 121 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 124 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 131 [Min Grade: D] or BIO 132 [Min Grade: D] or BIO 133 [Min Grade: D]

BIO 225 Vertebrate Biology and Evolution Laboratory 2.0 Credits

A hands-on laboratory course that complements BIO 224: Form, Function & Evolution of Vertebrates. Students use the comparative approach to learn about the anatomy, physiology and evolution of vertebrates. Laboratory work will be on campus and in the field trips to observe vertebrates in nature.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 224 [Min Grade: D] (Can be taken Concurrently)

BIO 226 Microbiology for Health Professionals 5.0 Credits

An introduction to microbiology for students in the health professions. Covers the diversity of microorganisms, their growth and how to control them. An introduction to the principles of disease and pathogenicity, host interaction and immunological response. Laboratories focus on the basic techniques to culture and student microorganisms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 228 Evolutionary Biology & Human Health 3.0 Credits

This course illustrates the importance and utility of evolutionary perspectives on various topics related to human health. In addition to the "how" questions, this course also introduces the "why" questions. Various evolutionary hypotheses are examined. Arguments for and counter-arguments against each hypothesis are presented to foster understanding of each topic. Selected topics include infectious diseases, pathogen virulence, allergies/asthma, mental health/addiction, genetic disorders, diseases of civilization, sex, pregnancy, aging, and public health concerns.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]) and (BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D])

BIO 232 Discovering Antibiotics 3.0 Credits

The focus of this course is the process of research and inquiry that leads to the isolation, characterization and identification of potential antibiotic producing microbial strains and species from soil. Students will work in small groups to collaboratively design and carry out their own experiments that will isolate these microorganisms. During this course, you will learn about the structure, metabolism, nutrition, and diversity of soil microorganisms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 242 SEA-GENES I 2.0 Credits

SEA-GENES is a lab developed by HHMI where students participate in a term-long research project. In SEA-GENES, students generate expression libraries for phage genes, test for the ability of phage gene products to modulate bacterial host phenotypes, and screen phage gene products against the bacterial host proteome to identify putative host targets.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 132 [Min Grade: D]

BIO 244 Genetics I 3.0 Credits

Surveys Mendelian, microbial, molecular, and population genetics. Discusses model systems and analytical methods used by geneticists to understand gene functions at cellular, organismal, and population levels.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D] or BIO 132 [Min Grade: D]

BIO 256 Vertebrate Morphology and Physiology 3.0 Credits

Provides comparative study of the major vertebrate groups, relationships between physiology and organismal structure, evolutionary history, comparative anatomy, and development.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 224 [Min Grade: D] or ENVS 212 [Min Grade: D]

BIO 257 Vertebrate Morphology & Physiology Lab 2.0 Credits

A hands-on laboratory course that complements BIO 256: Vertebrate Morphology and Physiology. Students will use comparative dissections of representative vertebrates to understand the anatomy and evolution of major vertebrate groups.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 256 [Min Grade: D] (Can be taken Concurrently)

BIO 264 Ethnobotany 3.0 Credits

This course explores the relation between ancient/cultural botanical knowledge and its current application in modern pharmacology and alternative forms of medicine. It provides an interdisciplinary approach to the study of plants for food, medicine, stimulation, religious rituals and death.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

BIO 284 Biology of Stress 3.0 Credits

This course focuses on the biological responses to the physical and psychological stress, discussing in turn stress responses in various organ systems. Emphasis is given to the analysis and evaluation of conflicting biological evidence on stress effects.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 100 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 285 Forensic Biology 3.0 Credits

This course will introduce students to the fascinating subject of forensic science, and specifically the role that biology can play in solving crimes. Topics being covered will include examining a crime scene, and the analysis of biological materials such as fingerprints, blood, plant material and human remains. During the course students will have to play the role of a forensic scientist, applying the knowledge that they will learn each week to see if they can determine who committed the crime. Case studies from real crimes will also be used to illustrate the points being made.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 122 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 286 Forensic Toxicology 3.0 Credits

In this online course students will study forensic toxicology, the study of chemicals- drugs, alcohol and poisons (to name a few), in relation to legal cases. These cases may involve identification of a powder, or examination of an envelope for traces of poisons, or the analysis of a blood samples to identify and quantify the presence of a substance which may have results in intoxication or even death.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 285 [Min Grade: D]

BIO 305 Mobilizing the Scientific Method 3.0 Credits

The main intent of this STEM Connections Course is for Drexel students and the Robeson students with whom we will be partnering to experience the Scientific Method. Both sets of students, Drexel and high school partners, will be instructed with active learning pedagogical methodologies to enhance student understanding. Students in both cohorts will learn to apply the scientific method to questions about plants. This course is a Community-Based Learning Course.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: BIO 100 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 108 [Min Grade: D] or BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 306 Biochemistry Laboratory 2.0 Credits

Covers biochemical techniques ranging from basic laboratory preparatory work such as making solutions to the measurement of enzyme kinetics and substrate specificity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D] or CHEM 248 [Min Grade: D]

BIO 311 Biochemistry 4.0 Credits

Covers bioenergetics and metabolism; enzymes, substrates, products, coenzymes, transporters, pathways (catabolic and anabolic for carbohydrates, lipids, amino acids, and nucleotides). Intracellular regulation, intercellular regulation, and how all this serves to meet the need of the cell and organism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D] or CHEM 248 [Min Grade: D]

BIO 314 Pharmacology 3.0 Credits

In this course, students will apply their studies of chemistry and biology to understand how drugs: are designed, affect the body, and are affected by the body. Students can expect to learn the fundamentals of pharmacology, and to discuss current topics and novel approaches being used to design new therapeutics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 318 Biology of Cancer 3.0 Credits

In this course, students will apply their studies of cell and molecular biology to understand cancer pathology. Starting with a fundamental knowledge of normal cellular processes, students will learn how normal processes go awry in tumor development and metastasis, and the current approaches being used to develop new cancer therapeutics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]) or BIO 211 [Min Grade: D]

BIO 320 Microbial Pathogenesis 3.0 Credits

Covers mechanisms of pathogenesis in microbial disease: transmission, prevention, public health. Also covers molecular basis of microbial pathogenesis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]) and BIO 221 [Min Grade: D]

BIO 323 Parasitology 3.0 Credits

Parasitology explores the most predominant lifestyle on earth, parasitism. Students will learn how parasites invade and exploit their hosts, the resultant damage to the hosts, and the mechanisms by which hosts defend and protect themselves from these invaders.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 211 [Min Grade: D]

BIO 329 Dictyostelium Research 3.0 Credits

We will be developing and progressing molecular and cellular projects to study cellular function in Dictyostelium discoideum as a model to investigate human cellular dysfunction. This exploratory and experimental course is designed to provide opportunities for students to experience authentic laboratory investigation in the context of a course which runs like a research group. Projects progress from term to term so students are welcome to continue in subsequent terms to further progress their projects or switch to other ongoing projects.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: BIO 219 [Min Grade: D] (Can be taken Concurrently) or BIO 209 [Min Grade: D]

BIO 331 Bioinformatics I 3.0 Credits

This course uses a combination of lecture and hands-on exercises to develop computational, algorithmic, and database navigation skills used in the analysis of genes and genomes. Topics include genomic databases, genome assembly and annotation, sequence alignment, phylogenetics, and comparative genomics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 132 [Min Grade: D]

BIO 332 Bioinformatics II 3.0 Credits

This course uses a combination of lecture and hands-on exercises to develop programming and software skills used in the study of functional genomics. Topics include genetics, transcriptomics, proteomics, and metabolomics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 331 [Min Grade: D]

BIO 333 Bioinformatics Laboratory 2.0 Credits

In this course, students develop and apply computational skills in bioinformatics to address a quarter-long research project. Topics generally focus on the ecology and evolution of microbes, which have become much easier to study thanks to the advent of molecular tools and software for the analysis of DNA sequences.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D], BIO 132 [Min Grade: D] (Can be taken Concurrently) or BIO 141 [Min Grade: D]

BIO 346 Stem Cell Research 3.0 Credits

This course will focus on recent and important topics relevant to stem cell research and development. Topics will include nuclear reprogramming and epigenetics, environmental influences on stem cell differentiation, stem cells and cancer, stem-cell-based therapies for heart and neurodegenerative disorders, stem cells and ageing, and politics of stem cell research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 348 Neuroscience: From Cells to Circuits 3.0 Credits

This course provides an introduction to the biological basis of human and animal behavior. This course will emphasize fundamental aspects of neuroscience including how individual neurons respond to stimuli, how these neurons connect to form circuits during development, and how ensembles of neurons work together to mediate simple tasks.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D] or BIO 100 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 349 Behavioral Neuroscience 3.0 Credits

This course provides an introduction to the biological basis of human and animal behavior. This course will emphasize fundamental aspects of neuroscience with a focus on the principles of how circuits function in the nervous system. Topics covered will include how neural circuits mediate sensory perception, drive behavioral output, and generate thoughts and emotions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 122 [Min Grade: D] or BIO 100 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 131 [Min Grade: D]

BIO 372 Histology 4.0 Credits

This course is designed to give students an understanding of the established fundamentals and principles of histology. Histology lies at the interface between cell biology and physiology: here we examine how cells work together as tissues and organs to create a functional pump (the heart), filters (the kidneys), and bellows (the lungs). While considerable focus will be on the structural details of select systems, there are recurring patterns that emerge in tissue construction. These patterns reflect regional variations in the functional role of the assembled tissue; studying these principles offers us a view of how small differences in cell number, type, and interaction can lead to the wide variety of tissue/organ properties seen in the human body.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 373 Developmental Biology 3.0 Credits

Covers molecular, cellular and physiological mechanisms underlying development of animals from gametes to adults. Covers the major stages and selected aspects of vertebrate development in importance animal model systems. Particular focus in on the importance of differential gene expression and its regulation in development.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 211 [Min Grade: D] or (BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D])

BIO 374 Developmental Biology Lab 2.0 Credits

Includes observations into development processes in a diverse group of organisms including developmental principles in simple multicellular organisms, gametogenesis in diverse animal, fertilization in sea urchins, embryonic development of vertebrates, regeneration of planarians, and the role of gene regulation in fruit fly development. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 373 [Min Grade: D] (Can be taken Concurrently) or BIO 270 [Min Grade: D]

BIO 386 Gross Anatomy I 2.0 Credits

This course is to give students an understanding of Human Anatomy in a clinical format. Anatomy will be studied in a regional manner with an emphasis placed on landmarks and relationships of structure within a region. Regions covered to include the back, upper limb, thorax, and abdomen.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: (BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]) or BIO 211 [Min Grade: D]

Corequisite: BIO 387

BIO 387 Gross Anatomy I Laboratory 2.0 Credits

This course is to accompany the Gross Anatomy lecture course and complements the students study of human anatomy by allowing the student to hone their dissection skills through dissection of a preserved mammalian specimen.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: (BIO 214 [Min Grade: D] and BIO 218 [Min Grade: D]) or BIO 211 [Min Grade: D]

Corequisite: BIO 386

BIO 388 Gross Anatomy II 2.0 Credits

This course is a continuation of the clinically focused study of Human Anatomy begun in BIO 386 (Gross Anatomy I). Anatomy will be studied in a regional fashion, with a focus on the pelvis, lower limb, head, and neck.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 386 [Min Grade: D]

Corequisite: BIO 389

BIO 389 Gross Anatomy II Lab 2.0 Credits

This course is to accompany the Gross Anatomy lecture course and complements the students study of human anatomy by allowing the student to hone their dissection skills through dissection of a preserved mammalian specimen. This course is a direct continuation of BIO 387 (Gross Anatomy I Lab).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 387 [Min Grade: D]

Corequisite: BIO 388

BIO 404 Structure and Function of Biomolecules 4.0 Credits

Covers the weak interactions which govern structure and function of biomolecules, including amino acids, proteins (structural organization, isolation, and methods of analysis). Enzymes (structure, catalytic mechanisms, kinetics), lipids and biomembranes, and DNA and RNA folding.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D] or CHEM 248 [Min Grade: D]

BIO 410 Advanced Molecular Biology 3.0 Credits

This course will provide students the opportunity to learn about molecular mechanisms of gene expression and control, genome analysis and manipulation, and the use of advanced tools and techniques in molecular biology. The principles of molecular biology and techniques will be discussed in the context of model organisms commonly used for molecular biology research. The course will have a strong focus on experimental approaches, problem solving and on understanding literature in the field. At the conclusion of the course, students should have the background to design experiments, and read and discuss papers from the primary literature regarding different aspects of molecular biology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 211 [Min Grade: D]

BIO 412 Biology of Aging 3.0 Credits

Discusses ageing at the organismal, organ, cellular, and molecular levels. Discussions include chronological versus biological aging, normal and abnormal human physiology of aging, current theories of aging, the effect of caloric restriction on aging, and the molecular mechanisms that underlie normal and abnormal aging.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 413 Genomics 3.0 Credits

This course aims to elucidate current technologies, theory, and applications of genomic research. Though a large emphasis will be placed on the use of genomic tools to study human health, we will also study the genomes, transcriptomes, and proteomes of bacteria, fungi, plants, and other animals.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 414 Behavioral Genetics 3.0 Credits

This course explores the role of genetics in determining variation in animal (including human) behavior, and the role of gene expression in regulating behavioral development. The course surveys techniques for quantifying and analyzing genetic variation, behavioral effects, and gene expression.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: BIO 122 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 132 [Min Grade: D]

BIO 415 Proteins 3.0 Credits

Discusses protein structure, function, and isolation. Emphasizes biochemical, biophysical, and molecular biological techniques.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 416 Biochemistry of Major Diseases 3.0 Credits

This course focuses on the biochemical bases of several selected human disorders including neoplasm, cardiovascular disorders, diabetes and obesity. Biochemical changes and their regulation by signaling pathways under the disease conditions will be examined. The relevance of diagnosis and treatment will be discussed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 203 [Min Grade: C] or BIO 311 [Min Grade: C]

BIO 420 Virology 3.0 Credits

Discusses the major viral groups, including biochemistry and molecular genetics of viral replication, structure, gene expression, latency, and role in disease.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 421 Biomembranes 3.0 Credits

The experimental and theoretical basis for the structure and function of biological membranes will be surveyed. Topics include membrane self-assembly, bilayer phase behavior and dynamics, membrane protein structure, passive and active transport, membrane fusion and trafficking.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 426 Immunology 3.0 Credits

Covers the fundamental concepts of innate and adaptive immunity, including the molecular and cellular mechanisms that generate responses to a broad spectrum of infectious threats, self/non-self recognition, immune regulation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 430 Cell Biology of Disease 3.0 Credits

An introduction to the pathobiology of human disease as it relates to principles of cytoskeleton and membrane biology. The course reviews basic intracellular mechanisms and examines how they go awry in respiratory, heart and kidney diseases, diabetes, cancer, neurodegeneration and during viral and microbial infections.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 433 Advanced Cell Biology 3.0 Credits

Course covers chemical composition and cellular function of organelles and other cellular structures, intra- and inter- cellular regulatory processes, intercellular communication, genetic mechanisms and analytical techniques.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is BIO.

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 435 Immunobiology of Disease 3.0 Credits

This course will expand on the concepts of molecular immunology focusing on emerging concepts in immunology research, immunopathologies, failure of host defense and current clinical concepts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 426 [Min Grade: D]

BIO 436 Population Genetics 4.0 Credits

This course surveys population genetics theory as applied to studies of micro-evolutionary changes. We will examine the forces of evolution—mutation, selection, inbreeding, gene flow, genetic drift—and how they can (and cannot) change allele frequencies in populations over time. We will apply the theory that you have learned by also examining current primary literature on human evolutionary history, population genetics and patterns of adaptation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (BIO 122 [Min Grade: D] or BIO 132 [Min Grade: D]) and (BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D]) and (BIO 211 [Min Grade: D] or BIO 217 [Min Grade: D] or BIO 218 [Min Grade: D] or ENVS 212 [Min Grade: D])

BIO 444 Human Genetics 3.0 Credits

Covers the fundamentals and principles of genetics with an emphasis on their relevance to human genetics and disease. Topics include human genetic disorders, pedigree analysis and genetic testing, cytogenetics, epigenetics, genetics of cancer, gene therapy, stem cell research, human genomics and biotechnology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 447 Advanced Genetics and Molecular Biology 3.0 Credits

Covers classical prokaryotic and eukaryotic genetics; DNA/RNA structure; DNA replication, transcription, translation and regulation of these processes. Also covers major molecular techniques used for characterizing prokaryotic and eukaryotic genes, tools for analysis of genomes, and applications of molecular genetics research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]) and (BIO 244 [Min Grade: D] or BIO 444 [Min Grade: D])

BIO 453 Protein Dysfunction in Disease 3.0 Credits

Proteins are essential for the function and health of the cell. Misfolded and damaged proteins are at the root of numerous human diseases, known collectively as conformational diseases. In this course we will examine cellular mechanisms involved in biosynthesis, folding and maintenance of proteins, and discuss how the failure of these mechanisms contributes to disease.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 461 Neurobiology of Autism Disorders 3.0 Credits

Autism disorders arise from changes in neurodevelopment that deeply affect how individuals interact with the world around them. As study of autism has increased over the past several decades, it has become clear that autism actually comprises a large, heterogeneous set of similar disorders, most of which are genetic in origin. In this class, we will study how neuronal cell biology is disrupted in known forms of autism, and how distinct forms of autism can arise from alterations in common cellular pathways. Further, we will discuss how these discoveries may lead to eventual treatments or cures.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 348 [Min Grade: D] or BIO 349 [Min Grade: D]

BIO 462 Biology of Neuron Function 3.0 Credits

Covers molecular and cellular mechanisms underlying neuron function. Topics include: molecular and cellular biology of neurons and neural development; molecular biology and physiology of sensory and motor neurons; molecular biology of muscle function; molecular and cellular basis of learning and memory in model organisms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 201 [Min Grade: D] or BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 348 [Min Grade: D] or BIO 349 [Min Grade: D]

BIO 463 Molecular Mechanisms of Neurodegeneration 3.0 Credits

This is an advanced course on the current, primary literature in the area of neurodegeneration. Students are expected to be conversant in areas of Genetics, Cell Biology, Molecular Biology, Biochemistry, and Neurobiology. This is a discussion course based on reading current manuscripts from the primary literature. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 348 [Min Grade: D] or BIO 349 [Min Grade: D]

BIO 465 Neurobiology of Disease 3.0 Credits

The objective of the course is to provide a basic understanding of molecular and cellular biology of disorders of the human nervous system. Advances developed from experimental models that have armed clinicians and basic scientists with new tools for diagnosis and treatment of disease and injury will be presented.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 462 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 348 [Min Grade: D] or BIO 349 [Min Grade: D]

BIO 466 Endocrinology 4.0 Credits

Describes the classical hormones, their regulation and major clinical abnormalities. New directions in endocrinology, such as cellular regulation and cellular mediators of hormonal action are also considered. The major focus of the course will be on mammals, although some examples involving other vertebrates are included.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 468 Pathophysiology 4.0 Credits

This course is designed to give students an appreciation of the many ways to think about the diseased organism, with an emphasis on the cellular- and systems-level malfunctions that contribute to the disease state. Having established an understanding of the normal physiology of the system in question, we will investigate the underlying cause, origin, and symptoms of the pathophysiology, as well as exploring the successes and limitations of available treatment options. Considerable emphasis will be placed on the importance of model systems that mimic aspects of the diseased state, as well as the role epidemiological data plays in helping to clarify the genetic and environmental contributors.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (BIO 214 [Min Grade: D] or BIO 211 [Min Grade: D]) and BIO 201 [Min Grade: D]

BIO 471 Seminar in Biological Sciences 2.0 Credits

Discusses and evaluates selected current topics in bioscience and biotechnology. Includes presentations by outside speakers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is BIO and classification is Senior.

Prerequisites: BIO 218 [Min Grade: D] or BIO 211 [Min Grade: D]

BIO 472 Seminar in Biological Sciences 2.0 Credits

In the second term of senior seminar, we will continue to host professional seminars with speakers presenting current research in the various biological disciplines. Professional development sessions will be available that will be helpful to the student's maturation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is BIO and classification is Senior.

Prerequisites: BIO 471 [Min Grade: D]

BIO 473 [WI] Seminar in Biological Sciences 2.0 Credits

In the third term of senior seminar, student groups complete their year-long capstone assignment and present final projects during seminar. We will continue to host research seminars and professional development sessions to aid students in their scientific development and in planning for their future careers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is BIO and classification is Senior.

Prerequisites: BIO 472 [Min Grade: D]

BIO 474 Thesis in Biology 2.0 Credits

Through this course, research-active students will engage in activities intended to help them develop a written thesis, and learn how to present their research effectively in both written and oral formats. Students will be encouraged to improve their skills in reading and analyzing the literature and their own data. Students will communicate their ideas through the development of a formal thesis, an in-class oral presentation, and a poster presentation. Seminar attendance will be a part of this course. Students must complete BIO 471 and 473 before registering for this course.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is BIO and classification is Senior.

Prerequisites: BIO 473 [Min Grade: D] (Can be taken Concurrently)

BIO 497 Research 0.5-12.0 Credits

Provides guided research in biology, molecular biology, microbiology, cell or human physiology, genetics, biochemistry, or biotechnology.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

BIO I199 Independent Study in BIO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO I299 Independent Study in BIO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO I399 Independent Study in BIO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO I499 Independent Study in BIO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO T180 Special Topics in Bioscience & Biotechnology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO T280 Special Topics in Bioscience & Biotechnology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO T380 Special Topics in Bioscience & Biotechnology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

BIO T480 Special Topics in Bioscience & Biotechnology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Business Analytics

Courses

BSAN 160 Business Analytics and Data Visualization 4.0 Credits

The field of business analytics is concerned with managing and analyzing complex, high-dimensional data to support business decisions and improve firm performance. Data visualization is emerging as an essential complement to business analytics that greatly facilitates managerial understanding and decisions. This course introduces state-of-the-art techniques for data management, analysis and visualization in business contexts. It will emphasize practical challenges involving complex, real-world data and include several case studies and hands-on exercises with leading data analysis and visualization software.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BSAN 260 Introduction to Business Analytics 4.0 Credits

This course introduces mathematical models that can be used to improve decision-making within an organization. Topics will include analytical tools such as optimization, simulation, and Visual Basic for Applications (VBA) for problem solving and decision support in all areas of business, including supply chain networks, operations, finance, economics, and marketing. Students will make extensive use of Excel and several spreadsheet based add-ins to solve real business problems, improve business processes, and help make important business decisions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BSAN 261 Data Visualization for Business Analytics 4.0 Credits

Data visualization enables business analysts to understand and present deeper and better insights into their businesses. These insights allow for greater managerial understanding and improvement in the quality of business decisions. This course is designed for students learning to use data visualization in business analytics, regardless of their technical or analytical backgrounds. Students will learn the fundamentals of data visualizations and the strengths and weaknesses of various visualizations. They will progress to learning to use data visualization software to conduct basic data analytics within an organization to support decision making, strategy formulation and operational improvements.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 201 [Min Grade: C]

BSAN 360 Programming for Data Analytics 4.0 Credits

The mission of this course is to immerse students in the technical challenges associated with contemporary data analytics as applied to business processes and data-driven decision making. To achieve this mission, the course will introduce modules covering the state of the art in the areas of statistical programming as applied to data analysis for business problems.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: (STAT 202 [Min Grade: C-] or STAT 206 [Min Grade: C-]) and (BSAN 260 [Min Grade: C-] or BUSN 260 [Min Grade: C-] or BSAN 160 [Min Grade: C-])

BSAN 460 Business Analytics Senior Project 4.0 Credits

The senior project serves as a capstone for business analytics majors. The course provides an opportunity for students to develop a project that draws on their skills in the areas of data management, mathematical modeling, and statistical analysis to support data driven decision-making processes. Students often choose a project in the area of a second major (marketing, finance, etc.) and thus the project provides deeper insight into organizational decision-making in a functional area of business.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: (BSAN 160 [Min Grade: C-] or BSAN 260 [Min Grade: C-] or BUSN 260 [Min Grade: C-]) and (BSAN 360 [Min Grade: C-] or BUSN 360 [Min Grade: C-]) and STAT 331 [Min Grade: C-]

BSAN T180 Special Topics in Business Analytics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BSAN T280 Special Topics in Business Analytics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BSAN T380 Special Topics in Business Analytics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BSAN T480 Special Topics in Business Analytics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Business Statistics

Courses

STAT 201 Introduction to Business Statistics 4.0 Credits

This introductory first course in business statistics focuses on applications of data analysis and statistics in business and economics. Topics covered include descriptive statistics and graphical presentation, probability, statistical inference, and simple regression analysis.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MATH 101 [Min Grade: D] or MATH 121 [Min Grade: D] or MATH 171 [Min Grade: D] or MATH 181 [Min Grade: D]

STAT 202 Business Statistics II 4.0 Credits

This second course in business statistics focuses on widely used data analysis techniques in business and economics. Topics include two sample procedures, categorical data analysis, analysis of variance, regression analysis and other statistical applications as time permits. Applications are covered through practical data analysis examples.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: STAT 201 [Min Grade: C]

STAT 205 Statistical Inference I 4.0 Credits

Covers descriptive statistics, elementary probability theory, discrete and continuous random variables and probability distributions, joint distribution functions, expected values, statistical measures, sampling distributions, and point and interval estimation.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

STAT 206 Statistical Inference II 4.0 Credits

Topics include hypothesis testing, two sample procedures, analysis of variance models, regression analysis and the use of statistical software.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: STAT 205 [Min Grade: D]

STAT 325 Six-Sigma Quality Implementation 4.0 Credits

Focuses on current theory and practice in Six-Sigma implementation for quality monitoring and improvement. Topics include the dynamic nature of quality, Six-Sigma implementation, and the roles of management in planning and guiding quality efforts. The fundamentals of managerial and statistical methods for quality monitoring and improvements are covered.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 201 [Min Grade: C-] or STAT 205 [Min Grade: C-]

STAT 331 Introduction to Data Mining for Business 4.0 Credits

This course introduces students to the fundamental ideas of data mining methods, including dimension reduction, cluster, classification and regression trees, and logistic regression. The emphasis is understanding the application of methods rather than on mathematical and computational foundations. All applications are business-oriented.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 202 [Min Grade: C-] or STAT 206 [Min Grade: C-]

STAT 335 Introduction to Experimental Design 4.0 Credits

The purpose of this course is to introduce the student to the fundamentals of experimental design, including the planning, conducting, and analysis of statistically designed experiments. Randomized, factorial, fractional and Plackett-Burman designs are covered with an emphasis on business applications.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 202 [Min Grade: C-] or STAT 206 [Min Grade: C-] or MATH 313 [Min Grade: C-]

STAT I199 Independent Study in Business Statistics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT I299 Independent Study in Business Statistics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT I399 Independent Study in Business Statistics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT I499 Independent Study in Business Statistics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT T180 Special Topics in STAT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT T280 Special Topics in STAT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT T380 Special Topics in STAT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STAT T480 Special Topics in STAT 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Chemical Engineering

Courses

CHE 211 Material and Energy Balances I 4.0 Credits

Covers elementary principles of chemical engineering, use of stoichiometry and material and energy balances to analyze chemical processing operations, and application to specific commercial processes.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] and MATH 122 [Min Grade: D]

CHE 212 Material and Energy Balances II 4.0 Credits

Covers application of material and energy balances to analyze chemical processing operations, with application to both small-scale and commercial processes. Emphasis is on simultaneous solution of material and energy balances and on time-dependent analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 211 [Min Grade: D] and CHE 220 [Min Grade: D]

Corequisite: CHE 230

CHE 220 Computational Methods in Chemical Engineering I 3.0 Credits

Introduces computational approaches and software applied to solve problems in chemical engineering. Software includes spreadsheet programs (Excel), high level computing languages (MATLAB), and chemical process simulation tools (Aspen, HYSYS).

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D]

Corequisite: CHE 211

CHE 230 Chemical Engineering Thermodynamics I 4.0 Credits

First and second laws of thermodynamics, use of state functions to solve macroscopic problems, distinction between solving ideal gas and real fluid problems. An introduction to phase equilibrium and mixtures. Concepts of fugacity and activity as measures of nonideality.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D] and CHE 211 [Min Grade: D] and CHE 220 [Min Grade: D]

Corequisite: CHE 212

CHE 320 Computational Methods in Chemical Engineering II 3.0 Credits

This course introduces computational approaches and software applied to solve problems in chemical engineering. The course includes finite element software for solving differential equations (COMSOL Multiphysics) and computer programming.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 341 [Min Grade: D] and CHE 220 [Min Grade: D]

CHE 330 Chemical Engineering Thermodynamics II 4.0 Credits

Covers mixture thermodynamics, multi-component, multi-phase equilibrium calculations, and chemical equilibrium calculations for real fluids.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 230 [Min Grade: D]

CHE 331 Separation Processes 3.0 Credits

Covers application of thermodynamics and equilibrium stage concepts to separation unit operations in chemical processing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 330 [Min Grade: D] and CHE 343 [Min Grade: D]

CHE 341 Fluid Mechanics 4.0 Credits

Introduces, within the context of processes, transport phenomena, fluid flow, momentum transport, skin friction, drag, and piping networks.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 212 [Min Grade: D] and CHE 230 [Min Grade: D] and MATH 210 [Min Grade: D]

CHE 342 Heat Transfer 4.0 Credits

Covers, as a continuation of transport phenomena and within the context of processes, transfer of energy by conduction, convection, and radiation and design of heat exchangers.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 341 [Min Grade: D]

Corequisite: CHE 343

CHE 343 Mass Transfer 4.0 Credits

Covers, within the context of processes previously introduced, mass transfer in mixtures; diffusion, convection, and continuation of transport phenomena; component separation in continuous contactors; gas absorption; liquid-liquid extraction; and simultaneous heat and mass transfer.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 341 [Min Grade: D]

Corequisite: CHE 342

CHE 344 Transport Phenomena in Bioengineering Processes 3.0 Credits

Covers gas-liquid mass transfer in microbial systems, mass transfer in cells and biofilms, membrane transport, fluid mechanics of fermentation broth, power consumption in agitated vessels, heat transfer, and scale-up of mass transfer equipment.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (CHE 343 [Min Grade: D] or CHE 304 [Min Grade: D]) and (CHE 341 [Min Grade: D] or CHE 302 [Min Grade: D])

CHE 350 Statistics and Design of Experiments 3.0 Credits

Provides statistical treatment of engineering data including application of statistical techniques to process model formulation, statistical designs of engineering experiments, and analysis of probabilistic systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D]

CHE 351 [WI] Chemical Engineering Laboratory I 2.5 Credits

Offers laboratory experience in chemical engineering processes, requiring both experimental design and analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 341 [Min Grade: D] and CHE 330 [Min Grade: D]

CHE 352 [WI] Chemical Engineering Laboratory II 2.5 Credits

Offers laboratory experience in chemical engineering processes, requiring both experimental design and analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 343 [Min Grade: D] and CHE 331 [Min Grade: D]

CHE 360 BioProcess Principles 3.0 Credits

This course is concerned with manufacturing processes involving biological substances. Students gain detailed knowledge in the design and operation of bioreactors and learn about biomolecules produced therein. Specific topics covered include: Cells (type, organization, function and growth); Protein and Enzymes; Bioreactor Process Principles (active vs. passive immobilization, fermentation and scale-up, recovery and purification); Special consideration for animal and plant cell cultures.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 211 [Min Grade: D] or CHE 201 [Min Grade: D]

CHE 362 Chemical Kinetics and Reactor Design 4.0 Credits

Covers isothermal and non-isothermal reactor design, series and parallel reactions, and heterogeneous catalysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 330 [Min Grade: D] and CHE 342 [Min Grade: D] and CHE 343 [Min Grade: D]

CHE 364 Bioprocess Unit Operations 3.0 Credits

Covers separation processes applicable to bio-systems, including liquid-liquid extractions, membrane separations, chromatographic separations, filtration, and centrifugation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 305 [Min Grade: D] or CHE 331 [Min Grade: D]

CHE 371 Engineering Economics and Professional Practice 3.0 Credits

Provides techniques for making engineering project decisions. Topics include the time value of money, key decision criteria, risk analysis, and ethical considerations and consequences of business decisions.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 211 [Min Grade: D] and CHE 220 [Min Grade: D]

CHE 372 Integrated Case Studies in Chemical Engineering 3.0 Credits

This course reviews selected cases (market, processes, equipment sets and incidents) from chemical engineering practice whose analysis requires integration of concepts from previous Chemical Engineering courses such as mass and energy transport, thermodynamics, separations and reaction engineering.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 342 [Min Grade: D] and CHE 343 [Min Grade: D]

CHE 373 The Brewing Process 3.0 Credits

This course will focus on the critical process steps which make up the brewing process on any scale with special attention to the chemistry and biochemistry of the involved process steps. The lecture material includes the brewing process steps from raw materials to fill/finish including: raw materials, malting, mashing, lautering, boiling, hopping, fermentation, clarification (filtration/centrifugation/flocculation), and fill/finish, as well as a discussion of the fundamentals, impurities chemistry, health concerns and practical knowledge.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D]

CHE 381 Solutions to Climate Change 3.0 Credits

Climate change will likely be the most important challenge of our time. Drawdown is the theoretical point in the future when greenhouse gas concentrations in the atmosphere peak and then begin to decline, reversing the trend of global warming. Can we get there? How? We will examine the potential impacts of dozens of top solutions to understand where our actions have the most leverage. Solutions range from technical (green energy, buildings, and transportation) to non-technical (food choices and education). The best solutions not only mitigate global warming but also lead to economic benefits and a more just and equitable society.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CHE 420 Process Systems Engineering 3.0 Credits

Covers the application of automatic control theory to chemical processes within the context of processes previously introduced.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (CHE 201 [Min Grade: D] or CHE 211 [Min Grade: D]) and (CHE 202 [Min Grade: D] or CHE 212 [Min Grade: D]) and CHE 303 [Min Grade: D]

CHE 430 Introduction to Sustainable Engineering 3.0 Credits

This course introduces students to sustainability in an engineering context. Sustainable engineering encompasses the relationships between technology, society, the environment, and economic prosperity. A variety of systematic approaches will be used for multivariable design and analysis of the sustainability of engineering systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

CHE 431 Fundamentals of Solar Cells 3.0 Credits

This course focuses on the fundamentals of solar cells. It will cover semiconductor materials, basic semiconductor physics, optical and electronic phenomena, and case studies of crystalline silicon, thin film, and nanostructured photovoltaics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D] and CHEM 102 [Min Grade: D] and PHYS 102 [Min Grade: D]

CHE 432 Electrochemical Engineering 3.0 Credits

This course introduces principles and application of electrochemical equilibria, kinetics, and transport processes.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 330 [Min Grade: D] and CHE 343 [Min Grade: D]

CHE 433 Introduction to Rheology 3.0 Credits

Introduces the concepts of how science defines and conceptualizes the behavior of "real" fluids. Covers concepts such as how to characterize, quantify, and simulate non-Newtonian behavior in real fluids.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 341 [Min Grade: D] or CHE 302 [Min Grade: D]

CHE 452 Polymer Process Technology 3.0 Credits

Covers chemistry of chain and stepwise polymerization, industrial reactor systems, polymer melt rheology, processing of thermoplastic resins, and plastics properties.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

CHE 453 [WI] Chemical Engineering Laboratory III 2.5 Credits

Offers laboratory experience in chemical engineering processes, requiring both experimental design and analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 362 [Min Grade: D] (Can be taken Concurrently)

CHE 460 Biochemical Engineering 3.0 Credits

Introduces underlying biological and engineering principles in an integrated fashion for biopharmaceutical production systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is BME or major is CHE and classification is Junior or Senior.

CHE 461 Principles of Colloid Science 3.0 Credits

This course focuses on fundamental principles of colloid science from a biological perspective. It will cover surface active agents, thermodynamics of self-assembly of surfactants, surface chemistry and physics of monolayers and bilayers, microstructures and phase behavior, specific biological colloids (micelles, liposomes, and lipoproteins), and colloidal stability.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: BIO 141 [Min Grade: C] or BIO 122 [Min Grade: C]

CHE 464 Process Dynamics and Control 3.0 Credits

Covers the application of automatic control theory to chemical processes within the context of processes.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 210 [Min Grade: D] and CHE 212 [Min Grade: D]

CHE 466 Chemical Process Safety 3.0 Credits

Covers selected topics such as safeguarding systems, fault trees, risk analysis, explosions, fires, and process safety.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 472 [Min Grade: D]

CHE 471 Process Design I 4.0 Credits

Within the context of previously introduced processes, covers economic feasibility of projects and optimization of equipment and production in the design of process plants.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 331 [Min Grade: D], CHE 362 [Min Grade: D] (Can be taken Concurrently) and CHE 371 [Min Grade: D] and CHE 372 [Min Grade: D]

CHE 472 [WI] Process Design II 3.0 Credits

Within the context of previously introduced processes, covers execution of feasibility study and preliminary design of process plants.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 471 [Min Grade: D]

CHE 473 [WI] Process Design III 3.0 Credits

Within the context of previously introduced processes, covers completion of feasibility study and preliminary design of process plants.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE 472 [Min Grade: D]

CHE 498 Senior Thesis Research 3.0 Credits

This course teaches students the ability to structure and write a thesis and defend their research.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHE I499 [Min Grade: D]

CHE I199 Independent Study in Chemical Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE I299 Independent Study in Chemical Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE I399 Independent Study in Chemical Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE I499 Independent Study in Chemical Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE T180 Special Topics in CHE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE T280 Special Topics in CHE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE T380 Special Topics in CHE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CHE T480 Special Topics in CHE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Chemical Engineering Chemistry

Courses

CHEC 352 Physical Chemistry and Applications II 4.0 Credits

Equilibrium electrochemistry and transport; Covers electrochemical cells, Nernst equation, fuel cells, batteries, electrolytic solutions, transfer processes, Fick's laws, diffusion, ion transport, introduction to simple quantum mechanical systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] and (CHE 206 [Min Grade: D] or ENGR 210 [Min Grade: D] or CHEM 253 [Min Grade: D])

CHEC 353 Physical Chemistry and Applications III 4.0 Credits

Kinetics and spectroscopy; Covers reaction kinetics, steady state approximation, chain reactions and unimolecular reactions, optical spectroscopy; Beer's Law, atomic spectra/simple atomic models, rotational and vibrational spectra, Raman spectra, term symbols and selection rules, lasers, molecular statistics, partition functions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 102 [Min Grade: D] and (CHE 230 [Min Grade: D] or ENGR 210 [Min Grade: D])

CHEC I199 Independent Study in CHEC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEC I299 Independent Study in CHEC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEC I399 Independent Study in CHEC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEC I499 Independent Study in CHEC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

**CHEC T180 Special Topics in Chemical Engineering Chemistry
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

**CHEC T280 Special Topics in Chemical Engineering Chemistry
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

**CHEC T380 Special Topics in Chemical Engineering Chemistry
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

**CHEC T480 Special Topics in Chemical Engineering Chemistry
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Chemistry

Courses

CHEM 100 Chemistry 2.0 Credits

Chemistry and its significance to industry and life, with discussions revolving around synthesis and use of polymers and biologically significant molecules.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CHEM 101 General Chemistry I 3.5 Credits

Covers fundamental principles of chemistry, stoichiometry, atomic and molecular structure, chemical bonding, states of matter, thermochemistry, and periodicity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APCH 12 or CHEM 111 [Min Grade: D] or APCH50 P

Corequisite: EXAM 080

CHEM 102 General Chemistry II 4.5 Credits

Covers chemical equilibrium, including acid-base equilibria in solution; electrochemistry; organic chemistry; polymers; and petroleum.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 101 [Min Grade: D] or CHEM 121 [Min Grade: D] or CHEM 161 [Min Grade: D]

Corequisite: EXAM 080

CHEM 103 General Chemistry III 4.5 Credits

Covers organic functional groups, biochemistry, inorganic and coordination compounds, chemical kinetics, thermodynamics, and nuclear chemistry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or CHEM 108 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

Corequisite: EXAM 080

CHEM 108 Health Chemistry I 3.0 Credits

Covers physical and chemical properties of substances used in medical areas and related principles: atomic structure, bonding, gases, solutions, acids and bases, oxidation-reduction and the chemistry of hydrocarbon compounds and polymers. Examples are taken from pharmacology, nutrition and other allied health fields.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

CHEM 110 Environmental Chemistry 2.0 Credits

Chemistry of the environment; the ecological aspects. Discussion of problems related to the pollution of the atmosphere, natural waters, and soil from a chemist's point of view.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CHEM 111 General Chemistry I 4.0 Credits

Not open to engineering or science majors. Introduces the principles of general chemistry. Covers SI units, unit factor calculations, states of matter, elements and compounds, energy, atoms, electronic configurations, ionic and covalent bonds, Lewis dot structures, shapes of molecules, chemical equations, stoichiometry, molarity, gas laws, nuclear chemistry, equilibrium between different states of matter, and some colligative properties of solutions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

CHEM 112 General Chemistry II 4.0 Credits

Introduces organic chemistry. Covers some classes of organic compounds from alkanes to amines, basic reactions of important functional groups, uses of some compounds, stereochemistry, synthetic and natural polymers (carbohydrates, protein, DNA), and briefly acids and bases.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 111 [Min Grade: D]

CHEM 113 General Chemistry I Laboratory 1.5 Credit

Covers chemical and physical properties and techniques for inorganic, organic, and polymeric compounds, including distillation, crystallization, chromatography, separation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 111 [Min Grade: D] (Can be taken Concurrently)

CHEM 114 General Chemistry II Laboratory 1.5 Credit

Continuation of CHEM 113.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 112 [Min Grade: D] (Can be taken Concurrently)

CHEM 121 Majors Chemistry I 5.0 Credits

Part I in an introductory sequence for chemistry majors. Covers fundamental principles of atomic and molecular nature of matter, electronic structure, physic-chemical properties, periodicity, chemical reactions, stoichiometry, thermochemistry, chemical bonding, properties of gases, and nuclear chemistry. Course includes weekly lab experiments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CHEM.

Prerequisites: APCH 12 or CHEM 111 [Min Grade: D] or APCH50 P

CHEM 122 Majors Chemistry II 5.0 Credits

Part II in an introductory sequence for chemistry majors. Covers physical properties of liquids and solids, kinetics, equilibrium, solutions, acids and bases, thermodynamics, and electrochemistry. Course includes weekly lab experiments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CHEM.

Prerequisites: CHEM 101 [Min Grade: C-] or CHEM 121 [Min Grade: C-]

CHEM 123 Majors Chemistry III 5.5 Credits

Part III in an introductory sequence for chemistry majors. Course covers physical and chemical properties of substances used in consumer products through an introduction to fundamental structures, nomenclature and properties of hydrocarbons, organize functional groups, polymers and biomolecules. Course includes weekly lab experiments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CHEM.

Prerequisites: CHEM 102 [Min Grade: C-] or CHEM 122 [Min Grade: C-]

CHEM 151 Applied Chemistry 3.0 Credits

For business majors. Covers physical and chemical properties of substances used in consumer products. Provides qualitative introduction to required principles, including atomic structure and the elements, bonding and compounds, and the chemistry of carbon compounds and polymers. Uses examples from the areas of food and nutrition, pharmacology, and the petrochemical industry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

CHEM 161 General Chemistry I 3.0 Credits

Covers atomic structure, stoichiometry, gases, valence theory, and thermochemistry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 003 [Min Grade: D] or (MATH 001 [Min Grade: D] and MATH 002 [Min Grade: D])

CHEM 162 General Chemistry II 3.0 Credits

Covers solutions, colligative properties, chemical equilibrium, and electrochemistry. Introduces organic chemistry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 161 [Min Grade: D] or CHEM 101 [Min Grade: D]

CHEM 163 General Chemistry III 3.0 Credits

Continues organic chemistry. Introduces thermodynamics, molecular biology, inorganic chemistry, chemical kinetics, and nuclear chemistry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 164 [Min Grade: D] and CHEM 162 [Min Grade: D]

CHEM 164 General Chemistry Laboratory I 2.0 Credits

Involves experiments demonstrating the principles of gas behavior, thermochemistry, colligative properties, chemical equilibrium, and electrochemistry. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 162 [Min Grade: D] (Can be taken Concurrently)

CHEM 165 General Chemistry Laboratory II 2.5 Credits

Involves experiments illustrating the principles of organic separations, transition metal chemistry, complex ions, chemical kinetics, and qualitative analysis. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 163 [Min Grade: D] (Can be taken Concurrently)

CHEM 201 Why Things Work: Everyday Chemistry 3.0 Credits

Course will cover chemical explanations of everyday materials and phenomena. The focus will be conceptual understanding, as opposed to a detailed quantitative treatment.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CHEM 230 Quantitative Analysis 4.0 Credits

Covers chemical analysis and data treatment, including chemical equilibrium, acid-base and redox reactions, and applications to gravimetric and titrimetric methods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 231 [WI] Quantitative Analysis Laboratory 2.0 Credits

Provides laboratory studies in quantitative analysis. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 230 [Min Grade: D] (Can be taken Concurrently)

CHEM 241 Organic Chemistry I 4.0 Credits

Covers structure, reactions, and stereochemistry of organic compounds, especially alkanes, cycloalkanes, haloalkanes, and alkenes. Also covers SN1, SN2, E1, and E2 compound.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 242 Organic Chemistry II 4.0 Credits

Covers structure, reactivity, and stereochemistry of organic compounds, especially alkanes, alkynes, alcohols, ethers, dienes, and aromatic compounds. IR, MS, and NMR spectral techniques are introduced and applied to the identification of organic compounds.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 241 [Min Grade: D]

CHEM 243 Organic Chemistry III 3.0 Credits

Covers structure, preparation, reactivity, and stereochemistry of organic compounds, especially substituted aromatics, aldehydes, ketones, carboxylic acids, carboxylic acid halides, anhydrides, amides, polypeptides, esters, amines, phenols, and carbohydrates.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D]

CHEM 244 Organic Chemistry Laboratory I 3.0 Credits

Introduces simple recrystallization, distillation, extraction, and chromatography techniques and applies them to several organic reactions illustrative of topics covered in CHEM 241 and CHEM 242. Provides opportunity to take and interpret IR and GC spectra.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D] (Can be taken Concurrently) and CHEM 241 [Min Grade: D]

CHEM 245 Organic Chemistry Laboratory II 3.0 Credits

Provides experiments illustrating a number of organic reactions covered in CHEM 242 as well as more advanced organic techniques. Provides opportunity to take and interpret IR and GC scans. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D] (Can be taken Concurrently) and CHEM 244 [Min Grade: D]

CHEM 246 Organic Chemistry for Majors I 6.5 Credits

This course offers a basic foundation for modern organic chemistry.

Lecture topics include: the chemistry of alkanes, cycloalkanes, alkyl halides, alkenes, cycloalkenes, and alkynes, free radical substitution, nucleophilic substitution, elimination, ionic addition, and free radical addition reactions. Lab topics include recrystallization, distillation, chromatography, liquid-liquid extraction, and simple chemical reactions, including an elimination reaction to prepare an alkene and several substitution reactions to prepare alkyl halides. Introduction to the use of IR and ¹H NMR as structure identification tools.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CHEM.

Prerequisites: CHEM 103 [Min Grade: D] or CHEM 123 [Min Grade: D]

CHEM 248 Organic Chemistry for Majors II 6.5 Credits

This course continues developing the basic foundation of modern organic chemistry started in CHEM 246. Lecture topics include the chemistry of alcohols, ethers, conjugated systems, aromatic compounds and thiols.

The principles of IR, MS, ¹H and ¹³C NMR will be taught in lecture and put to use in identifying products in the lab. Other lab topics include the preparation of alcohols, a Grignard synthesis, an alkene addition reaction, an aromatic nitration, a Friedel-Crafts reaction, the preparation of ferrocene, and how to safely handle water-sensitive chemicals.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CHEM.

Prerequisites: CHEM 246 [Min Grade: D] or (CHEM 241 [Min Grade: D] and CHEM 244 [Min Grade: D])

CHEM 249 Organic Chemistry for Majors III 7.0 Credits

This course completes development of the basic foundation of modern organic chemistry started in CHEM 246. Lecture topics include the chemistry of aldehydes, ketones, amines, carboxylic acids & their derivatives, carbohydrates, organometallic compounds, and multi-step organic synthesis. Asymmetric synthesis and C-C bond forming reactions will also be covered. Lab topics include the multi-step syntheses of benzocaine and DEET, stereochemical inversion, diazonium coupling, Aldol condensation, sequential Diels-Alder and lactonization reactions, and the principles of functional group protection.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CHEM.

Prerequisites: CHEM 248 [Min Grade: D] or (CHEM 242 [Min Grade: D] and CHEM 245 [Min Grade: D])

CHEM 251 Physical Chemistry I 3.0 Credits

Introduces physical chemistry. Topics include quantum chemistry, operators, the uncertainty principle, deBroglie wavelength, particle in a box, hydrogen-like atoms, aufbau principle, commutators, normalization, LCAO-MO, variation principle, diatomic molecules, Hecke approximation, harmonic oscillator, conjugated systems, electronic and vibrational spectroscopy, and selection rules.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (CHEM 102 [Min Grade: D] and MATH 200 [Min Grade: D]) or TDEC 121 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 253 Thermodynamics and Kinetics 4.0 Credits

Covers gas properties, gas laws, state functions, first, second, and third laws of thermodynamics, phase transformations, phase diagrams, chemical equilibrium, spontaneous reactions, Gibbs free energy, molecular motion, diffusion, rates of chemical reactions, rate laws, molecular reaction dynamics, transition states, electron transfer.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D]) and MATH 200 [Min Grade: D]

CHEM 256 Physical Chemistry for Biological Sciences 4.5 Credits

Covers elementary chemical thermodynamics and homogeneous reaction kinetics as bases for experiment and phenomenology in biology and biochemistry, including properties of molecules in solution.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] or (CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D])

CHEM 270 Software Skills for Chemists 3.0 Credits

Course covers mathematical, computational, and professional skills useful to chemists. Representation of chemical problems in mathematical language; use of software to: solve mathematical problems that arise in chemistry; process, analyze and present data; visualize and analyze molecular structures. Also covers the American Chemical Society guidelines for professionalism in chemistry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D] and (PHYS 201 [Min Grade: D] or PHYS 211 [Min Grade: D])

CHEM 346 Qualitative Organic Chemistry 5.5 Credits

Covers identification of pure organic compounds, physical constants, solubilities by semi-micro techniques, infrared and nuclear magnetic resonance spectroscopy, and separation and identification of mixtures.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 249 [Min Grade: D] or (CHEM 243 [Min Grade: D] and CHEM 245 [Min Grade: D])

CHEM 355 Physical Chemistry IV 3.0 Credits

Computational methods of modeling molecules; Covers potential energy functions and surfaces, molecular conformations, failures of classical physics, the quantum hypothesis, the classical wave equation and the origins of the Schrodinger equation, particle-in-a-box, linear variation functions, molecular orbitals from linear combinations of atomic orbitals, Pauli principle, molecular calculations and their interpretation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (CHEM 253 [Min Grade: D] or CHEC 352 [Min Grade: D]) and (CHEM 270 [Min Grade: D] or PHYS 160 [Min Grade: D]) and (MATH 201 [Min Grade: D] or MATH 210 [Min Grade: D])

CHEM 356 Physical Chemistry Laboratory 2.0 Credits

Provides experiments in physical chemistry for engineering students. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 241 [Min Grade: D] (Can be taken Concurrently)

CHEM 357 [WI] Physical Chemistry Laboratory I 2.5 Credits

This laboratory course reinforces thermodynamics and kinetics topics. Experiments focus on the characterization of liquids, solute-solvent systems (e.g., polymers in solution), phase transitions, diffusion processes and binary mixtures of liquids.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 253 [Min Grade: D] and (PHYS 211 [Min Grade: D] or PHYS 201 [Min Grade: D]) or CHEC 352 [Min Grade: D]

CHEM 358 Physical Chemistry Laboratory II 2.5 Credits

This laboratory course focuses on optical spectroscopy, kinetics and adsorption processes. The spectroscopy part of the course involves absorption and fluorescence measurements. Experiments also have thermodynamic components. Students are encouraged to complete CHEM 355 and CHEM 359 before enrolling in this course.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 357 [Min Grade: D] and (CHEM 253 [Min Grade: D] or CHEC 352 [Min Grade: D])

CHEM 359 Atomic and Molecular Spectroscopy 3.0 Credits

Emission and absorption of light, laser principles, optical spectrometers, atomic spectroscopy. LS-coupling, Zeeman effect, magnetic resonance spectroscopy, EPR, NMR, ENDOR, molecular spectroscopy of diatomic and polyatomic molecules, rotational, vibrational and electronic, fluorescence spectroscopy, two-photon spectroscopy, time resolved spectroscopy, photo-electron spectroscopy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 355 [Min Grade: D]

CHEM 361 Advanced Organic Chemistry Laboratory 2.5 Credits

Emphasizes experimental design, data collection, and interpretation in such areas as reaction mechanism and molecular structure determination. Not offered every year.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 249 [Min Grade: D] or (CHEM 243 [Min Grade: D] and CHEM 245 [Min Grade: D])

CHEM 364 Spectroscopic Analysis 3.0 Credits

Covers interpretation of spectra for the determination of structure of organic molecules. Stresses use of infrared, nuclear magnetic resonance, and mass spectrometry. Fall. Not offered every year.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 249 [Min Grade: D] or CHEM 243 [Min Grade: D]

CHEM 367 Chemical Information Retrieval 3.0 Credits

This course examines methods for retrieving literature information, via standard tabulations, journals, and abstracts, using both hard-copy and electronic sources. Includes techniques for online searching of databases such as Chemical Abstracts, Beilstein, and crystallographic depositories.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CHEM 371 Chemistry of Biomolecules 3.0 Credits

This course is a chemistry-based approach to understanding the basic structure, chemical reactivity, and biological function of biomolecules – including amino acids, peptides, proteins, carbohydrates, nucleic acids, and lipids. A special emphasis will be given to topics in the frontiers of biomolecular research at the interface between chemistry and biology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 243 [Min Grade: D] or CHEM 249 [Min Grade: D]

CHEM 375 The Chemistry Behind Drugs: Fundamentals of Medicinal Chemistry 3.0 Credits

Covers basic concepts of general and organic chemistry that constitute the foundation of medicinal chemistry. Focuses on applications and problem-solving through active-learning. Offers a comprehensive overview of potential roles for science majors on a medicinal chemistry team. Students will make interdisciplinary connections, while applying nomenclature, stereochemistry and physicochemical properties of functional groups (e.g., water/lipid solubility, electronic effects, acidity/basicity, ionization and salt formation at physiological pH) to predict drug-target and drug-drug interactions, as well as drug metabolic pathways. Using structure-activity relationships and retrosynthetic analysis, students will then design ligands and prodrugs with virtually improved pharmacological action and bioavailability.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 243 [Min Grade: D], CHEM 249 [Min Grade: D] (Can be taken Concurrently) or CHEM 245 [Min Grade: D]

CHEM 420 Molecular Symmetry and Group Theory Applied Chemistry 3.0 Credits

Applies the principles of simple group theory to molecular structure and to electronic and motional properties of molecules, including crystal field and molecular orbital methods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 421 [Min Grade: D]

CHEM 421 Inorganic Chemistry I 3.0 Credits

Covers crystal, atomic, and molecular structure; modern chemical bonding; and magnetic properties of inorganic systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 253 [Min Grade: D] (Can be taken Concurrently) or ENGR 210 [Min Grade: D]

CHEM 422 Inorganic Chemistry II 3.0 Credits

Covers organometallic and coordination compounds, substitution mechanisms, and bio-inorganic chemistry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 420 [Min Grade: D]

CHEM 424 Special Chemistry Problems 0.5-12.0 Credits

Allows theoretical and laboratory investigations of a particular problem of interest to the individual student. A written report may be required.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

CHEM 425 Inorganic Chemistry Laboratory 4.0 Credits

Covers synthesis of properties of inorganic compounds, magnetic measurements, spectroscopic properties, and interpretations of complex ion structure. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 422 [Min Grade: D] (Can be taken Concurrently)

CHEM 430 Analytical Chemistry I 3.0 Credits

Provides an introduction to statistics (particularly the development and use of analytic calibration curves), basic electronics, and the principles of spectroscopic methods of analysis, including the interaction of light with matter and basic instrument design.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 253 [Min Grade: D] (Can be taken Concurrently) and CHEM 230 [Min Grade: D] and (CHEM 248 [Min Grade: D] or CHEM 242 [Min Grade: D]) or CHEM 352 [Min Grade: D])

CHEM 431 [WI] Analytical Chemistry II 4.0 Credits

Continues CHEM 430. Covers principles of chromatographic methods of analysis. Lab includes experiments on atomic absorption, fluorescence, infrared absorption, UV/visible absorption, gas chromatography, high performance liquid chromatography, basic electronics, and potentiometry/coulometry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 430 [Min Grade: D] or ENGR 210 [Min Grade: D]

CHEM 465 Synthetic Polymer Chemistry 3.0 Credits

Explores scope of polymer science; structure-property relations; step, free radical, cationic, group-transfer, metathesis, coordination, and ring-opening polymerizations; and stereochemistry of polymerizations and reactions of polymers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 242 [Min Grade: D] or CHEM 248 [Min Grade: D]

CHEM 466 Physical Chemistry of Polymers 3.0 Credits

Covers kinetics and thermodynamics of polymerizations; control of polymerization processes; gelation theory; copolymerization; and determination of polymer molecular weight and distribution by membrane osmometry, light-scattering, solution viscosity, and other techniques.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (CHEM 242 [Min Grade: D] or CHEM 248 [Min Grade: D]) and CHEM 253 [Min Grade: D]

CHEM 467 Polymer Chemistry III 3.0 Credits

Covers spectroscopy of polymers; rubber elasticity; morphology; viscoelasticity; thermal analysis; computational methods; testing, fabrication, and processing; and magnetic and mechanical properties of polymers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 253 [Min Grade: D] or CHEM 352 [Min Grade: D] or ENGR 210 [Min Grade: D]

CHEM 493 Senior Research Project 0.5-12.0 Credits

Provides individualized research with a faculty member in any number of chemical disciplines. Requires written report. May be repeated three times for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

Restrictions: Can enroll if major is CHEM and classification is Junior or Senior.

CHEM 497 Research 0.5-12.0 Credits

Covers research problems in several areas of chemistry. Requires written report.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is CHEM.

CHEM I499 Independent Study in CHEM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEM I299 Independent Study in CHEM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEM I399 Independent Study in CHEM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEM I499 Independent Study in CHEM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHEM T180 Special Topics in Chemistry 0.0-5.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 15 credits

CHEM T280 Special Topics in Chemistry 0.0-5.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 20 credits

CHEM T380 Special Topics in Chemistry 0.0-5.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 15 credits

CHEM T480 Special Topics in Chemistry 0.0-5.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 15 credits

Chinese

Courses

CHIN 101 Chinese I 4.0 Credits

Introductory Mandarin Chinese. Includes listening, speaking, and reading, with individual audiolingual practice.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APCX N or APWCH 0

CHIN 102 Chinese II 4.0 Credits

Continues CHIN 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHIN 101 [Min Grade: D] or APWCH 151

CHIN 103 Chinese III 4.0 Credits

Continues CHIN 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHIN 102 [Min Grade: D] or APWCH 251

CHIN 201 Chinese IV 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on CHIN 103.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHIN 103 [Min Grade: D] or APWCH 400

CHIN 202 Chinese V 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on CHIN 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHIN 201 [Min Grade: D] or APWCH 600

CHIN 310 Advanced Writing and Speaking 4.0 Credits

Provides advanced practice in written and oral communication, including journalistic, professional, and creative writing. Examines contemporary cultural contexts through media and news. Taught in Chinese.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHIN 202 [Min Grade: C]

CHIN 320 Introduction to Language for the Professions 3.0 Credits

Introduction to communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in Chinese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: CHIN 310 [Min Grade: C]

CHIN 340 Introduction to Power and Resistance 3.0 Credits

Introduction to the analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. Taught in Chinese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: CHIN 310 [Min Grade: C]

CHIN 350 Introduction to Language, Media, and Society 3.0 Credits

Introduction to the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Chinese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: CHIN 310 [Min Grade: C]

CHIN 420 Advanced Topics in Language for the Professions 3.0 Credits

Advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in Chinese. Topics will vary according to the instructor's expertise.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: CHIN 310 [Min Grade: C]

CHIN 440 Advanced Topics in Power and Resistance 3.0 Credits

Advanced analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. Taught in Chinese. Topics will vary according to the instructor's expertise.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: CHIN 310 [Min Grade: C]

CHIN 450 Advanced Topics in Language, Media, and Society 3.0 Credits

Advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Chinese. Topics will vary according to the instructor's expertise.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: CHIN 310 [Min Grade: C]

CHIN I199 Independent Study in CHIN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN I299 Independent Study in CHIN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN I399 Independent Study in CHIN 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN I499 Independent Study in CHIN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN T180 Special Topics in Chinese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN T280 Special Topics in Chinese 0.0-12.0 Credits

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN T380 Special Topics in Chinese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CHIN T480 Special Topics in Chinese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Civic Engagement

Courses

CIVC 100 Foundations of Civic Engagement 3.0 Credits

This course is designed to help students develop skills as active participants in a pluralistic democratic society through direct service, education, and reflection opportunities. It will cover key concepts and frameworks for understanding civic engagement, including: models of civic life through American history; critiques of philanthropy, volunteerism, community service, public service, and political activism; and university-community relations.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

CIVC 101 Introduction to Civic Engagement 1.0 Credit

In this course, students will explore what it means to be a responsible, socially-conscious citizen of Philadelphia and the world. Students will explore the broad definition of civic engagement and critically examine concepts of identity, community, and systems to better understand social issues and build a foundation for making social change through civic engagement. As a community-engaged learning course, students will combine classroom learning with volunteerism and other interactions with community. Throughout the course, students will participate in reflective activities to tie together their learning and engagement and provide tools to advance their knowledge and practice beyond the course.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

CIVC 200 Active Citizenship and Community-Based Learning 3.0 Credits

By exploring the conceptions of active citizenship and taking part in civic engagement activities, this course will examine issues regarding community-based learning experiences for today's university students.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

Prerequisites: CIVC 100 [Min Grade: D]

CIVC 201 Civic Engagement Leadership 3.0 Credits

This course provides experiential learning in community settings as students observe, define, analyze, and practice leadership skills.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

Prerequisites: CIVC 100 [Min Grade: D]

CIVC 202 University-Community Partnerships 3.0 Credits

This course will examine the university as a social institution and community actor.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

Prerequisites: CIVC 100 [Min Grade: D]

CIVC 490 Capstone Project in Civic Engagement 3.0 Credits

Under faculty supervision, students plan and execute a term project that integrates the academic and community-based knowledge acquired in their curriculum. Students define an issue and set learning objectives relevant to the project, develop a plan for implementation, and complete the term project.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

CIVC I199 Independent Study in Civic Engagement 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated multiple times for credit

CIVC I299 Independent Study in Civic Engagement 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated multiple times for credit

CIVC I399 Independent Study in Civic Engagement 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated multiple times for credit

CIVC I499 Independent Study in Civic Engagement 1.0-3.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Center for Civic Engagement

Repeat Status: Not repeatable for credit

CIVC T180 Special Topics in Civic Engagement 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated multiple times for credit

CIVC T280 Special Topics in Civic Engagement 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated 2 times for 6 credits

CIVC T380 Special Topics in Civic Engagement 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated multiple times for credit

CIVC T480 Special Topics in Civic Engagement 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Center for Civic Engagement

Repeat Status: Can be repeated multiple times for credit

Civil & Arch Engineering

Courses

CAE 491 [WI] Senior Design Project I 3.0 Credits

Introduces the design process, including information retrieval, problem definition, proposal writing, patents, and design notebooks. Includes presentations on problem areas by experts from industry, government, and education.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: (CIVE 330 [Min Grade: D] and CIVE 303 [Min Grade: D]) or (AE 391 [Min Grade: D] and CIVE 303 [Min Grade: D]) or (CIVE 330 [Min Grade: D] and CIVE 312 [Min Grade: D]) or (CIVE 303 [Min Grade: D] and CIVE 312 [Min Grade: D]) or (AE 391 [Min Grade: D] and CIVE 330 [Min Grade: D])

CAE 492 [WI] Senior Design Project II 3.0 Credits

Continues CAE 491. Requires written and oral progress reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CAE 491 [Min Grade: D]

CAE 493 [WI] Senior Design Project III 3.0 Credits

Continues CAE 492. Requires written and oral final reports, including oral presentations by each design team at a formal Design Conference open to the public and conducted in the style of a professional conference.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CAE 492 [Min Grade: D]

Civil Engineering

Courses

CIVE 240 Engineering Economic Analysis 3.0 Credits

Techniques for project decisions: benefit cost and present worth analysis, rate of return, capital budgeting, risk analysis, environmental impact, and depreciation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

CIVE 250 Construction Materials 4.0 Credits

Construction Materials.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 202 [Min Grade: D] and (ENGR 220 [Min Grade: D] or MATE 220 [Min Grade: D])

CIVE 302 Structural Analysis I 4.0 Credits

Covers analysis of statically determinate structures: equilibrium, compatibility, boundary conditions, complimentary and virtual work, energy theorems, reactions, member forces and deflection of trusses, beams and frames, and influence lines. The laboratory portion will make use of structural analysis computer programs to construct analytical models of various structural systems. Calculate reactions and deflections of statically determinate and indeterminate structures and check reliability of results.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 250 [Min Grade: D] and MEM 230 [Min Grade: D]

CIVE 303 Structural Design I 3.0 Credits

This course will provide a general overview of engineering design (20%) and then a specific treatment of the structural design process (80%). The key topics to be covered include the determination of system-level loads/demands, the estimation of element-level demands and demand envelopes, and the sizing of beams and columns constructed of both reinforced concrete and structural steel.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 302 [Min Grade: D]

CIVE 312 Soil Mechanics I 4.0 Credits

Overview of geotechnical engineering; principles and practices. Exploration methods and soil profile preparation. Index properties used in engineering and agricultural classification systems. Description and modification of three phase particulate and void descriptions and modification. Laminar liquids flow as per dArcy's law.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (CAEE 212 [Min Grade: D] or GEO 101 [Min Grade: D]) and CIVE 320 [Min Grade: D]

CIVE 315 Soil Mechanics II 4.0 Credits

This course covers stress-strain and stability behavior of porous particulate soil. Effective stress and laminar flow are combined in one-dimensional consolidation. Stress distribution from applied loads and the resulting deformation are addressed in elastic and plastic equilibrium stages. Failure theory and measurement of strength properties are included, along with basic application to slopes, retaining structures, and both shallow and deep foundations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 230 [Min Grade: D] and CIVE 250 [Min Grade: D] and CIVE 312 [Min Grade: D]

CIVE 320 Introduction to Fluid Flow 3.0 Credits

Covers fundamentals of fluid flow, fluid properties, hydrostatic forces, kinematics of flow, the Bernoulli equation, linear momentum, dimensional analysis, Froude and Reynolds similarity and hydraulic models and an introduction to pipe flows and friction.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 210 [Min Grade: D] or ENGR 210 [Min Grade: D]

CIVE 330 Hydraulics 4.0 Credits

Applications of the principles of fluid mechanics to the design and analysis of hydraulic structures and systems. Principles of confined flow, pipe networks, open channel flow, channel design, hydraulic modeling, and introduction to unsteady flow.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CIVE 320 [Min Grade: D]

CIVE 375 Structural Material Behavior 3.0 Credits

Study of deformation, fracture and fatigue of structural materials used in infrastructure. Includes basic failure modes, yielding and plasticity, and fracture mechanics. Emphasis on analytical and predictive methods that designers use to avoid failure. Metals, ceramic and composites are considered, as is time-dependent behavior.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 230 [Min Grade: D] and CIVE 250 [Min Grade: D] and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or CAEE 231 [Min Grade: D] or ENGR 231 [Min Grade: D])

CIVE 400 Structural Analysis II 3.0 Credits

This course expounds on CIVE 302 (analysis of determinate structures) by introducing problems for which statics alone cannot solve for the unknown reactions and forces. This course covers the analysis of statically indeterminate structures: force methods for trusses, beams and frames, slope-deflection and equilibrium methods, moment distribution, stiffness matrices of truss and beam elements, and stiffness matrix method of analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CIVE 303 [Min Grade: C]

CIVE 401 Structural Design II 3.0 Credits

Covers principles of design of reinforced concrete structural systems, including beams, slabs, columns, and footings.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 400 [Min Grade: D]

CIVE 402 Structural Design III 3.0 Credits

Covers elastic and plastic design of structural steel members, including beams, columns, tension members, beam columns, and plate girders; design of welded and high-strength bolted connections; and design of steel trusses, bridges, and buildings.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 400 [Min Grade: D]

CIVE 411 Advanced Steel Design 3.0 Credits

Covers a variety of special topics in steel design including (i) plate girders, (ii) composite beams, (iii) frame analysis and design (i.e., summation of P concept and direct analysis method), (iv) special connection detailing (e.g., moment connections and gusset plates), (v) beam, column, and frame bracing, (vi) fatigue and fracture.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CIVE 402 [Min Grade: D]

CIVE 416 Geotechnical Site Investigation 3.0 Credits

This course will cover best practices for the geotechnical characterization of subsurface conditions required for successful planning, design, construction, and operation of civil infrastructure. The course provides historical, theoretical, experimental, and empirical development of different in-situ tests in geotechnical engineering. Practical applications and limitations of field-testing devices will be studied. Interpretation of test results and measurements for geotechnical site characterization will be discussed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 312 [Min Grade: D]

CIVE 418 Natural Hazards and Infrastructure 3.0 Credits

Overview of natural hazards in the form of landslides, earthquakes, windstorms, tsunamis, hurricanes, floods, scour, subsidence, tornadoes, wildfires, etc. Covers processes and risk to civil infrastructure through case histories and post-disaster reconnaissance to improve our understanding of these hazards and how to help us mitigate the risk posed by these natural hazards.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CAEE 212 [Min Grade: D]

CIVE 421 Foundation Engineering 3.0 Credits

Engineering properties of soils focused on soil shear strength and compressibility in determining the bearing capacity and settlement of shallow and deep foundations in sands, clays, and layered geotechnical profiles.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 315 [Min Grade: C]

CIVE 422 Lateral Earth Pressures and Retaining Structures 3.0 Credits

In this course, students will learn classical and modern lateral earth pressure theories, effects of wall friction and external loads (including earthquakes). Geotechnical design, including computer applications, of retaining structures including rigid and flexible retaining walls; Deadman anchors, sheet pile walls, mechanically stabilized soil reinforcement systems, and excavation bracing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 315 [Min Grade: C]

CIVE 423 Engineering Ground Improvement 3.0 Credits

This course covers the improvement of soil properties to meet project requirements, including surface and in situ technologies: compaction, densification, precompression, stabilization with admixtures, grouting and dewatering.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 315 [Min Grade: C]

CIVE 430 Hydrology 3.0 Credits

Covers the relationship between precipitation and runoff, unit hydrographs, flood routing, and water supply principles and applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CAEE 212 [Min Grade: D] and CIVE 320 [Min Grade: D]

CIVE 431 Hydrology-Ground Water 3.0 Credits

Covers geologic and hydrologic occurrence of groundwater, underground flow, and groundwater supply. Winter.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 330 [Min Grade: D]

CIVE 450 Transportation Engineering 3.0 Credits

This course will introduce basic knowledge, mathematical models, and solution tools to various highway traffic problems. Topics that will be covered include components in highway systems (driver, vehicle, road, and intersection), probability and statistics for transportation engineers, queuing theory, traffic flow basics, highway capacity and level of service, traffic control, traffic safety, and emerging transportation technologies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CIVE 451 Transportation System Planning 3.0 Credits

This course introduces topics and concepts of transportation planning and methods to analyze the impacts of transportation systems on society. The core of this course is travel demand modeling, which employs mathematical models (Don't be scared by the name; You will learn how simple some of them are after taking this course) to predict the distribution of travel demand across time and space. The course will also cover methods and case studies on transportation system impact analysis, including benefit-cost analysis and equity impact analysis. Emerging topics such as planning for new transportation technologies, the use of artificial intelligence and big data analytics in transportation planning will also be discussed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CIVE 450 [Min Grade: D]

CIVE 454 Traffic Flow Theory 3.0 Credits

This course introduces topics and concepts of traffic flow theory and their applications, including models (single vehicle dynamics, car following models, lane-change models, etc.), data (sensing, data processing, model calibration and validation), and applications (microscopic traffic simulation, connected and automated vehicles).

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CIVE 450 [Min Grade: D]

CIVE 477 [WI] Seminar I 2.0 Credits

Covers professional development and ethics. Requires preparation of a technical paper. It is anticipated that each student will attend a weekly one (1) hour seminar and work a minimum of two (2) hours per week on research in the development of their technical paper.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

CIVE 478 [WI] Seminar II 1.0 Credit

Requires developing and delivering a presentation on a technical paper. Students are expected to attend a minimum of 50% of the scheduled class meetings.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: CIVE 477 [Min Grade: D]

CIVE I199 Independent Study in Civil Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CIVE I299 Independent Study in Civil Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CIVE I399 Independent Study in Civil Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CIVE I499 Independent Study in Civil Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CIVE T180 Special Topics in Civil Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CIVE T280 Special Topics in Civil Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CIVE T380 Special Topics in Civil Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

CIVE T480 Special Topics in Civil Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Civil, Arch & Envr Engr

Courses

CAEE 202 Introduction to Civil, Architectural & Environmental Engineering 3.0 Credits

This course introduces the planning, design, construction, operation, maintenance and documentation of engineering projects that are in unique social, topographic, environmental and geologic settings. The scope and principles of Civil, Architectural and Environmental engineering practice are each presented as well as the relationships between the three disciplines. The concepts are illustrated through laboratory projects, case studies, field trips and field measurement exercises. The course also addresses professional ethics, practice and licensure.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CAEE 203 System Balances and Design in CAEE 3.0 Credits

Based on fundamental science and mathematics preparation, this course for students in Civil, Architectural and Environmental Engineering covers delineation of system boundaries, analysis of mass, energy and force balances that support system integration; life cycle and uncertainty analysis; and formulation of problem solutions using these balances.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

CAEE 212 Geologic Principles for Infrastructure & Environmental Engineering 4.0 Credits

This course focuses on geological principles and their relationships to engineering properties and behavior of soil and rock materials. Topics include formation of minerals, igneous, sedimentary, and metamorphic rocks, plate tectonics, structural geology, rock mechanics, landforms and geological hazards. Labs focus on mineral and rock identification, map skills, and rock mechanics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATE 220 [Min Grade: D] or ENGR 220 [Min Grade: D]

CAEE 231 Linear Engineering Systems 3.0 Credits

Provides an overview of systems and modeling; specifically using linear algebra as the model. Specific emphasis will be placed on developing models of engineering systems and the use of computational tools for solutions to the problems. The focus of the lab will be the use of MATLAB for the solution of contemporary engineering problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

Corequisite: EXAM 081

CAEE 232 Dynamic Engineering Systems 3.0 Credits

Provides an overview of dynamic systems and modeling; specifically using differential equations as the model. Specific emphasis will be placed on developing models of engineering systems and the use of computational tools for solutions to the problems. The focus of the lab will be the use of MATLAB for the solution of contemporary engineering problems. Laplace transforms will be introduced as a means to study systems and solutions to differential equations. Basic control laws will also be introduced.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CAEE 231 [Min Grade: D] or ENGR 231 [Min Grade: D]

Corequisite: EXAM 081

CAEE 301 Community-Based Design 3.0 Credits

This course evaluates the weight of evidence for community-based design practices as related to peacebuilding, conflict management and sustainable development. A case-study-based approach will enable students to study participatory theory, informed design and adaptive management.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CAEE 361 Statistical Analysis of Engineering Systems 3.0 Credits

This class covers probability and statistics with applications to civil, architectural, and environmental engineering. Students will learn probability theory, distributions of random variables, and statistical hypothesis testing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CAEE I199 Independent Study in Civil, Architecture & Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE I299 Independent Study in Civil, Architecture & Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE I399 Independent Study in Civil, Architecture & Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE I499 Independent Study in Civil, Architecture & Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE T180 Special Topics in CAEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE T280 Special Topics in CAEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE T380 Special Topics in CAEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CAEE T480 Special Topics in CAEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Common Exams

Courses

EXAM 080 Common Exam Period - I 0.0 Credits

College/Department: University Courses

Repeat Status: Can be repeated multiple times for credit

EXAM 081 Common Exam Period - II 0.0 Credits

College/Department: University Courses

Repeat Status: Can be repeated multiple times for credit

EXAM 082 Common Exam Period - III 0.0 Credits

College/Department: University Courses

Repeat Status: Can be repeated multiple times for credit

Communication

Courses

COM 101 Human Communication 3.0 Credits

This course explores the elements of basic human communication - what does it mean to communicate? What makes communication good or bad? What is the nature of verbal and non-verbal messages? What does it mean to communicate in a group? How does culture affect communication?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is COMM.

COM 111 Principles of Communication 3.0 Credits

Explores the importance of communication in organizational settings.

Includes assessment of appropriate modes of communication, including written, spoken, and electronic.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 150 Mass Media and Society 3.0 Credits

Provides an overview of the history, economic structure, regulation, and impact of the mass media in the United States.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 160 [WI] Introduction to Journalism 3.0 Credits

This course is designed to acquaint students with various forms of basic news writing and interview techniques. Students will learn how to write leads and short articles under deadline pressure. Although writing is the main emphasis of this class, students also will learn newsroom organization, ethics and press law.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 181 Public Relations Principles and Theory 3.0 Credits

This course presents students with an overview of the PR industry, fundamental practices, and its key players, including journalists, PR practitioners, and different types of publics. It introduces students to both theory and practice of PR through the use of real-life materials and situations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 200 Current Events in Media and Communication 3.0 Credits

Media are not only the channels through which we learn about current events—they are also, often, event makers themselves. This course will explore the collaborative relationships between media and current events, while exploring the topics of contemporary interest from the last 4-6 months.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 4 times for 15 credits

COM 210 Theory and Models of Communication 3.0 Credits

Surveys historical and contemporary attempts to understand the process of human communication, using examples from the literature of interpersonal, group, organizational, and mass communication.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 211 Children and Media 3.0 Credits

This course examines the effects of media on the well-being and development of children and adolescents from a number of perspectives, including: emotional, intellectual, and physical. Through research, discussion and writing, students consider the effects of not only the "legacy" media (television, radio, music and print), but also those of "new" media, including social media.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 215 [WI] Communication Resources for Media Studies 3.0 Credits

The powerful combination of internet and video technologies has led to a kind of revolution in how humans express and share their experiences. This course provides a grounding in how this communication revolution involves new forms of meaning making resources that tap into the combination of text, image, and sound, and their circulation in contemporary life. Each week involves the study of a major approach to theorizing and interpreting media and its messages. By developing a final longer piece of their own, students generate more overt awareness of how persuasion, interpretation, and analysis function in mediated and multimodal messages.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 216 Sourcing Challenges in Journalism 3.0 Credits

The major challenges faced by journalists as they source and write their stories and how those challenges manifest themselves in coverage will be explored. Topics include how misrepresentation deepens marginalization of social groups, "both sides-ism," collaborations with public relations professionals on content, the blurred boundary between news and advertising, and how to handle "alternative facts" and conspiracy theories in a supposedly post-truth society. Through readings, critical thinking exercises, and written assignments, we will examine the media's dominant notion of "objectivity" and the role it plays in perpetuating bias. Students will study how newsroom decisions—what to cover, how to frame a story, and how to correctly source and shape social and political narratives about diverse communities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 160 [Min Grade: D]

COM 220 Qualitative Research Methods 3.0 Credits

This course provides a detailed investigation of the nature, application, analysis and write up of qualitative research in communication and the social sciences, including such topics as ethnography, in-depth interviews, focus groups, participant observation, and narrative analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 221 Quantitative Research Methods in Communication 3.0 Credits

This course introduces students to quantitative methods used in the study of communication. The course will help student develop techniques to understand research problems in communication settings. Students will consider applications, including survey research, content analysis, usability testing, and experimental design, and will discuss procedures for developing, operationalizing, and testing questions within communication environments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 222 Interpersonal Communication 3.0 Credits

This course is designed to acquaint students with a more thorough understanding of the dynamics of interpersonal communication. This will be done through both a review of scholarly writing on the subject, as well as direct observations and analysis. By the end of this course, students should have a much deeper appreciation of the complexities of interpersonal communication, their own capacities as a communicator, as well as increased interpersonal communication skills.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 101 [Min Grade: D] or COM 111 [Min Grade: D]

COM 230 Techniques of Speaking 3.0 Credits

A workshop course in improving public speaking skills. Provides experience in speeches of explanation, persuasion, and argument.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 102 [Min Grade: D] or ENGL 105 [Min Grade: D] or ENGL 112 [Min Grade: D]

COM 240 New Technologies In Communication 3.0 Credits

Provides an overview and survey of the changes taking place in the technologies of information production, distribution, storage, and display, including the interaction of these changes with legal, social, cultural, and communications systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 246 Media and Identity 3.0 Credits

This course focuses on the central role that identity plays in popular culture, exploring how media reflect diverse identities and how, in turn, we use media to construct our own identities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 247 Strategic Social Media Communication 3.0 Credits

Students learn research-based best practices for strategic social media communication by brands and organizations across a range of platforms. Working in teams, students develop social media campaigns with content calendars, potential influencers and evaluation plans utilizing analytic tools. Students earn a professional social media certification credential.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 248 Reputation Management in Public Relations 3.0 Credits

Successful PR management includes contributing to an organization's bottom line through effective reputation management. In this course, students will gain knowledge of the PR strategies and tactics needed to promote, maintain and manage organizational reputation. Focus areas will include organizational reputation development and assessment, Corporate Social Responsibility (CSR) for community building, issues and crisis management, as well as media coaching from a PR standpoint.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 250 Diversity in Media 3.0 Credits

Students are invited to examine how ideas about diversity and diverse peoples in America and other places are created and experienced through media. The class will center around questions such as who creates and controls major images and ideas of diversity, and who consumes those ideas and why? How are social and ethnic groups recognized and how does that recognition change historically through various media? How do micro- and macro- politics of diversity play out in media and how do producers and consumers of media affect mainstream and non-mainstream ideas of diversity?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 251 Language and Cultural Diversity in the USA 3.0 Credits

This course will explore the history and current dynamics of language-based cultural diversity in the USA. Through an examination of communication patterns of men and women, language diversity of African Americans, and the cultural production of various immigrant groups, we will explore the predominance of a rich array of languages and cultures pertaining to most periods of American history. The Yiddish language-based immigrant culture of American Jews will be treated as a case study, dwelling on the rich Yiddish literature created, as well as language-based cultural institutions, such as the press, theater, radio, klezmer music, and film.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 255 Fans, Fandom, and Audiences 3.0 Credits

This course will introduce students to theories and concepts in the study of popular culture related to fans, fandoms, and audiences. Through readings, discussions, videos, etc. this course will examine issues around fans and fandoms, taste and consumption, fan production, and diversity in fandoms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 261 [WI] Advanced Journalism 3.0 Credits

This course is designed for students interested in advancing their knowledge of news reporting and writing. Students will learn how to cover meetings, speeches, public affairs, such as courts, and to write for digital media. In addition, students will learn how to write human-interest stories, called features.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 160 [Min Grade: D]

COM 263 Multiplatform Journalism 3.0 Credits

Merging traditional media with a more contemporary "one-person band" approach to reporting, you will act as reporter, videographer, and storyteller, recognizing that journalism today is practiced largely outside the newsroom. Students will immerse themselves in a community of their choosing to find stories that have not received attention – individuals with fascinating backstories, undiscovered histories, and unexplored issues facing residents. Students will be equipped to perform all the functions involved in the construction of coherent, incisive multimedia journalistic narratives.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 160 [Min Grade: D]

COM 265 Audio Journalism 3.0 Credits

This course will familiarize students with the creation of audio news and editorial content that is used not only in traditional radio broadcasting, but also in web-delivered programming such as podcasts and streamed audio. Students will learn the unique characteristics of audio journalism, practice "writing for the ear" and will record and edit digital audio.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 160 [Min Grade: D] or COM 260 [Min Grade: D]

COM 266 Copy Editing for the Media 3.0 Credits

This course is designed to acquaint students with the necessary skills to prepare written materials for the media. It will cover traditional print media, magazines and online media, such as websites and blogs. The importance of accuracy, consistency, and credibility in handling written copy will be emphasized. Skills to write captivating headlines, captions and other accompaniments to visuals will be a large focus of this class.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 160 [Min Grade: D] or COM 260 [Min Grade: D]

COM 270 [WI] Business Communication 3.0 Credits

Covers the writing of business letters, resumes, memos, proposals, and reports.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 102 [Min Grade: D] or ENGL 112 [Min Grade: D]

COM 282 [WI] Public Relations Writing in the Digital Age 3.0 Credits

In this course, students develop professional-level writing and pitching skills expected of public relations practitioners. The objectives include an understanding of PR writing styles and genres as a persuasive influence and learn how to write internal and external PR materials for both print and digital media.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 181 [Min Grade: D]

COM 284 Public Relations Research, Measurement and Evaluation 3.0 Credits

Scientific research is the first essential element in the process of Public Relations. This course predominantly focuses on quantitative research methods most widely used to evaluate an organization's public relations efforts and scientifically measure public opinion. Students get hands-on experience of designing surveys, analyzing media content, and learning about focus groups.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 181 [Min Grade: D]

COM 286 Public Relations Strategies and Tactics 3.0 Credits

In this course, students develop skills to understand advanced concepts, strategies, and tactics for public relations management. Using current and historical cases, students learn to apply core theoretical ideas and practices to manage public relations efforts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 282 [Min Grade: D]

COM 290 Sports and the Mass Media 3.0 Credits

To explore the interrelationships between professional and college sports and the mass media. Students will look at how news media coverage has changes sports, the conventions found in sports journalism, promotion and marketing of sports teams and leagues, and how sponsorship of sporting events changes the nature of these events.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 102 [Min Grade: D] or ENGL 112 [Min Grade: D]

COM 305 Sports Journalism 3.0 Credits

To gain a deeper appreciation for and understanding of the meaning-making power of sports journalism. We will explore the history of sports journalism, review and critique examples of historically significant sports writing and write game stories and columns based on actual coverage of local and on-campus sporting events.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 260 [Min Grade: D] or COM 160 [Min Grade: D]

COM 310 [WI] Technical Communication 3.0 Credits

Develops skills in communicating with a technical focus. The course emphasizes technical genres such as proposals, reports, and instructions, as well as associated shorter documents, graphics and presentations optimized for print and online environments. Offers extensive application of the writing process, including creating drafts, receiving feedback, applying feedback in revising.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 102 [Min Grade: C] or ENGL 112 [Min Grade: C]

COM 315 [WI] Investigative Journalism 3.0 Credits

Mastery of investigative reporting tactics and strategies enables student to explore and write about issues of great importance to the community.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 260 [Min Grade: D] or COM 261 [Min Grade: D]

COM 316 Campaigns for Health & Environment 3.0 Credits

This seminar-style course explores theories and practical aspects of environmental and health campaigns and community-based social marketing campaigns. This course has a strong applied component.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 317 [WI] Environmental Communication 3.0 Credits

This reading and writing intensive course will explore communication about environmental issues. Topics can include advocacy campaigns, social marketing, environmental journalism, media coverage of environmental issues, green marketing, the environment in popular culture, risk communication, and public participation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

COM 318 Film, Celebrity and the Environmental Movement 3.0 Credits

Using the framework of mass media and behavioral change theories, we will look at the environmental movement through the lens of "eco celebrities" and mainstream environmental films and will discuss how Hollywood shapes our perceptions of the environment and whether this has helped or hurt the environmental movement.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 320 [WI] Science Writing 3.0 Credits

This course examines the conventions of the various genres of scientific writing and how to distinguish them. Students will develop skills by writing a research article summary, a review of research on a topic, and a grant letter or paragraph on a scientific topic written in lay terms. This is a writing-intensive course.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 325 Celebrity and Authenticity 3.0 Credits

In this course, we explore how the phenomenon of celebrity is constructed and who plays key roles in its construction: the celebrity, the entourage (industry representatives), the media, and audiences. Especially crucial is the notion of authenticity, an idea which guides media and fans in their appreciation of celebrity. Once we have established these key parameters, we discuss the role of mediated communication about celebrity among audiences and how celebrity and celebrities represent issues in society around intersections like race, age and gender.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 326 Public Relations for Science 3.0 Credits

Public relations in the service of science poses special challenges. Perhaps the biggest challenge arises from the tension between science's search for truth and public relations' work for advocacy. This course explores this tension and ways of resolving it through a combination of readings in recent practice and scholarship in the field, analyses of recent case studies, and conversations with area professionals in public relations for science.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 330 Professional Presentations 3.0 Credits

A workshop course in the theory and practice of making effective professional presentations for the technical and business professional. Provides a systems approach to the planning, production, and presentation of visual/aural programs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: COM 230 [Min Grade: D]

COM 335 [WI] Digital Publishing 3.0 Credits

Digital Publishing gives students applied and theoretical knowledge of professional digital publishing. Students will learn and apply best practices relating to writing and integrating text and graphics to create audience-specific branded websites and/or blogs. Students will also apply credibility and usability standards to evaluate websites.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 102 [Min Grade: D] or ENGL 112 [Min Grade: D]

COM 340 Modern Desktop Publishing 3.0 Credits

Covers production of publications using desktop publishing software, including planning, writing, designing, and budgeting of institutional magazines, newsletters, manuals, and brochures. Requires students to design several pieces (letterheads and flyers).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 102 [Min Grade: D] or ENGL 112 [Min Grade: D]

COM 341 Communication Past and Present 3.0 Credits

This course examines the history of communication in depth, drawing on major studies and theories of creating and interpreting world events across the globe and across the span of recorded history. In that examination, technologies of communication are conceived broadly as both material and ideational modes. Students will read signature works by Communication historians and discuss both evidence and argument, as well as how the various transitions in human society affect and are affected by forms of communication. Attention will also be paid to social movements and the role of communication in marshalling social power and influence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 342 English Worldwide 3.0 Credits

This course provides an overview of the spread of English globally, by examining English as a language of trade, diplomacy, and education, as well as its status as an aesthetic and market force. For a final project, students research how English is utilized for social, economic, and political purposes in a single area of the world.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 102 [Min Grade: D] or ENGL 112 [Min Grade: D]

COM 345 Intercultural Communication 3.0 Credits

This course introduces students to the theory and practice of intercultural communication. Drawing from traditions in anthropology and communication, intercultural communication is the study of the effect of differing cultural norms and beliefs upon communication between speakers. Through a wide range of readings, journal writing assignments, and participative and experiential activities, students will develop both their understanding of and skills in inter-cultural communication. A final project and presentation draws together participative experiences and the readings and class discussions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

COM 350 [WI] Document Design and Evaluation 3.0 Credits

Introduces the principles and practice of designing documents and measuring their effectiveness with audiences.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

COM 351 Computer Mediated Communication 3.0 Credits

We focus on practices and affordances of Computer Mediated Communication (CMC). We consider how computer technology is used in social interaction and its practical consequences. We focus on social practices and uses of technology. We use qualitative methods of analysis to understand the practices of CMC.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: COM 220 [Min Grade: D]

COM 355 Ethnography of Communication 3.0 Credits

Examines theories and methods of qualitative language and communication studies. Topics include story telling, greetings, gossip, self-presentation in talk, language of ritual and religion, men and women's roles in communication, and communicative events and competence. Case student in literature will be analyzed and will form a basis for the students' own ethnographic fieldwork.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

COM 360 Strategic International Communication 3.0 Credits

The course will explain the significance of strategic international communication in the contemporary globalized and digitized world. To a large extent, nations are brands and the images of those brands are strategically shaped by different agents – private and political interests, as well as state and business actors. The arsenal of tools they are using is huge – media, literature, movies, arts, history lessons, philosophy, religion, etc. Students will explore this process of strategic international image formation through the historical context, theoretical concepts, and the economic and structural aspects of strategic international communication. In each area, students will identify the key developments and large issues at stake rather than merely acquiring information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

COM 362 International Negotiations 3.0 Credits

This course is designed to give students a comprehensive overview of the field including different theoretical points of view on the process of international negotiations; the role of perceptions in this process; the role of internal politics and cultural variables in the process of international negotiations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

COM 363 Event Planning 3.0 Credits

This course will provide the student with the theoretical and practical fundamentals in understanding the complexities of producing Special Events across all major industries. Special Events addresses all elements of the communication process.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 365 Journalists, the Courts, and the Law 3.0 Credits

Students explore and apply techniques for covering the court system, and explore case law and recent key legal developments that have reshaped how journalists do their jobs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 260 [Min Grade: D] or COM 160 [Min Grade: D]

COM 375 [WI] Grant Writing 3.0 Credits

Students explore the grant writing process, from the development of an idea and researching appropriate contributors, to writing a fully realized grant proposal, complete with budget. Course topics also include surveying the political and social climate before developing an idea, assessing an organization's capabilities to handle a project, and performing through literature reviews.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: COM 270 [Min Grade: D] or COM 310 [Min Grade: D] or SOC 260 [Min Grade: D] or SOC 355 [Min Grade: D]

COM 376 Nonprofit Communication 3.0 Credits

The nonprofit sector is vital to today's complex society, uniquely supporting education, social services, advocacy and activism, political engagement, medical services, and much more. Studying this dynamic sector and its organizations through a communication perspective can help us gain deeper insights for more effective nonprofit work. This course introduces students to the strategic ways nonprofits communicate with a broad range of audiences and stakeholders, as well as the ways researchers have examined these practices. Through a combination of scholarly readings, case studies, and interviews, students will study and practice effective nonprofit communication strategies and skills across many nonprofit contexts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 377 Communication for Civic Engagement 3.0 Credits

Extremist rhetoric and divisive politics seem to go hand-in-hand in today's public deliberations. The media so often pair the word rhetoric itself with the pejorative adjectives mere, empty, and deceptive, that anything rhetorical becomes vilified. This course draws from the ancient accounts of rhetoric and the contemporary studies on rhetoric to rehabilitate it as a way to inform our efforts towards a more civil public discourse. This course also will host guest speakers from local civic and political organizations who engage in rhetorical practices in the service of civic engagement, which includes the discourse both of people who exercise political power and of citizens who debate over public policies and cultural identity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 378 Public Service Campaigns 3.0 Credits

Public communication campaigns are a familiar and essential part of American civic culture. Campaign topics range from personal issues, such as health, to social issues, such as equal opportunity, energy conservation, and environmental protection. Campaigns are regarded as public service programs if their goals are widely supported by the public and policymakers. If their goals are controversial, however, then they are regarded as advocacy strategies.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

COM 379 Focus Groups 3.0 Credits

This advanced qualitative research methods course will discuss the use of focus groups to collect data for social science inquiry from both an academic and a consumer research perspective. We will take an in-depth look at how to plan, implement, and analyze data collected through a focus group process, including: purposes and uses of focus group interviews, human subjects research considerations, participant recruitment, sampling, question design, facilitation techniques, recording options, transcription, analysis, and reporting of data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 384 Free Speech & Censorship 3.0 Credits

In this course, students will explore the various forms --some obvious, some not-- that censorship takes. Also explored will be what those who hold dissenting views endure as they try to contribute to the national dialogue. Historical and legal perspective on censorship will also be considered.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

COM 385 Media Effects 3.0 Credits

Some people believe that the mass media rule our lives, making us fat, violent, sexist, etc. Some think that media are irrelevant. Of course these arguments are extreme and simplifications. In this course, we ask: What are the facts regarding media effects research?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

COM 386 Public Relations Campaign Planning 3.0 Credits

This capstone course focuses on the application of public relations strategies and tactics. Students learn how to analyze, plan, and conduct successful public relations campaigns systematically and scientifically. Students will assess and define campaign objectives and create full-scale PR campaigns for their "real-world clients."

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: COM 284 [Min Grade: D] and COM 286 [Min Grade: D] and COM 248 [Min Grade: D]

COM 391 Critiques of Journalism and News Media 3.0 Credits

This course examines the role of journalism and news media in the social construction of our world. Focusing on key topics like framing and agenda setting in media research, we will critically consider how stories are routinely emphasized, excluded, organized, made sense of, and accumulate, plus more. We will discuss such topics in regard to various media (from newspapers to new media), various methods (qualitative and quantitative), and various public issues (including politics, music, sports, and representation of race/gender/sexuality/etc.).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: COM 150 [Min Grade: D]

COM 400 Seminar in Communication 3.0 Credits

This is an upper-level seminar in various topics in Communication, including but not limited to Rhetoric. Students will undertake an in-depth examination of critical texts or themes in Communication. The course is intended for upper-level majors in Communication and can be repeated for credit with a different topic.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 4 times for 12 credits

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: COM 210 [Min Grade: D]

COM 491 Senior Project in Communication I 3.0 Credits

Covers planning and execution of a professional project that integrates the academic and practical knowledge the student has acquired in his or her major.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is COMM and classification is Senior.

Prerequisites: COM 210 [Min Grade: D] and (COM 220 [Min Grade: D] or SOC 250 [Min Grade: D])

COM 492 Senior Project in Communication II 3.0 Credits

Requires completion and evaluation of the project begun in COM 491.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is COMM and classification is Senior.

Prerequisites: COM 491 [Min Grade: D]

COM I199 Independent Study in COM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

COM I299 Independent Study in COM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

COM I399 Independent Study in COM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

COM I499 Independent Study in COM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

COM T180 Special Topics in Communication Theory 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

COM T280 Special Topics in Communication Theory 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

COM T380 Special Topics in Communication Theory 1.0-5.0 Credit

Provides advanced communication studies covering various subjects in interpersonal, group, organizational, and mass communication. May be taken for credit twice.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

COM T480 Special Topics in Communication Theory 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Complementary and Integrative Therapies

Courses

CIT 338 Introduction to Complementary & Integrative Health 3.0 Credits

This course provides an introduction to the underpinning philosophy, and practice of complementary and integrative health (CIH). It presents an evidence-based review of the major categories including: phytotherapy, clinical aromatherapy, mind-body interventions, and the role of spirituality in health and healing. In addition, students explore effective relaxation techniques that help to integrate the mind-body-spirit connection, which support health and well-being.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CIT 345 Holistic Self-Care 3.0 Credits

Holistic Self-Care provides students with an A-Z approach to "living" a holistic, balanced life, complete with step-by-step guidelines necessary to incorporate dietary and lifestyle changes and effective stress reduction and stress management techniques to assist in navigating through the common challenges associated with student life and beyond. Students will be required to purchase a "Holistic Student Stress Reduction Kit", complete with specific essential oils, Meditation DVD, and guided stress reduction techniques.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CIT I399 Independent Study in Complementary & Integrative Therapies 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CIT I499 Independent Study in Complementary & Integrative Therapies 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CIT T380 Special Topics in Complementary & Integrative Therapies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CIT T480 Special Topics in Complementary & Integrative Therapies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Computer Engineering Technology

Courses

CET 201 Microcomputer Hardware 3.0 Credits

This course introduces students to the fundamentals of microcomputer hardware. Students learn the functionality of all components of modern desktop computers, as well as how to specify, build, reconfigure, upgrade, troubleshoot and repair them. The course prepares students for the hardware portion of the CompTIA A+ industry certification.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CET 301 Advanced Digital Electronics 4.0 Credits

This course introduces students to more advanced topics in Digital Design, including State Machine-based design, switching hazards, glitches, and race conditions. The course includes a term project, to be developed in Verilog on a Spartan3 FPGA dev board. Emphasis is placed on hands-on laboratory exercises and construction of the course project.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 205 [Min Grade: D]

CET 303 Computer Architecture with Verilog HDL 4.0 Credits

This course introduces students to the fundamentals of what goes into the design and testing of a microprocessor core. Through a series of homework assignments and labs, students specify, design, implement, and test a simple IP core RISC microprocessor. The IP core processor is designed by the students using Verilog HDL (and optionally schematic capture), and implemented on a Spartan3 FPGA.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CET 301 [Min Grade: D]

CET 401 Real-Time Operating Systems 4.0 Credits

Students are introduced to Real-Time Operating Systems (RTOSes). In the laboratory component of the course, students deploy, use, and test various RTOS installations in order to become familiar with their use, advantages, and disadvantages. Students are introduced to the idea of soft, firm, and hard real-time systems, and are shown concrete examples of each type. As a course project, students design, implement, and test a "hard" real-time operating system.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: D] and EET 401 [Min Grade: D]

CET 402 Applied Embedded Systems 4.0 Credits

The course introduces students to Programmable System on Chip (PSoC) devices and their applications in embedded systems. Students will learn to combine programs for the ARM microcontroller portion of the PSoC with analog component configurations to design and develop uniquely capable devices.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 202 [Min Grade: D] and EET 205 [Min Grade: D] and CET 301 [Min Grade: D]

CET 403 Computer Networking Technologies 4.0 Credits

This course introduces students to the fundamentals of computer networking, with an emphasis on TCP/IP networking and various intra-device networking technologies such as I2C and SPI. Students will gain hands-on experience in using these networking technologies by completing laboratory exercises.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CET 301 [Min Grade: D] and EET 208 [Min Grade: D]

CET 405 Electronic Device Design 4.0 Credits

Introduces students to techniques for designing, developing, prototyping, and testing electronic devices, with an emphasis on programmable systems. Students develop functional devices using microcontrollers and/or FPGAs, depending on device requirements.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: D] and CET 303 [Min Grade: D]

CET 421 Senior Design Project I 3.0 Credits

This is the first of a three course sequence, Senior Design Project. It aims to train the students in identifying projects of relevance to the society, in planning and scheduling a solution, and in entrepreneurial activities that may result from the project. It is also intended to cover an industrial project starting from the proposal writing and conceptual design to final steps. This course is focused on proposal writing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

CET 422 Senior Design Project II 3.0 Credits

This course is the second course of a three-quarter course sequence. It aims to train the students in maintaining the progress of a project on schedule, including resolving any team conflicts. It also trains them how to prepare oral, and submit written progress reports. The students supply summary reports to his/her advisor. This course is focused on following standard design steps from the conceptual to final design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CET 421 [Min Grade: D]

CET 423 Senior Design Project III 3.0 Credits

This is the final installment of a three course sequence. The course objective is to train students to execute a project from initial conceptual design to the preliminary and the final design completion, how to conduct design reviews, and how to document and present the findings, design concepts, and conclusions, in both oral and written formats. Students are also required to build a working prototype of their final design concept and present it during final presentation of the project.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CET 422 [Min Grade: D]

Computer Science

Courses

CS 150 Computer Science Principles 3.0 Credits

An introduction to computer science principles: the big ideas and computational thinking practices central to computer science, and the societal impact of computing and information technology. Exposure to algorithms, big data, machine learning, privacy, security and digital citizenship while introducing and reinforcing the importance of programming.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CS 164 Introduction to Computer Science 3.0 Credits

An introduction to the field of computer science. Exposure to core areas (selected from algorithms, artificial intelligence, computer architecture, databases, graphics, human-computer interaction, programming languages, scientific computation, software engineering) while introducing and reinforcing the importance of programming.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CS 171 Computer Programming I 3.0 Credits

Introduces fundamental concepts of computing including memory, instructions, function calls, and activation records. Covers fundamentals of structured computer programming in the language of instruction: variables, input and output, expressions, assignment statements, conditionals and branching, subprograms, parameter passing, repetition, arrays, top-down design, testing, and debugging.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CS 172 Computer Programming II 3.0 Credits

Covers object-oriented design, inheritance hierarchies, information hiding principles, string processing, recursion, good programming style, documentation, debugging, and testing.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 171 [Min Grade: C] or CS 175 [Min Grade: C]

CS 175 Advanced Computer Programming I 3.0 Credits

Advanced programming in language of instruction at an accelerated pace: introduces fundamental concepts of computing including memory, instructions, function calls, and activation records. Covers fundamentals of structured computer programming in the language of instruction: conditionals and branching, subprograms, parameter passing, repetition, arrays, top-down design, testing, and debugging. Supplements basic topics with deeper presentation of advanced techniques for those with some incoming programming experience.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CS 190 Selected Computer Language 3.0 Credits

Focuses on programming in a selected language of interest. Course content, language, and prerequisites may vary according to instructor, with emphasis on applications for which the language is designed. May be repeated for credit.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS 260 Data Structures 4.0 Credits

Data structures form the basis for the programmer's toolbox. Students will become familiar with the basic data structures and learn to modify or create on their own. Additionally, they will learn several algorithms that use these data structures in solving common problems such as searching and sorting, that involve sequentially, pairwise, or hierarchically related data. Further, students will learn data abstraction, how to separate interface from implementation, and viewing a problem simply in terms of functional requirements and dependencies. Throughout the course, students will develop abstract thinking and problem-solving skills.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: C]

CS 265 Advanced Programming Tools and Techniques 3.0 Credits

Introduction to the basic principles of programming practice: testing, debugging, portability, performance, design alternatives, and style. Application in a variety of programming languages, programming environments, and operating systems. Introduction to tools used in the software development process for improving program functionality, performance, and robustness.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: C] or ECE 105 [Min Grade: D] or ECE 201 [Min Grade: D]

CS 270 Mathematical Foundations of Computer Science 3.0 Credits

Introduces formal logic and its connections to Computer Science. Students learn to translate statements about the behavior of computer programs into logical claims and to prove such assertions using both traditional techniques and automated tools. Considers approaches to proving termination, correctness, and safety for programs. Discusses propositional and predicate logic, logical inference, recursion and recursively defined sets, mathematical induction, and structural induction.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: C] or CS 265 [Min Grade: C] or ECE 105 [Min Grade: D] or ECE 201 [Min Grade: D]

CS 277 Algorithms and Analysis 3.0 Credits

Introduces foundational concepts in Computer Science theory, including computability, decidability, the Turing Machine, and algorithmic complexity. Applies concepts underlying graph theory and automata to current topics in computing to create contextualized connections between theory and practice.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and CS 270 [Min Grade: C] and MATH 221 [Min Grade: C]

CS 281 Systems Architecture 4.0 Credits

Covers internal function and organization of digital computers, including instruction sets, addressing methods, input-output architectures, central processor organization, machine language, and assembly language.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: (CS 270 [Min Grade: C] or ECE 200 [Min Grade: D]) and (CS 172 [Min Grade: C] or ECE 201 [Min Grade: D] or ECE 105 [Min Grade: D])

CS 283 Systems Programming 3.0 Credits

This course introduces computer systems, including interaction of hardware and software through the operating system, from the programmer's perspective. Three fundamental abstractions are emphasized: processes, virtual memory, and files. These abstractions provide programmers a common interface to a wide variety of hardware devices. Topics covered include linking, system level I/O, concurrent programming, and network programming.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: C]

CS 300 Applied Symbolic Computation 3.0 Credits

This course covers the fundamentals of symbolic mathematical methods as embodied in symbolic mathematics software systems, including: fundamental techniques, simplification of expressions, solution of applications problems, intermediate expressions swell, basic economics of symbolic manipulation, efficient solution methods for large problems, hybrid symbolic/numeric techniques.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and CS 270 [Min Grade: C] and MATH 200 [Min Grade: C] and (MATH 201 [Min Grade: C] or ENGR 231 [Min Grade: C])

CS 303 Algorithmic Number Theory and Cryptography 3.0 Credits

Covers fundamental algorithms for integer arithmetic, greatest common divisor calculation, modular arithmetic, and other number theoretic computations. Algorithms are derived, implemented and analyzed for primality testing and integer factorization. Applications to cryptography are explored including symmetric and public-key cryptosystems. A cryptosystem will be implemented and methods of attack investigated.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (MATH 221 [Min Grade: C] or MATH 222 [Min Grade: C]) and (MATH 201 [Min Grade: C] or ENGR 231 [Min Grade: D])

CS 314 Computing in the Small 3.0 Credits

Explores the technologies and techniques associated with microcontrollers and Systems on Chips (SOCs) as well as their use in embedded systems. A major focus is on developing software to control input and output devices.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 283 [Min Grade: C]

CS 341 Serious Game Development 3.0 Credits

The goal of this course is to learn more about serious games, that is games used in a non-entertainment context, such as games for health, education, and persuasion, through readings and through the design, development, and implementation of serious games.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 377 [Min Grade: D]

CS 342 Experimental Game Development 3.0 Credits

The goal of this course is to develop new ideas and innovations in games through the design, development, and implementation of games using short development cycles and creative thematic constraints.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 345 [Min Grade: C], GMAP 345 [Min Grade: D] (Can be taken Concurrently)

CS 345 Computer Game Design and Development 3.0 Credits

This course introduces students to the computer game design process. Students also learn how the individual skills of modeling, animation, scripting, interface design and story telling are coordinated to produce interactive media experiences for various markets, devices and purposes.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: C]

CS 352 Processor Architecture & Analysis 3.0 Credits

This course covers performance evaluation and benchmarking, pipelining, superscalar processors, multiprocessors, and interfacing processors and peripherals. The memory hierarchy, including cache and virtual memory, are also explored from a programmer's perspective with high-performance computing techniques in mind.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 281 [Min Grade: C] or ECEC 355 [Min Grade: D]

CS 360 Programming Language Concepts 3.0 Credits

Introduces the design and implementation of modern programming languages: formal theory underlying language implementation; concerns in naming, binding, storage allocation and typing; semantics of expressions and operators, control flow, and subprograms; procedural and data abstraction; functional, logic, and object-oriented languages. Students will construct an interpreter for a nontrivial language.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and CS 265 [Min Grade: C] and CS 270 [Min Grade: C]

CS 361 Concurrent Programming 3.0 Credits

Covers programming of concurrent, cooperating sequential processes. Studies race conditions, critical sections, mutual exclusion, process synchronization, semaphores, monitors, message passing, the rendezvous, deadlock, and starvation.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CS 260 [Min Grade: C] and (CS 281 [Min Grade: C] or ECEC 355 [Min Grade: D])

CS 370 Operating Systems 3.0 Credits

Explores the internal algorithms and structures of operating systems: CPU scheduling, memory management, file systems, and device management. Considers the operating system as a collection of cooperating sequential processes (servers) providing an extended or virtual machine that is easier to program than the underlying hardware. Topics include virtual memory, input/output devices, disk request scheduling, deadlocks, file allocation, and security and protection.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CS 283 [Min Grade: C] or ECEC 353 [Min Grade: D]

CS 375 Web Development 3.0 Credits

Introduction to web development with a focus on programming full-stack web applications. Covers front-end topics like HTML, CSS, and client-side JavaScript, and back-end topics like web servers and databases.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: C]

CS 377 Software Security 3.0 Credits

An introduction to foundational systems concepts underpinning the broad area of software security. Topics covered include access control, software vulnerabilities such as buffer overflows and race conditions, insecurity in software, cryptocurrency, malware, and operating systems security.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 283 [Min Grade: C] or ECEC 353 [Min Grade: D]

CS 380 Artificial Intelligence 3.0 Credits

Explores the foundations of artificial intelligence: production systems, heuristic programming, knowledge representation, and search algorithms. Also covers programming in an AI language. Additional topics chosen from game theory, decision support systems, pattern matching and recognition, image understanding, natural language, fuzzy and non-monotonic logic, machine learning, theorem proving, and common sense reasoning.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CS 260 [Min Grade: C] and CS 270 [Min Grade: C]

CS 383 Machine Learning 3.0 Credits

This course covers the fundamentals of modern statistical machine learning. Lectures will cover the theoretical foundation and algorithmic details of representative topics including probabilities and decision theory, regression, classification, graphical models, mixture models, clustering, expectation maximization, hidden Markov models, and weak learning.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (MATH 201 [Min Grade: C] or ENGR 231 [Min Grade: D]) and (MATH 221 [Min Grade: C] or MATH 222 [Min Grade: C]) and (MATH 311 [Min Grade: C] or MATH 410 [Min Grade: C] or ECE 361 [Min Grade: D])

CS 385 Evolutionary Computing 3.0 Credits

This course covers computational intelligence approaches to problem solving for classification, adaptation, optimization, and automated control. Methods covered will include evolutionary programming/genetic algorithms, genetic programming, neural networks, swarm optimization, and fuzzy logic.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and CS 380 [Min Grade: C]

CS 387 Game AI Development 3.0 Credits

This course focuses on artificial intelligence (AI) techniques for computer games. Students will learn both basic and advanced AI techniques that are used in a variety of game genres including first-person shooters, driving games, strategy games, platformers, etc. The course will emphasize the difference between traditional AI and game AI, the latter having a strong design component, focusing on creating games that are “fun to play.” Topics include path-finding, decision-making, strategy and machine learning in games.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and CS 380 [Min Grade: C]

CS 429 Software Defined Radio Laboratory 3.0 Credits

This laboratory course takes a Software-Defined Radio (SDR) implementation approach to learn about modern analog and digital communication systems. Software defined radio uses general purpose radio hardware that can be programmed in software to implement different communication standards. We will begin by discussing the basic principles of wireless radio frequency transmissions and leverage this knowledge to build analog and digital communication systems. Knowledge of these techniques and systems will provide a platform that can be used in the class project for further exploration of wireless networking topics such as cybersecurity, cognitive radio, smart cities, and the Internet of Things.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: (CS 260 [Min Grade: C] and CS 265 [Min Grade: C] and CS 270 [Min Grade: C])

CS 430 Computer Graphics 3.0 Credits

The course presents the fundamental geometric representations and drawing algorithms of computer graphics through lectures and programming assignments. The representations include lines, curves, splines, polygons, meshes, parametric surfaces and solids. The algorithms include line drawing, curve and surface evaluation, polygon filling, clipping, 3D-to-2D projection and hidden surface removal.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (MATH 201 [Min Grade: C] or MATH 261 [Min Grade: C] or ENGR 231 [Min Grade: D])

CS 431 Advanced Rendering Techniques 3.0 Credits

The creation of realistic images from 3D models is central to the development of computer graphics. The ray tracing algorithm has become one of the most popular and powerful techniques for creating photo-realistic images. This class explores the algorithmic components of ray tracing. Students implement many of these components in their class programming projects.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 430 [Min Grade: D] or CS 432 [Min Grade: D]

CS 432 Interactive Computer Graphics 3.0 Credits

This is a project-oriented class that covers the concepts and programming details of interactive computer graphics. These include graphics primitives, display lists, picking, shading, rendering buffers and transformations. Students will learn an industry-standard graphics system by implementing weekly programming assignments. The course culminates with a student-defined project.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (MATH 201 [Min Grade: C] or MATH 261 [Min Grade: C] or ENGR 231 [Min Grade: D])

CS 435 Computational Photography 3.0 Credits

Fundamentals of computational photography, an interdisciplinary field at the intersection of computer vision, graphics, and photography. Covered topics include fundamentals of cameras, novel camera designs, image manipulation, single-view modeling, and image-based rendering with an emphasis on learning the computational methods and their underlying mathematical concepts through hands-on assignments.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (MATH 201 [Min Grade: C] or MATH 261 [Min Grade: C] or ENGR 231 [Min Grade: D])

CS 438 Game Engine Programming 3.0 Credits

The goal of this course is to learn the general principles and techniques required to build a game engine from scratch. The course covers basic programming techniques for games, but without focusing on any specific programming language nor platform. Topics include game engine architecture, game loops, real-time 2D and 3D rendering, collision detection, input handling, networking, animation, scripting, Game AI, and 2D and 3D physics simulation. Additionally, students will also gain knowledge of existing game engines.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (MATH 201 [Min Grade: C] or ENGR 231 [Min Grade: C])

CS 440 Theory of Computation 3.0 Credits

Finite automata, regular sets, and regular expressions; pushdown automata, context-free languages, and normal forms for grammars; Turing machines and recursively enumerable sets; Chomsky hierarchy; computability theory.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: CS 270 [Min Grade: C] and (MATH 221 [Min Grade: C] or MATH 222 [Min Grade: C])

CS 441 Compiler Implementation 3.0 Credits

Covers the fundamentals of optimizing compilers and code generation, including compiler intermediate representations, basic compiler optimizations, program analyses to enable optimizations (such as value numbering), and generation of efficient code (register allocation and instruction selection).

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: (CS 281 [Min Grade: C] or ECE 350 [Min Grade: D]) and CS 360 [Min Grade: C]

CS 455 Computational Network Neuroscience 3.0 Credits

This course provides a broad introduction to computational network neuroscience, also known as connectomics, which is an interdisciplinary field between medicine, neuroscience, machine learning, and graph theory to students coming from a computing background. Processing of neuroimaging data to obtain brain networks, its analysis using basic statistical methods as well as advanced machine learning techniques, with applications on healthy and various patient populations will be covered. After taking the course, the student will become prepared for a postgraduate level research experience in the burgeoning field of connectomics.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: CS 172 [Min Grade: C] or CS 175 [Min Grade: C] or ENGR 132 [Min Grade: D] or BMES 202 [Min Grade: D] or BIO 331 [Min Grade: D] or PBHL 211 [Min Grade: D]

CS 457 Data Structures and Algorithms I 4.0 Credits

This course covers techniques for analyzing algorithms, including: asymptotic analysis, recurrence relations, and probabilistic analysis; data structures such as hash tables and binary trees; algorithm design techniques such as dynamic programming, greedy methods, and divide & conquer, as well as graph algorithms for graph traversal, minimum spanning trees, and shortest paths.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and CS 270 [Min Grade: C] and CS 277 [Min Grade: C] and (MATH 221 [Min Grade: C] or MATH 222 [Min Grade: C])

CS 458 Data Structures and Algorithms II 3.0 Credits

This course covers the amortized analysis of algorithms and data structures; Fibonacci heaps; graph algorithms for maximizing network flow and computing minimum all pairs shortest paths; string matching algorithms; NP-Completeness and approximation algorithms.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 457 [Min Grade: D]

CS 460 Theory Reading Group 0.0-3.0 Credits

This class covers a wide variety of special topics in theoretical computer science and mathematics, including advanced techniques for the design and analysis of algorithms, algorithmic game theory, approximation algorithms, randomized algorithms, computational complexity, and discrete mathematics.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

Prerequisites: CS 260 [Min Grade: C] and CS 270 [Min Grade: C] and CS 277 [Min Grade: C] and MATH 221 [Min Grade: C]

CS 461 Database Systems 3.0 Credits

Covers topics including structure and function of database systems, normal form theory, data models (relational, network, and hierarchical), query processing (ISBL), relational algebra and calculus, and file structures. Includes programming project using DBMS.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CS 260 [Min Grade: C]

CS 465 Privacy and Trust 3.0 Credits

This course will motivate the need for privacy protection and introduce basic privacy properties such as anonymity, unlinkability or unobservability. We will then discuss how these properties can be formalized, modeled and measured. The course will provide a broad overview of the state-of-the-art in privacy technologies, explain the main issues that these technologies address, what the current solutions are able to achieve, and the remaining open problems.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: C] and CS 270 [Min Grade: C]

CS 472 Computer Networks: Theory, Applications and Programming 3.0 Credits

Introduction to computer networking theory, applications and programming, focusing on large heterogeneous networks. Broad topdown introductions to computer networking concepts including distributed applications, socket programming, operation system and router support, router algorithms, and sending bits over congested, noisy and unreliable communication links.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 361 [Min Grade: D] or CS 283 [Min Grade: C] or ECEC 353 [Min Grade: D]

CS 475 Network Security 3.0 Credits

An introduction to foundational systems concepts underpinning the specialized area of network security. Focus to be given to security issues pertaining to the Data Link, Network, and Transport layers of the network stack. Topics include packet sniffing and spoofing, as well as MAC, IP, ICMP, TCP, and UDP attacks.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 472 [Min Grade: D] or CS 283 [Min Grade: C] or ECEC 353 [Min Grade: D]

CS 476 High Performance Computing 3.0 Credits

This course is an introduction to high performance computing, including concepts and applications. Course contents will include discussions of different types of high performance computer architectures (multi-core/multi-threaded processors, parallel computers, etc), the design, implementation, optimization and analysis of efficient algorithms for uni-processors, multi-threaded processors, parallel computers, and high performance programming.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: (CS 281 [Min Grade: C] and CS 283 [Min Grade: C]) or (ECEC 353 [Min Grade: D] and ECEC 355 [Min Grade: D])

CS 478 Advanced Web Development 3.0 Credits

Deeper dive into web development with a focus on programming full-stack web applications. Topics may include front-end frameworks, API architecture, authentication, deployment, security, and testing.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 375 [Min Grade: D]

CS 479 Advanced Network Security 3.0 Credits

A treatment of advanced systems concepts underpinning the specialized area of network security. Focus to be given to security issues pertaining to the Application layer of the network stack. Topics include security attacks on Firewalls and DNS, as well as attacks on Web Applications such as Cross-Site Request Forgery, Cross-Site Scripting, and SQL Injection.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 475 [Min Grade: D]

CS 481 Advanced Artificial Intelligence 3.0 Credits

This course covers topics in representation, reasoning, and decision-making under uncertainty; learning; solving problems with time-varying properties. Assignments applying AI techniques toward building intelligent machines that interact with dynamic, uncertain worlds will be given.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 380 [Min Grade: D] and (MATH 311 [Min Grade: D] or MATH 410 [Min Grade: D] or ECE 361 [Min Grade: D])

CS 482 Robust Machine Learning 3.0 Credits

This course introduces students to the understanding about the robustness and vulnerability of current state-of-the-art machine learning systems. Lectures will cover the theoretical foundation and algorithmic details of different types of adversarial attack and defense methods accordingly on multiple machine learning tasks including image classification, object detection, natural language processing, etc. Students will understand the intriguing property of deep learning systems and know the significance of robust and trustworthy machine learning.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 380 [Min Grade: C] or CS 383 [Min Grade: C]

CS 486 Topics in Artificial Intelligence 3.0 Credits

A variety of special topics are offered in artificial intelligence (AI) including: intelligent time-critical reasoning, knowledge-based agents, machine learning, natural language processing, and geometric reasoning. This course may be repeated for credit as topics vary.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

Prerequisites: CS 380 [Min Grade: C]

CS I199 Independent Study in Computer Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS I299 Independent Study in Computer Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS I399 Independent Study in Computer Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS I499 Independent Study in Computer Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS T180 Special Topics in Computer Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS T280 Special Topics in Computer Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS T380 Special Topics in Computer Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CS T480 Special Topics in Computer Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

Computing and Informatics

Courses

CI 101 Computing and Informatics Design I 2.0 Credits

Introduces computing and informatics through a combination of lectures and hands-on laboratory exercises. Lectures emphasize an integrated view of topic areas and systems, spanning low-level software and implementation issues to high-level use and acceptance by individuals and communities. Lab exercises allow students to explore familiar systems in unique and novel ways to better understand how these systems are designed and used.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CI 102 Computing and Informatics Design II 2.0 Credits

Introduces computing and informatics through a combination of lectures and hands on laboratory exercises. Lectures emphasize an integrated view of topic areas and systems, spanning low level software and implementation issues to high level use and acceptance by individuals and communities. Lab exercises allow students to explore familiar systems in unique and novel ways to better understand how these systems are designed and used.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CI 103 Computing and Informatics Design III 2.0 Credits

Follows CI 102 in the Computing & Informatics design sequence. Introduces computing and informatics through a combination of lectures and hands-on laboratory exercises. Lectures emphasize an integrated view of topic areas and systems, spanning low-level software and implementation issues to high-level use and acceptance by individuals and communities. Lab exercises allow students to explore familiar systems in unique and novel ways to better understand how these systems are designed and used.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CI 102 [Min Grade: D]

CI 120 CCI Transfer Student Seminar 2.0 Credits

Introduces students to the academic and co-curricular aspects of university life. Includes academic functions such as reflection papers, reading, and study skills, as well as co-curricular functions such as campus resources, activities, and social programs. Aids in the transition to student life at Drexel and is designed to help each student achieve academic and personal success through academic and career exploration.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CI 489 Seminar in Computing and Informatics 1.0-3.0 Credit

This seminar in Computing and Informatics allows for enrichment discussion and laboratory experimentation in selected topics for a cohort of students.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CI 490 Undergraduate Research Experience in Computing and Informatics 1.0-6.0 Credit

This research seminar in Computing and Informatics supports and enriches undergraduate research projects with a cohort experience practicing research talks, writing a research paper in Computing and Informatics, and conducting experiments.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CI 491 [WI] Senior Project I 3.0 Credits

Part of a multi-term capstone experience involving in-depth study and application of computing and informatics. Students work in teams to develop a significant product. Requires use of a development process that includes planning, specification, design, implementation, evaluation, and documentation.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 442 [Min Grade: D] or SE 310 [Min Grade: D] or (INFO 324 [Min Grade: D] and INFO 355 [Min Grade: D])

CI 492 [WI] Senior Project II 3.0 Credits

Part of a multi-term capstone experience involving in-depth study and application of computing and informatics. Students work in teams to develop a significant product. Requires use of a development process that includes planning, specification, design, implementation, evaluation, and documentation.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CI 491 [Min Grade: D]

CI 493 [WI] Senior Project III 3.0 Credits

Part of a multi-term capstone experience involving in-depth study and application of computing and informatics. Students work in teams to develop a significant product. Requires use of a development process that includes planning, specification, design, implementation, evaluation, and documentation.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CI 492 [Min Grade: D]

Computing Technology

Courses

CT 140 Network Administration I 3.0 Credits

Students gain an understanding of terminology, technology, and issues involved in implementing networks. Topic include: understanding the OSI 7 layer model; concepts of servers and clients; network hardware/software functions; basics of TCP/IP protocol, main types of network topologies (bus, ring, star and mesh); and share and access network resources (files, printers, etc.).

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 101 [Min Grade: D]

CT 200 Server I 3.0 Credits

Introduces administration and management of Windows operating system. Topics include operating systems installation, configuration, directory services, data storage subsystems, troubleshooting and problem determination of server. In addition the course will cover redundancy, upgrading, and disaster recovery.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 101 [Min Grade: D]

CT 201 Information Technology Security I 3.0 Credits

Surveys information security topics; familiarizes students with the technologies and policies that support confidentiality, integrity and availability. Industry standards for security architecture, operational security, policy and governance are covered and provides the foundations for further study of information security.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 210 Open Server I 3.0 Credits

Introduces administration of open source operating systems and management of open servers. Topics covered include the boot process and fundamental server concepts related to processing, memory and storage. Addresses use of a command line interface to manage processes, modify file permissions, examine configuration settings, and run utilities for server administration.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 212 Computer Forensics I: Fundamentals 3.0 Credits

This course presents the theory, methodology and hands-on labs necessary for students to become competent in the basics of computer forensics. Topics covered include: understanding computer investigations, the investigators, laboratory, current forensics tools, digital evidence controls and processing crime.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 250 IT Security Awareness 3.0 Credits

This course explores the challenges IT security teams face when trying to mitigate threats targeting the human element within their organizations. IT Security Awareness introduces students to techniques and concepts that threaten security of organizations by targeting their human assets.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 301 Information Technology Security II 3.0 Credits

Focuses on securing digital infrastructure by examining threats, vulnerabilities, and technologies used to prevent cyber attacks such as: encryption, security devices, software, authentication and identity protocols. Hands-on labs demonstrate the use of tools and techniques discussed in the course.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 140 [Min Grade: D] and CT 201 [Min Grade: D]

CT 310 Open Server II 3.0 Credits

Presents an in depth study of server administration utilizing the Linux Operating System. Topics covered include: shell environments, shell program structures, executions, variables, positional parameters, special shell variables, and shell programming statements. In addition the course will examine shell conditional statements, looping constructs, interrupt handling, and debugging tools.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 210 [Min Grade: D]

CT 312 Access Control and Intrusion Detection Technology 3.0 Credits

Fundamental theory and methodology of intrusion detection systems. Using intrusion detection systems to secure corporate and personal networks against attacks. Hands-on laboratory experience using an in-depth, open-source network intrusion detection system.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 420 [Min Grade: D] or CT 301 [Min Grade: D]

CT 320 Server II 3.0 Credits

Presents an in depth study of Windows server operating system and active directory. Topics include installation, implementation, administration of resources, monitoring, troubleshooting techniques. In addition, the course will examine Windows based network management tools, high availability and disaster recovery.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 200 [Min Grade: D]

CT 330 Network Administration II 3.0 Credits

Course covers both theoretical knowledge and hands-on exercises for networking using CISCO hardware. Topics include: Extending Switched Networks with VLANs; Determining IP Traffic with Access Lists; Establishing Point-to-Point Connections; and Establishing Frame Relay Connections.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 140 [Min Grade: D]

CT 335 Mobile Applications 3.0 Credits

Provides students with an understanding of mobile technologies and the components for building and testing mobile applications. Topics covered include: mobile frameworks, plugins, mobile device storage, visual design and user interfaces for mobile applications, device sensors, and compression.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 152 [Min Grade: D] or CS 171 [Min Grade: D]

CT 353 Virtual Environments and Cloud Security 3.0 Credits

This course explores various models of virtual servers, storage, networks and levels of cloud computing. Students will learn how to apply best practice solutions to secure virtual environments and the different levels of cloud computing.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 200 [Min Grade: D] and CT 210 [Min Grade: D]

CT 355 Wireless Network Security Technology 3.0 Credits

Theory, methodology and hands-on labs relating to the unique security issues of Wireless Networks. Limitations and risks of Wireless Networks. Use of audit and exploit tools to discover security flaws. Protocol and signal vulnerabilities. Methods to secure such vulnerabilities.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 420 [Min Grade: D] or CT 301 [Min Grade: D]

CT 362 Network Auditing Tools 3.0 Credits

Theory, methodology and hands-on labs relating to Network Auditing. The course relies on advanced multi-functional network auditing tools to uncover Network Security problems, with the purpose of eliminating these vulnerabilities.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 420 [Min Grade: D] or CT 301 [Min Grade: D]

CT 382 Applied Cryptography 3.0 Credits

This course presents the theory, methods, strengths, weaknesses, and effective strategies necessary for students to acquire a fundamental knowledge of Cryptography and Stenography. This is a hands-on course utilizing several tools and software programs. Emphasis is placed on formulating effective strategies, such as when and how to protect computer data.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 393 Information Technology Security Risk Assessment 3.0 Credits

This course addresses risk management methodology, the specific procedures for determining assets valuation, vulnerabilities, and threats. Risk migration methods that security professional use to protect valuable IT assets will also be studied. Issues, designed to foster critical thinking, are explored, as well as the standardized approaches to risk management.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 400 Network Security 3.0 Credits

This class focuses on the security aspects of networks. Topics covered: intrusion detection, VPN, and Firewalls. This course is designed to provide students with the necessary skills and information aligned with Securing Networks.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 330 [Min Grade: D]

CT 412 Information Technology Security Policies 3.0 Credits

This course presents the theory and legal issues necessary for students to acquire fundamental knowledge of Computer Policies for information Security. Topics covered include: E-mail, Employee Privacy, Labor Organization Activities (Fair Use), Avoiding Discrimination and Harassment, Copyright, Defamation, Spamming, Trade Secrets & Confidential Information, Attorney-Client communication via E-mail, Computer Security, Preventing Waste of a Computer Resources, Essentials for Good Policy, and Ensuring Compliance.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 414 Ethical Hacking and Penetration Testing 3.0 Credits

This course provides students with the opportunity to learn hands-on techniques to protect and secure their information-critical infrastructure against cyber-attacks, viruses, worms, and other system cyber vulnerability weaknesses that pose significant threat to organizational systems.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

CT 415 Disaster Recovery and Continuity Planning 3.0 Credits

Disaster Recovery & Continuity Planning specific to Emergency Recovery Procedures. Techniques for development of disaster recovery plans, procedures and testing methods. Strategies used by businesses to assure that sensitive data will not be lost in the event of a disaster. Techniques used to manage potential risk within multiple environments.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

CT 432 Information Technology Security Systems Audits 3.0 Credits

This course presents the theory, methodology, procedures and hands-on labs necessary for students to acquire a fundamental working knowledge of IT System Audits. Students learn how to discover system vulnerabilities with proper audit procedures, and how to document their findings properly for upper management.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CT 420 [Min Grade: D] or CT 301 [Min Grade: D]

CT 491 [WI] Senior Project I 3.0 Credits

This course is an independent project which small student teams determines and scopes an appropriate computing technology project that can be completed within the constraints of time and resources under faculty guidance. The objective of the course is to provide specifications and requirements for the team project.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: INFO 324 [Min Grade: D]

CT 496 [WI] Senior Project II 3.0 Credits

This course is a continuation of Senior Project I. In this course, student-teams are required to implement their project specifications and requirements developed in the previous course.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CT 491 [Min Grade: D]

CT I199 Independent Study in CST 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CT I299 Independent Study in CST 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

CT I399 Independent Study in CST 0.5-9.0 Credits

Provides individual study or research in computing and security technology with faculty supervision. This course may be repeated for credit.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated 2 times for 6 credits

CT I499 Independent Study in CST 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

Construction Management

Courses

CMGT 101 Introduction to Construction Management 3.0 Credits

This course will introduce the basic history and management concepts of the construction industry to students with the expectation that upon completion students will have an overview of the industry. Career choices, industry firms, and key players in the Construction Management process will be explored.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Junior or Senior

CMGT 161 Building Materials and Construction Methods I 3.0 Credits

This course is designed to explore the range of building materials in use today and their interrelationships in a construction project. Topics will include a study of the major components of construction materials, the selection process, specification, alternatives, procurement, placement and quality management for the building systems covered. Foundations, excavations, wood framing and steel construction and the role these materials play in the success of a project once chosen will be considered and evaluated.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is AE or major is CIVE

CMGT 162 Building Materials and Construction Methods II 3.0 Credits

Continues CMGT 161. Covers concrete, reinforced concrete, site cast and pre-cast concrete, brick and concrete masonry, reinforced masonry, and properties of these materials and construction methods associated with them.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is AE or major is CIVE

Prerequisites: CMGT 161 [Min Grade: D]

CMGT 163 Building Materials and Construction Methods III 3.0 Credits

Continues CMGT 162. Covers roofing systems, glass, glazing, windows, doors, cladding systems, interior finishes, the properties of these materials and construction methods associated with each of them.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is AE or major is CIVE

Prerequisites: CMGT 162 [Min Grade: D]

CMGT 240 [WI] Economic Planning for Construction 3.0 Credits

Covers techniques for economic decision making for building and infrastructure construction topics. Topics include cash flow, present worth analysis, equivalent annual worth, rate of return, risk analysis, and benefit/cost analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is AE

Prerequisites: MATH 121 [Min Grade: D]

CMGT 251 Construction Surveying 3.0 Credits

Covers the theory and use of surveying instruments and principles of plane and topographic surveying. Introduces satellite positioning, geomatics, and other modern surveying techniques related to construction.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is AE

Prerequisites: MATH 121 [Min Grade: D]

CMGT 261 Construction Safety 3.0 Credits

Covers OSHA liability, general safety, hazard communication, fire, material handling, tools, welding, electricity, scaffolding, fall protection, cranes, heavy equipment, excavation, concrete, ladders and stairways, confined space entry, personal protective equipment, and health hazards. Course approved by the OSHA Training Institute.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT.

CMGT 262 Building Codes 3.0 Credits

Familiarizes students with the content of the International Building Code (emphasizing the non-structural provisions), the purpose and intent of code requirements, and how to apply the code to structures and occupancies. Examines how the code is used as a tool in design and construction and prepares students for the advent of a single model building code planned for the nation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT.

CMGT 263 Understanding Construction Drawings 3.0 Credits

This course examines a variety of construction documents, including drawings, details, graphic standards, sections, and quantities for competitive bidding and execution of projects. Both residential and commercial construction documents will be examined.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CMGT 101 [Min Grade: D] and CMGT 161 [Min Grade: D]

CMGT 265 Information Technologies in Construction 3.0 Credits

The objective of this course is to expose students to a large variety of information technologies in construction and will discuss the impact of these technologies on work environments, processes, and work quality. Students will investigate a variety of issues surrounding IT in construction including implementation, standards, integration, knowledge management and the underlying technology.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CMGT 266 Building Systems I 3.0 Credits

This course covers construction management and design concepts relating to heating, ventilation, and air conditioning systems and the integration of these systems into the building design and construction process.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 101 [Min Grade: D] or PHYS 151 [Min Grade: D] or PHYS 182 [Min Grade: D] or PHYS 100 [Min Grade: D]

CMGT 267 Building Systems II 3.0 Credits

Continues CMGT 266. This course covers construction management concepts relating to electrical systems, wiring, lighting, signal and data systems, and transportation systems and the integration of these into the building design and construction process.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CMGT 266 [Min Grade: D]

CMGT 270 Principles of Statics for Construction Management 3.0 Credits

This algebra-based course is the study of forces acting upon structural elements. Analytic and graphic methods are used to illustrate resultants and reactions, equilibrium, centroids and moments of inertia applied to static structures. Analysis includes stress, strain, axial loading, bending, and deflection of beams.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 110 [Min Grade: C-] and (PHYS 151 [Min Grade: C-] or PHYS 101 [Min Grade: C-] or PHYS 182 [Min Grade: C-] or PHYS 100 [Min Grade: C-])

CMGT 355 Introduction to Sustainability in Construction 3.0 Credits

An overview of the design and construction of high performance buildings. Students will gain topical familiarity with the wide range of issues related to sustainable design and construction. The USGBC's green building certification program will be covered in detail. Both historical and contemporary case studies will be utilized.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CMGT 361 Contracts And Specifications I 3.0 Credits

Analyzes construction contracts, specifications, and practices with regard to business law and liability. Required for construction management students. Elective for others. Fall.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

CMGT 362 Contracts and Specifications II 3.0 Credits

Continues CMGT 361. Examines contractor, architect, and engineer responsibilities through case studies and class discussions. Winter.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CMGT 361 [Min Grade: D]

CMGT 363 Estimating I 3.0 Credits

Covers discussion of the estimating function and review and applications of material quantity survey techniques used in estimating costs of construction projects. Includes types of approximate and precise methods of estimating and their uses, and computer applications. Required for construction management students.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 110 [Min Grade: D] or MATH 121 [Min Grade: D]) and (CMGT 263 [Min Grade: D] or CAEE 202 [Min Grade: D] or ARCH 191 [Min Grade: D])

CMGT 364 Estimating II 3.0 Credits

Covers pricing and bidding of construction work including cost factors, labor and equipment, productivity factors, prices databases, job direct and indirect costs, methods of estimating time, materials, equipment, subcontractors' work, general expenses, and profit, bid preparations and submission, and computer applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CMGT 363 [Min Grade: D]

CMGT 365 Soil Mechanics in Construction 4.0 Credits

Gives an overview of the types of problems encountered in geotechnical construction. Subjects covered will be composition, groundwater fundamentals, settlement and consolidation, stability of earth slopes, types of foundations and behavior of difficult soils.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: CMGT 161 [Min Grade: D] and MATH 121 [Min Grade: D] and (PHYS 101 [Min Grade: D] or PHYS 151 [Min Grade: D] or PHYS 182 [Min Grade: D] or PHYS 100 [Min Grade: D])

CMGT 366 Construction Accounting and Financial Management 3.0 Credits

This course brings together all of the key principles from general business accounting, financial management, and engineering economics needed by construction managers vis-a-vis the unique characteristics of the construction industry, and addresses how these principles are specifically applied in the construction industry, and how they should interact effectively to ensure the efficient and profitable management of construction projects and companies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 116 [Min Grade: D] and CMGT 364 [Min Grade: D] and CIVE 240 [Min Grade: D]

CMGT 371 Structural Aspects in Construction I 3.0 Credits

The first of two course series designed specifically for construction management majors. The sequence addresses the interactions of different kinds of loads with common structural elements and design considerations for typical construction materials. This course places emphasis on the design of wood framed construction.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: CMGT 270 [Min Grade: D]

CMGT 372 Structural Aspects in Construction II 3.0 Credits

The second part in a two-course sequence for Construction Management majors. The course places emphasis on the design and analysis of concrete and steel frame construction.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CMGT 371 [Min Grade: D]

CMGT 375 Building Information Modeling in Construction 3.0 Credits

This course is intended to provide students with a hands-on introduction to Building Information Modeling (BIM) in Construction. Emphasis will be placed on the use of BIM to support current construction activities such as design review, coordination, scheduling, logistics, estimating, and project close-out. Topics will include an introduction to 3D BIM modeling, 3D coordination and clash detection, 4D visual scheduling and logistics, 5D estimating, and BIM for Facility Management. Students will learn the fundamentals of the most widely used software applications in the construction industry: SketchUp, Revit and Navisworks.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: CMGT 265 [Min Grade: D]

CMGT 385 [WI] Selling and Negotiation Techniques in Construction 3.0 Credits

Applies negotiation and marketing principles to the construction industry. Includes understanding the roles of market research, business development planning, negotiation and networking techniques. Students will acquire the skills and techniques to prepare a winning presentation and negotiations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: CMGT 263 [Min Grade: D]

CMGT 450 Management of Field Operations 3.0 Credits

This course is intended to equip students with knowledge and skills required to successfully manage and support construction field operations. Knowledge areas include contract administration, project engineering, site superintendence, and other topics critical to field operations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT and classification is Junior or Senior.

Prerequisites: CMGT 363 [Min Grade: D]

CMGT 451 Heavy Construction Principles & Practices 3.0 Credits

This course is intended to provide students an introduction to the principles and practices employed in heavy construction. The course content is presented from a practical perspective focusing on actual field applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT and classification is Junior or Senior.

CMGT 461 Construction Project & Company Management 3.0 Credits

Covers construction management concepts and practices applicable on both project and enterprise levels including the management system, construction planning and programming, project control, environmental management, quality management, and ethics in construction management.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT or major is INTR and classification is Junior or Senior.

CMGT 463 Value Engineering 3.0 Credits

Covers the value concept, value engineering job plan, and techniques of project selection.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT or major is INTR or major is MECH.

Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

CMGT 467 Techniques of Project Control 4.0 Credits

This course covers construction planning, scheduling, network systems, and communications required for project control, diagram logic, and Earned Value Analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is AE or major is ARCH or major is CIVE or major is CMGT or major is ENGR or major is MECH.

Prerequisites: CMGT 363 [Min Grade: D]

CMGT 468 Real Estate 3.0 Credits

Overview of the development process including site selection, residential densities, market analysis and cash flow analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

CMGT 469 Construction Seminar: Contemporary Issues 3.0 Credits

This course is intended to prepare students for professional practice through a survey of the current and future state of the industry.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CMGT and classification is Senior.

CMGT 470 Productivity in Construction 3.0 Credits

Explores the evaluation of construction management's effectiveness. Overview of techniques required for improvement of construction field efficiency including quality management, productivity measurements, method improvement, human factors, and communications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

CMGT 485 Habits of Successful Design and Build Construction 3.0 Credits

The course develops specific and essential skills necessary for success within the construction workforce and project environments. Students will learn to convert virtues to habits for life and career success in the challenges of the construction industry. Strategic skills in planning and scheduling, information handling, critical event completion, problem solving, negotiating, and team-building techniques crucial to the construction process will be analyzed and developed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CMGT 385 [Min Grade: D]

CMGT 486 Leading in the Construction Industry 3.0 Credits

Leadership fundamentals for Constructors. Investigation of self-mastery to include behavioral profiles and emotional intelligence quotients to establish a baseline for skill development and personal growth required in the construction industry. Engagement in team building and communication models. Examination of leadership traits and skills through analysis of theory and comparison of construction industry leaders.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CMGT 485 [Min Grade: D]

CMGT 491 [WI] Senior Capstone I 3.0 Credits

First component of a three-part capstone series. It is the initial problem proposal phase. Students meet with clients and establish project goals, budget, and timeline. Emphasis on proposal writing, defining customer needs, and effective presentation skills.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CMGT 364 [Min Grade: D] and CMGT 385 [Min Grade: D]

CMGT 492 [WI] Senior Capstone II 3.0 Credits

Continues CMGT 491. This course requires preparation of options and alternative solutions to the problem defined in the proposal phase. It requires a written and oral progress report.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CMGT 491 [Min Grade: D]

CMGT 493 Senior Capstone III 3.0 Credits

Continues CMGT 492. Requires presentation of alternative solutions to client representatives in both oral and written reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: CMGT 492 [Min Grade: D]

CMGT I199 Independent Study in CMGT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CMGT I299 Independent Study in CMGT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CMGT I399 Independent Study in CMGT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CMGT I499 Independent Study in CMGT 0.0-4.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Senior.

CMGT T180 Special Topics in Construction Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CMGT T280 Special Topics in Construction Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

CMGT T380 Special Topics in Construction Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

CMGT T480 Special Topics in Construction Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Cooperative Education

Courses

COOP 001 Co-op Essentials 0.5 Credits

Co-op Essentials is an accelerated version of the required course for co-op students, COOP 101. It is designed for non-traditional students with significant work history. The course covers all of the essential job development topics including, introduction to the Steinbright Career Development Center and SCDOnline, resumes, interviewing, and workplace issues. The emphasis of Co-op Essentials is on integrating and adapting the student's previous experience to a co-op environment.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if concentration is 4COP or concentration is 4TOP or concentration is 5COP or concentration is 5TOP.

COOP 101 Career Management and Professional Development 1.0 Credit

Prepares new students to achieve success, personally and academically, in their first co-operative education experience. Topics covered include career exploration, resume development, interview techniques, job search strategies, success in the workplace, and professionalism.

College/Department: University Courses

Repeat Status: Not repeatable for credit

COOP 201 Co-op Experience 0.0-16.0 Credits

College/Department: University Courses

Repeat Status: Can be repeated 6 times for 96 credits

COOP 250 Professional Skills Enrichment 0.0 Credits

Professional Skills Enrichment is designed to enable the student to hone their job search skills. Taught as a series of workshops, each class focuses on a different career-related topic including Networking, Utilizing Social Networking Sites, and Mastering the Interview. Students are required to attend a mock interview and participate in a mock networking event.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Creativity Studies

Courses

CRTV 300 Mind, Brain and Learning 3.0 Credits

This course focuses on current and emerging research related to the learning sciences and Mind, Brain, and Education science. Neuromyths and evidence-based practices are explored. The course examines general neuroanatomy and processes associated with learning, memory, and emotion. Topics include neuroplasticity, brain imaging, differentiation, stress, and self-efficacy.

College/Department: School of Education

Repeat Status: Not repeatable for credit

CRTV 301 Foundations in Creativity 3.0 Credits

This course provides a foundation in creativity including leading creativity theorists and their ideas, and introduction to creativity in many fields. Students will explore basic creative characteristics including originality, fluency, flexibility, elaboration, resistance to premature closure, and tolerance of ambiguity. Sets the foundation for acquiring tools and applying creativity.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

CRTV 302 Tools and Techniques in Creativity 3.0 Credits

This hands-on course provides tools for enhancing creative strengths including role-play, simulation, brainstorming together with synectics, and creative problem solving. A second focus is the role of inspiration in how creativity, personal maturity, and spirituality inter-relate and how this interaction expands our repertoire of tools and techniques in creativity.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

CRTV 303 Creativity in the Workplace 3.0 Credits

This course focuses on how creative ideas happen and how they become innovations to reveal a set of principles for infusing creativity into every aspect of an organization. Examples from a wide range of settings demonstrate how to build systemic creativity at the individual, team, and leadership levels.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

CRTV 304 Neurodiversity in Education and Workforce 3.0 Credits

This course focuses on neurodiversity. The neurobiology of learning and memory is explored from the learning sciences and Mind, Brain, and Education science within the context of educational and work environments. The impact of practice, stress, and environment are examined in connection to neuroplasticity, memory, performance, and brain imaging. Students are engaged in peer-review and self-evaluation as they demonstrate technical and applied knowledge, creative critical-thinking, and communication skills through presentations and projects aligned neurodiversity and Universal Design for Learning across real-world contexts.

College/Department: School of Education

Repeat Status: Not repeatable for credit

CRTV 308 Neuropedagogy and Assessment 3.0 Credits

This course explores the connections between neuropedagogy, the learning sciences, and Mind, Brain, and Education science, and creative thinking. Evidence-based practices are examined including metacognition, Universal Design for Learning, spacing, interleaving, cognitive load, and feedback. Students are introduced to formative, interim, and summative assessment as well as technology platforms, tools, and applications that support mastery and transfer of learning. Students demonstrate their understanding of neuroplasticity, neuropedagogy, creative problem solving, and assessment through interactive real-world projects across educational and workforce environments.

College/Department: School of Education

Repeat Status: Not repeatable for credit

CRTV T180 Special Topics in Creativity Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

CRTV T280 Special Topics in Creativity Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

CRTV T380 Special Topics in Creativity Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

CRTV T480 Special Topics in Creativity Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

Criminology & Justice Studies

Courses

CJS 100 Freshman Seminar in Crime and Justice 3.0 Credits

This is an entry level course for CJS freshman that introduces them to the norms of academic writing and comprehension in the disciplines of criminology and criminal justice. During the course students will read a combination of classic and current volumes in criminology to initiate them into the academic discipline. The course will be mostly seminar-style, which means students will engage in active learning through reading, writing, and discussion.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 101 Introduction to Criminal Justice 3.0 Credits

This course provides a survey of the criminal justice system with the primary goal of conveying an understanding of America's formal response to crime. We confront the long-standing struggle to balance due process with crime control through the lenses of the police, courts and corrections -- the core elements of the Criminal Justice system. We also examine major crime control paradigms (historic and current), and the tenuous relationship between race and justice. The course offers a variety of educational approaches in an effort to match (as much as is reasonable) students' individual learning styles and needs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 180 Serial Killers 3.0 Credits

This course discusses serial killers; the group of individuals that fascinate all of us given the heinous nature of their crimes. We will explore the various types of serial killers, the pathology behind their killings, the victims of serial killings and how we (society and law enforcement) respond to serial killers/killings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 200 Criminology 3.0 Credits

This course examines the myriad factors that explain crime and criminal behavior. The course describes prevalences of different crime types across various populations and geographic areas to help students understand how and why crime often clusters within certain settings. The Course reviews major theories of crime developed over the past two hundred years to help explain crime and the labeling of criminal offenders. The course will draw on references from popular culture to help provide a context for crime and crime causation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 210 Race, Crime, and Justice 3.0 Credits

This course considers how race affects the behaviors of the major institutions of the justice process, as well as how the justice process affects social perceptions of race and crime. The course also describes the relationships among race, criminal offending, and victimization; and it explores how justice--related outcomes are often influenced by the quality and behaviors of local schools, access to housing, economic investment in majority--minority communities, crime control strategies, and the perceived fairness of the justice process itself.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 220 Crime and the City 3.0 Credits

This course reviews the nature of crime and disorder in cities from the urban industrial revolution through the so-called "Crime Drop" of the early 2000s. The course opens with an overview of urbanization, contrasting the "best" with the "worst" aspects of the industrial revolution on human life. It then examines urban drug markets, violence, and policing before moving into a discussion of the crime "peak" of 1992. The course then follows the ensuing crime drop, examining demographic, economic, and cultural factors that may explain the national crime decline. The course then focuses on violence as a public health issue and on how crime, incarceration, health, housing, and education are all tied to urban crime policy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 230 Police and Society 3.0 Credits

Policing is the only institution in America with the general right to use coercive force to accomplish its mandate. This class focuses on the benefits and social costs of policing, examining the evolution of the police role, the paramilitary structure of police organizations, and the recruitment and training paradigms that have shaped the identities of police officers. The course also critiques American policing and proposes a reimagined police role that deemphasizes crime fighting and coercive control in favor of protecting life. Throughout the course, students will consider and reconsider the question: If coercion is the defining feature of the police, does every interaction between the police and public have to be coercive?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 240 Seminar in Justice Informatics 3.0 Credits

Justice Informatics. Digital Justice. Data Justice. These are the theoretical and ethical contexts that frame our discussions of how the government and other entities create, use, and archive data they have gathered about members of our society. Many people are familiar with predictive policing; we have heard the terms "racist algorithms" and "artificial intelligence." But few people actually know how these activities and concepts apply to our institutions of criminal justice, and how they often conflict with society's desire to secure privacy in a data-driven world. This seminar explores Justice Informatics as a subfield of Criminology and Justice Studies. Students will learn how to conceptualize justice informatics as that intersection of information science, AI, justice, and criminal justice.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 250 Research Methods & Analytics I 3.0 Credits

This is the first of three integrated methods and analysis courses for CJS students that introduces them to the fundamentals of research design, the benchmarks of scientific quality, sampling, modes of observation, and units of measurement. The course also introduces students to the most relevant analytical procedures often used at each stage in the methodological process, such as developing a data set, performing descriptive (univariate) analyses, examining bivariate relationships, and testing hypotheses using both parametric and non-parametric statistical tests. The course culminates with students writing a research proposal that includes the major components of most grant applications: Statement of the Problem, Literature Review, Research Questions, and Research Methodology/Analytical Procedures.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 260 Justice in Our Community 4.0 Credits

This course is a seminar style community-based learning course that will begin with an introduction to justice in urban communities and examine problems unique to cities. The course format will include lectures and on-site work with our community partners at UConnect. The synthesis of scholarship and community classroom experience will provide a holistic lens in which to explore issues in our urban community. Topics include urban economies, access to education and health care, digital divides and crime. Students who take this course will also register for one recitation section of CJS 260.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 261 Prison, Society and You 4.0 Credits

This course utilizes the Inside--#Out Prison Exchange Program to explore the relationship between individuals and the prison system. The Inside--#Out Exchange Program is an evolving set of projects that creates opportunities for dialogue between those on the outside and those on the inside of the nation's correctional facilities. The program demonstrates the potential for dynamic collaborations between institutions of higher education and correctional institutions. Most importantly, through this unique exchange, Inside-Out, this course seeks to deepen the conversation and transform ways of thinking about crime and justice (Crabbe, Pompa, 2004).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 262 Places of Justice 3.0 Credits

We often debate the theory and praxis of justice and do not analyze the very places and spaces that encourage (or discourage) justice. Throughout this course students will practice justice by engaging with faculty, students, and community. This course will begin by analyzing classic and contemporary theories of justice. Upon the development of a theoretical foundation, students will explore and engage with the built environment and other social structures which support justice or create unjust places and practices. Topics include the built environment and infrastructure, climate, housing, education, and correctional facilities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 263 Crime, Violence, and Climate Change 3.0 Credits

An undergraduate course that explores the impacts of climate change on crime and violence, both at the global and local levels. The course begins with an overview of climate change as both a scientific and social construct, then examines the primary theoretical model that links climate change with crime and violence. The course then focuses on the primary contexts within which climate change affects crime and violence, including mass migrations of refugees, droughts, major water events (e.g., monsoons), destruction of habit, and urban heat islands. The course culminates in a local examination of how urban heat has influenced shooting victimizations in Philadelphia since 2016, finally examining the state security implications of global warming.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 266 Crime Prevention Planning 3.0 Credits

The course will explore the role of places and environments on criminal opportunities. By analyzing residential and business layouts, street networks, and routine activities of individuals, the course will seek ways in which situational crime prevention methods may then be applied for preventing criminal behavior in both the public and private settings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 267 Introduction to Security Studies 3.0 Credits

This course examines the private security industry. Substantive topics of interest include the historical development of the industry; its linkage to public forms of security (law enforcement and the regulatory state); its legal underpinnings; management issues; and the nature of internal and external threats faced by facilities and organizations. The philosophical and analytic paradigm for security -- risk analysis and prevention -- offers a framework for the study of problem solving models used in the field. This framework, along with the analytic models utilized by security professionals will be explored in depth.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 268 Electronic Fraud Investigations 3.0 Credits

This course examines the most common types of financial crimes that occur in contemporary society. It also explores how law enforcement authorities and private sector investigators collaborate to solve these crimes. The course opens with a history of US financial regulations, particularly pre-9/11, and shows how the events of September 11 led to changes in the regulations that govern the collective financial industry. The course includes case studies on terrorist financing schemes and Anti- Money Laundering investigations and teaches students to use IBM's i2 software to conduct, interpret, and write reports on, link analysis - a primary method for investigating electronic crime. The course concludes with an examination of how offenders use "dark web" as an illegal online marketplace to commit financial crime.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 270 Crime Analysis Using Open Data 3.0 Credits

We live a data rich world and "open data" initiatives have made unprecedented amounts of crime, criminal justice, demographic, and land use data available to academics, professionals, and citizens alike. The data are not useful unless we know what is available, how to access it, and what tools to use to make sense of it. Students will gain competence in each of these areas as we investigate: Why is open data, particularly related to crime and justice, so important? How can the availability of such data increase citizen participation in civil society? How might open data help us move toward a more just society? Should we become advocates for using the data? Students will conduct weekly exercises that focus on finding data and then getting actual and actionable information out of it and a final project.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 273 Surveillance, Technology, and the Law 3.0 Credits

This course will examine current surveillance technologies used by criminal justice agencies and private sector organizations and the laws that regulate government surveillance and protect privacy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 274 Sex, Violence, & Crime on the Internet 3.0 Credits

This course explores how offenders are adopting computers to commit traditional crimes in a high-tech manner. Specific attention will be paid to the following types of crime: cyberstalking, online harassment, cyberbullying, sexting, and computer-facilitated sexual exploitation of children. Related legislation and current law enforcement practices to address these crimes will be examined.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 276 Introduction to Computer Crime 3.0 Credits

This course provides an overview of computer crime. Emphasis will be placed on the legislative responses and policy issues related to computer intrusions and cyberfraud. Issues encountered when informing laws in cyberspace and the public/private sector initiatives for dealing with computer crime will also be explored.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 277 Introduction to Correctional Practices 3.0 Credits

This course provides insight into the Correctional component of the Criminal Justice System. Students will learn and understand correctional theory, over view of correctional facilities management and practice and contemporary issues in the field of corrections, including re-entry and alternatives to incarceration. Emphasis will be placed on actual real world experiences based upon the Philadelphia Prison System. Course material will be presented through the required textbook, court opinions from legal cases, handouts, classroom lecture and discussion, on-site visits and tours of the various Philadelphia Prison System facilities and guest lectures and demonstrations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 280 Communities and Crime 3.0 Credits

This course introduces students to the ecological study of crime. Crime varies in time, space, and populations as it reflects neighborhood structures and the routine social interactions that occur in daily life. Concentrations of crime can be found among locations, with antisocial activities like assaults and theft occurring at higher rates because of the demographic make-up of people (e.g., adolescents) or conflicts (e.g., competing gangs), for reasons examined by ecological criminology. We examine variations in socio-demographic structures (age, education ratios, and the concentration of poverty) and the physical environment (housing segregation, density of bars, street lighting) predicts variations between neighborhoods in the level of crime and disorder.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 289 Terrorism 3.0 Credits

This course examines the varying types and purposes of terrorism and its application. It will discuss the problems with definitions, worldviews and ideologies, and how these affect both the perceptions and responses to terrorist events.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 290 Crime and Public Policy 3.0 Credits

This course focuses on criminal justice and non-criminal justice policies used to combat crime. Students will use the most recent crime data and explanatory theories on crime to evaluate current policy. A multi-disciplinary approach will be used to develop new policies designed to have a long-lasting impact on crime.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 300 Research Methods and Analytics II 3.0 Credits

This course builds on (and reviews) the fundamentals of research design introduced in Methods and Analysis I with the specific aim of teaching students how to construct, and analyze data generated from, surveys. Students will learn the “mechanics” of survey design, such as where to place demographic questions, as well as how to identify and include validated scales on the instrument, and how to avoid misleading or debilitating items (e.g., “double-barreled” questions, biased/leading questions, non-mutually exclusive or exhaustive response categories. Students will also learn the process (and importance) of pre-testing the survey prior to implementing it; and they will be trained to analyze survey results using SPSS and other software packages as needed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CJS 250 [Min Grade: C]

CJS 301 Methods and Analytics III 4.0 Credits

The course focuses on the development of a community needs assessment as a platform for giving students the opportunity to work as part of a research team in the field, creating a data collection instrument, collecting and analyzing data, and reporting the findings. The course integrates the community needs assessment methodology with the urban disorder literature to educate students in the modes of observation required to reliably measure crime, disorder, surveillance gaps, and other sources of community risk. Students will map community demographic features, develop an assessment tool, make field observations, and analyze the findings as part of their culminating experience.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CJS 300 [Min Grade: C]

CJS 302 Advanced Criminological Theorizing 3.0 Credits

This course offers a detailed examination of several major theories of crime. Whereas CJS200/CJ204-Criminology represents a survey of many criminological theories, this advanced course focuses on three major perspectives in criminology: Life-course, genetics/bio-social, social disorganization (and specifically, subculture of violence) theories. The course also helps students understand how different criminological theories might integrate with each other to offer broad perspectives the causes of crime.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CJS 200 [Min Grade: C] or CJ 204 [Min Grade: C]

CJS 303 Applications of Justice 3.0 Credits

This course examines different aspects of justice -- distributional; procedural; retributive; and restorative – as they relate to crime, the criminal justice system and society more broadly. After introductory background history on this topic, each week will examine concrete cases pertaining to one of the various aspects of justice along with readings reflecting on the cases theoretically.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 304 Mental Illness and the Criminal Justice System 3.0 Credits

The increasing number of individuals with mental health and substance use conditions in the criminal justice system has enormous fiscal, health, and human costs. Within this course we will explore the shared tools needed to understand the interface between the criminal justice system and the mental health system. Through online lectures, discussions, and applied learning we will review the history and etiology of mental health, stakeholders in both systems and community considerations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 305 Crime and Popular Media 3.0 Credits

Turning on the news, streaming a popular crime show, listening to a podcast or viewing political memes sends a clear message and creates an often-inaccurate fear of crime. As a result, misinformed citizens may draw erroneous conclusions about crime, people who commit crime, and crime policies. Mass media and pop culture often misrepresent the complexity of crime and reality of those involved in the criminal justice system. Students will view popular media outlets and evaluate the legitimacy and efficacy of the sources while analyzing the accuracy of criminogenic factors and the criminal justice system as portrayed in movies, memes, podcast, and television shows.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 310 Crime Prediction Using Open Data 3.0 Credits

Information technologies have increased the amount of data researchers and practitioners have at their disposal for analysis. This data is valuable for predicting criminal behavior and the criminogenic factors present in certain geographical areas. These predictions are in turn used to support everything from policy decisions to sentencing guidelines. This course will examine the tools used for crime prediction and the impact of their use on individuals and communities. Students will learn the logic behind the algorithms used for crime prediction so they can understand the ethical implications of crime prediction tools and methodologies. We will learn R through edX so we have some hands on knowledge of one of the most popular tools being used in data science – focused on criminal justice.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 320 Comparative Justice Systems 3.0 Credits

This course offers students a transnational perspective on crime and justice institutions. As the world increasingly globalizes, it becomes increasingly important to understand how countries outside the United States undertake the processes of detecting crime, labeling people "criminal," and adjudicating criminal offenders. Is there a common threshold in other countries for determining guilt? Is there a universal standard that governs the presumption of guilt or innocence at the onset of the criminal justice process? How many other countries still use the death penalty? These are questions the course will address in addition to others related to policing, courts, and corrections.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 330 Crime Mapping I Using Geographic Information Systems 4.0 Credits

This course introduces students to the fundamentals of crime mapping through both lecture and the use of geospatial software. The course opens with a history of crime mapping, then moves to an examination of several place-based theories of criminology that help explain why crime events often cluster in time and space. The course then uses scenario-based exercises to teach students to work with and manage geospatial data, conduct select spatial analyses, interpret the results of such analyses within the contexts of different criminological theories, and create maps that illustrate spatial patterns and relationships across different units of geography.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 331 Crime Mapping II Using Geographic Information Systems 4.0 Credits

This course takes up where Crime Mapping I leaves off by teaching students some of the intermediate to advanced techniques of crime mapping using geospatial software. The course opens with a brief review of the fundamentals of crime mapping, then moves into some of the more advanced mapping/software applications that support complex analyses and visualizations. Students will learn to manipulate attribute tables, select by spatial locations, create spatial buffer and distance surfaces, convert vector data to raster data, and assess for spatial autocorrelation and clustering. They will also learn to detect and work with spatial outliers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CJS 330 [Min Grade: C]

CJS 360 Juvenile Justice 3.0 Credits

Students will learn about the history, development and current status of the juvenile justice system. Philosophical, sociological, psychological, legal and political factors contributing to the changes in the manner in which society processes children and youth who violate social norms will be explored in research articles, legal decision, and theoretical analyses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 362 Gender, Crime, and Justice 3.0 Credits

This term will explore the historical roots of crime and how we study crime specifically; we will critically analyze female crime trends and statistics, gender and the law, and female offending. After laying a strong foundation, we will connect gender and crime by exploring rape, pornography, and domestic violence, sex trafficking and female gangs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 365 Computer Investigations and the Law 3.0 Credits

This course will examine the techniques used to investigate Internet crimes and extract evidence from digital storage devices. Specific attention will be paid to the procedural laws that govern digital forensic techniques and investigations involving electronic evidence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 366 Technology and the Justice System 3.0 Credits

This course will examine past and current technologies adopted in the field of criminal justice to assess their usefulness in identifying and preventing crime and advancing justice. We will also discuss technologies on the horizon that are likely to be adopted by criminal justice agencies. Additionally, methods for evaluating technology use will be examined.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 372 Death Penalty - An American Dilemma 3.0 Credits

Capital punishment is one of the most complex issues in Criminal Justice and one of the most controversial facing America. Everyone has an opinion about the death penalty but rarely is it grounded in hard evidence. This course will examine the history of the use of capital punishment in America by reviewing the relevant case law in this area and will explore in-depth the issues which rise from the use of the Death Penalty in this country. Is it ethical? Is it fairly administered? Is it effective? Should it be reformed? Can it be reformed?

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 373 Environmental Crime 3.0 Credits

The objective of this course is to provide students with an introduction to and overview of the federal criminal enforcement program concerning the criminal prosecution of certain types of violations of federal environmental laws and regulations. Although the focus of the course will be on the federal government's environmental crimes program that is administered by the United States Environmental Protection Agency, general concepts concerning criminal law and procedure will also be discussed. More specifically, topics to be covered will include, among other things: the history of the federal environmental crimes program; the role of EPA-CID Special Agents and federal prosecutors in the investigation and prosecution of environmental crimes; environmental offenses under the Federal Acts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 375 Criminal Procedure 3.0 Credits

A solid understanding of constitutional criminal procedure is essential to any career in the law or law enforcement. Further, as America seeks to protect itself from terrorism, every citizen should understand the constitutional protections that Americans have historically enjoyed which have been and continue to be diminished by the courts and the legislature.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 376 Sentencing 3.0 Credits

We explore the theoretical basis for sentencing, including the purposes of sentencing, and determination of the just sentence, including the consideration of the crime, as well as the offender's background and criminal history. We cover contemporary issues like prosecutorial misconduct, plea bargaining, sentencing guidelines, mandatory minimums, truth in sentencing and the impact of racial and gender disparities. We also spend time investigating special issues within the field such as the sentencing of juveniles and capital sentencing procedures.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 377 Intellectual Property Theft in the Digital Age 3.0 Credits

This seminar focuses on the changing nature of intellectual property theft, piracy, and copyright infringement in the Digital Age. Attention will be paid to legislative and technical solutions for protecting copyrighted goods (including music, movies, and software) and the challenges faced when investigating the theft of intellectual property. Additionally, theoretical explanations to account for intellectual property theft will be explored.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 403 Policing: Theory and Practice 4.0 Credits

This course examines contemporary issues in policing, representing a unique collaboration between the Department of Criminology and Justice Studies and the Drexel University Police Department. The course offers both a classroom component that grounds students in the academics of policing, as well as a Citizen Police Academy experience to teach certain aspects of policing through practice. Each week, students will study a policing topic in class and then participate in a simulated police activity hosted by Drexel police officers. These simulated activities include car stops, shoot-don't-shoot scenarios, responding to mass shooting events, and drug seizures. Ultimately, this course hopes to integrate two aspects of American policing that are typically separated: How we teach policing, and how we do policing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS 405 Data-Driven Investigations and Crime 3.0 Credits

Crime, security, and intelligence analysts are faced with an increasing amount of data and sources to draw data from that can help detect, solve, and prevent crime and better understand criminality. In this course, students will build competencies in database design, Structured Query Language, and the Python programming language to support the collection, use, and analysis of data connected to criminal investigations and intelligence operations. Classroom activities and lab exercises will give students valuable hands-on experience with the latest methods and tools used by analysts in the criminal justice, security, and intelligence communities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

CJS I199 Independent Study in Criminology & Justice Studies**0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS I299 Independent Study in Criminology & Justice Studies**0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS I399 Independent Study in Criminology & Justice Studies**0.5-12.0 Credits**

Provides a course of independent study in Criminology and Justice Studies. Topics for study must be approved in advance of registration by the advisor and the instructor involved.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS I499 Independent Study in Criminology & Justice Studies**0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS T180 Special Topics in Criminology & Justice Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS T280 Special Topics in Criminology & Justice Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS T380 Special Topics in Criminology & Justice Studies 0.0-12.0 Credits

This course will explore current issues and interests in Criminology and Justice Studies. The topic will vary each term.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

CJS T480 Special Topics in Criminology & Justice Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Culinary Arts

Courses

CULA 115 Culinary Fundamentals 3.0 Credits

Introduces culinary principles and procedures used in commercial food preparation and practical application of classical culinary techniques.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA 120 Techniques and Traditions I 3.0 Credits

In this foundation culinary course, students will learn the fundamentals of a professional kitchen through lecture, demonstration and production. Classical and contemporary techniques are emphasized for development of cooking methods, knife skills, and food and kitchen safety and sanitation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 115 [Min Grade: D]

CULA 121 Techniques and Traditions II 3.0 Credits

A continuation of CULA 120. Students will further develop their kitchen skills with application to recipe and menu development and plate design. Service to the public will be executed through various preparation techniques and types of service.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 120 [Min Grade: D]

CULA 125 Foundations of Professional Baking 3.0 Credits

This course will introduce students to the foundations needed to work in a pastry kitchen. This hands-on lab class will help build students sense of timing and a delicate touch needed to produce classic bakery items such as pies, cookies, muffins, biscuits, pastry cream, and basic breads.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 115 [Min Grade: D] (Can be taken Concurrently)

CULA 216 A la Carte 3.0 Credits

This is a sophomore level course in dining operations designed around a weekly restaurant operation, which is marketed and delivered to the Drexel Community and general public.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 121 [Min Grade: D]

CULA 220 Patisserie I 3.0 Credits

Students will be introduced to a variety of techniques that are the foundations to creating restaurant quality desserts, including mousses, sorbets, custards, ice creams, and frozen desserts. Along with learning techniques, applications, and utilization of products dessert plating will be part of the students development.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CULA 125 [Min Grade: D]

CULA 225 Patisserie II 3.0 Credits

This course will further develop students sense of creativity, flavor, texture, color, and presentation skills. Building on knowledge and techniques already learned in previous courses, this course will provide students with knowledge and touch to produce professional quality desserts of all sizes from amuse bouche, petit fours, and sophisticated desserts.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CULA 220 [Min Grade: D]

CULA 227 Wheat and Grains: Artisan Breads 3.0 Credits

This course will introduce students to proper techniques in producing a variety of artisan breads. The course will allow students to create professional style breads and allow for fully developed yeast fermentation. Students will learn the skills, terminology, and calculations to produce artisan breads in volume.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 125 [Min Grade: D]

CULA 228 Design, Presentation, and Decorating in Pastry 3.0 Credits

This course will give students the foundation to create a variety of cakes for many special occasions. Students will learn to produce and utilize different types of icings, fondant, and cake styles to build numerous flavor and texture combinations. Along with the skills learned in garnishing student will create a variety of professional quality cakes.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 125 [Min Grade: D]

CULA 229 Confectionery 3.0 Credits

This course will give students an excellent foundation in understanding, taste, and usage of chocolate and its many forms. Students will learn to properly temper chocolate and then utilize it for creating garnishes and artisan candies. In addition the proper technique for sugar cookery will be learned and then applied for a variety of confections.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 125 [Min Grade: D]

CULA 230 Garden To Table Cooking 3.0 Credits

This course uses a variety of culinary platforms, rather than recipes, to teach students to cook sustainably from the available harvest of the season with a goal of full product utilization or root-to-leaf eating. A variety of moist and dry heat cooking methods and preservation techniques will be incorporated. The class consists of readings, discussions, hands-on cooking activities, and guest demonstrations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA 290 Culinary Arts Practicum I 3.0 Credits

Students will gain work experience in culinary production while under faculty supervision. Students obtain industry jobs, work a minimum of 60 hours, log their experiences, and write a final analysis. The networking opportunities often lead to rewarding co-op, part time, or full time employment opportunities. Students take CULA 290 or CULA 291.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CLSC or major is CULA.

Prerequisites: CULA 120 [Min Grade: D]

CULA 291 Culinary Arts Practicum II 6.0 Credits

Students will gain work experience in culinary production while under faculty supervision. Students obtain industry jobs, work a minimum of 120 hours, log their experiences, and write a final analysis. The networking opportunities often lead to rewarding co-op, part time, or full time employment opportunities. Students take either CULA 290 or CULA 291.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CLSC or major is CULA.

Prerequisites: CULA 120 [Min Grade: D]

CULA 303 Global Cuisine Studio 3.0 Credits

Students explore characteristic regional culinary traditions from the US and around the world on a rotating basis. Emphasis is on flavor principles, signature dishes, techniques, and the history, geography, and culture of the region of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 4 times for 15 credits

CULA 316 Butchery Laboratory 2.0 Credits

In this culinary lab course students will execute the fabrication of meat, fish and poultry products, skills necessary in any professional kitchen operation. Students will perform yield tests and calculate portion cost of fabricated items.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 115 [Min Grade: D] or CULA 120 [Min Grade: D]

CULA 320 Advanced Culinary Studio 3.0 Credits

Under the direction of culinary industry leaders and program faculty students will prepare and produce finished plates using a variety of previously learned skills. Finished products will reflect the style of a chosen culinary industry leader executed with the judgment and professionalism of the student.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 115 [Min Grade: D] or CULA 120 [Min Grade: D]

CULA 325 Garde Manger Laboratory 3.0 Credits

Introduces techniques used in the fabrication, selection and preparation of cold buffet production. Items include cold appetizers, canapes, garnishes, hors d'oeuvres, salads, and sandwiches. Additional focus on decoration, form, and presentation of cold food items.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CULA 120 [Min Grade: D] or CULA 115 [Min Grade: D]

CULA 328 Brasserie Applied Baking 3.0 Credits

This course will develop students ability to cross utilize the mediums of culinary arts and pastry arts. In almost every food service operation the techniques and products made by both the savory and sweet kitchen are seamlessly combined to create the menu. Students will focus on combining both of these disciplines to create contemporary and classic dishes.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 125 [Min Grade: D] and CULA 320 [Min Grade: D] and CULA 325 [Min Grade: D] and CULA 227 [Min Grade: D]

CULA 330 Charcuterie 3.0 Credits

Students learn about the chemistry and techniques of curing, brining, and smoking. Items covered include classic and modern, forcemeats, pates, galantines, terrines, and sausages (fresh and dry).

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 115 [Min Grade: D] or CULA 120 [Min Grade: D]

CULA 400 Directed Studies with a Master Chef 3.0 Credits

Structured program that allows students the opportunity to practice the skills and competencies learned in coursework with an acknowledged culinarian in a qualified foodservice operation. Students are monitored by their direct supervisor, by Culinary Arts faculty, and by evaluation of written reports, workbooks, journals, and portfolios prepared during the course.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 115 [Min Grade: D] or CULA 120 [Min Grade: D]

CULA 405 [WI] Culture and Gastronomy I 3.0 Credits

The first of two courses devoted to the study of food as a determinant, how culture, beliefs, methods of acquisition, preparation and social interaction impact on a global scale. Reading, research, and course study focuses on food sources, discoveries and the evolution of sustainables and their effects on the formation of tribes and communities, population growth and expansion. Dishes, history and commonalities from three global cuisines will be compared, prepared and discussed. Classes are divided between lecture and cooking labs.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA 410 Culture and Gastronomy II 3.0 Credits

The second of two courses devoted to the study of food and culture. The course comprises a survey of contemporary food studies topics and an examination of food choices in contemporary society. Reading, research and course study focuses on food sources, individual and gender identity, the global food chain, sustainability, inherent "costs" of contemporary consumables, and the future of food in an ever expanding global economy. Classes are divided between lecture and cooking labs. Students should anticipate a significant amount of reading and writing in this course.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 405 [Min Grade: D]

CULA 412 Food Writing 3.0 Credits

A practical introduction to food journalism. Explores through regular writing and reading assignments the broad range of topics typically encountered in a newspaper or magazine environment, from ingredient features and trend stories, to profiles, first person essays, restaurant criticism, "live" deadline assignments, and long-form magazine projects.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

CULA 421 Senior Design Project I 2.0 Credits

Students will undertake individual creative research which will enable them to prepare for the Culinary Arts Program annual show. Emphasis will be on the incorporation of skills, technologies and techniques learned from prior coursework and experience.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA 422 Senior Design Project II 2.0 Credits

Students will undertake individual creative research which will enable them to prepare for the Culinary Arts Program annual show. Emphasis will be on the incorporation of skills, technologies and techniques learned from prior coursework and experience.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CULA 421 [Min Grade: D]

CULA 425 The Kitchen Garden 3.0 Credits

This course familiarizes students with the preparation and planting of a raised-bed culinary garden using organic techniques. Students will practice indoor and outdoor seed sowing; learn to promote soil health and study the relationships between the kitchen and the garden. The harvested spring produce is used for various culinary applications.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA 426 The Kitchen Garden: Summer 3.0 Credits

This course familiarizes students with the dynamics of the contemporary kitchen garden as a food source, and a platform for environmental stewardship. Students will study the importance of plant nutrition; and take part in community garden outreach activities. The harvested summer produce is used in summer term Culinary Arts classes.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA 427 The Kitchen Garden: Fall 3.0 Credits

This course familiarizes students with the complex relationships between food sources, conventional vs. sustainable farming practices; and the ethics of food access and waste analysis. Preservation of the harvest is explored; and the fall produce is used in various culinary applications.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

CULA I199 Independent Study in Culinary Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CULA I299 Independent Study in Culinary Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CULA I399 Independent Study in Culinary Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is CULA.

CULA I499 Independent Study in Culinary Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CULA T180 Special Topics in Culinary Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CULA T280 Special Topics in Culinary Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CULA T380 Special Topics in Culinary Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

CULA T480 Special Topics in Culinary Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is CULA.

Custom-Designed Major

Courses

CSDN 101 [WI] Introduction to Multi-Disciplinary Perspectives 1.0 Credit

Teaches Custom-Designed Major students perspectives of scholarly analysis. Students will be introduced to interdisciplinary approaches to thinking and different ways of communicating interdisciplinarity to a variety of audiences. This course will inform the process of blending knowledge from across fields in the social sciences and humanities, creative arts, science and engineering, and business.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CSDN.

CSDN 102 Knowledge by Design Seminar 1.0 Credit

Develops skills in designing curriculum paths at the University, designing research topic bibliographies, and developing original research questions and methodologies. The course culminates in the presentation of the student's course of study in the Custom-Designed Major Program.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CSDN.

Prerequisites: CSDN 101 [Min Grade: D]

CSDN 203 Custom-Designed Major Seminar 1.0 Credit

Brings Custom-Designed Major students at the sophomore, pre-junior, and junior years together to present and critique original work with their peers related to their individualized courses of study.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CSDN.

Prerequisites: CSDN 102 [Min Grade: D]

CSDN 210 [WI] Methods of Interdisciplinary Inquiry 3.0 Credits

This seminar course will examine the role that varying methods of inquiry play across disciplines and how those different methods can be applied to problem solving. The intention is to expose students to a broad array of research and problem solving methodologies, and to help them synthesize these approaches in innovative ways to address real world problems.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

CSDN 220 [WI] Integrative Research Methods 3.0 Credits

This seminar course will help develop students' critical thinking and research skills through the examination of interdisciplinary research projects and the creation of their own research proposals. Students will explore how multiple disciplinary research methodologies are integrated and information is synthesized within and across interdisciplinary research. The course is designed so that students gain familiarity with the theory and application of interdisciplinary research. Students will develop an understanding and the means to assess the various stages of interdisciplinary research, including research question formulation, proposal development, integration of methods, and synthesis and analysis of information.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

CSDN 304 Custom-Designed Major Proj I 3.0 Credits

Research project sequence for the Custom-Designed Major program.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if major is CSDN and classification is Senior.

CSDN 305 Custom-Designed Major Project II 3.0 Credits

Research project sequence for the Custom-Designed Major program.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if major is CSDN and classification is Senior.

CSDN 306 Custom-Designed Major Project III 3.0 Credits

Research project sequence for the Custom-Designed Major program.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if major is CSDN and classification is Senior.

CSDN I199 Independent Study in CSDN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

CSDN I299 Independent Study in CSDN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

CSDN I399 Independent Study in CSDN 1.0-3.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated 2 times for 6 credits

CSDN I499 Independent Study in CSDN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

CSDN T180 Special Topics in CSDN 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

CSDN T280 Special Topics in CSDN 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

CSDN T380 Special Topics in CSDN 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

CSDN T480 Special Topics in CSDN 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Dance

Courses

DANC 100 Survey of Dance Studies 3.0 Credits

This course will include lecture, reading assignments, writing assignments and self-reflection activities to introduce students to academic dance coursework in higher education.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 102 Yoga 3.0 Credits

The physical and intellectual study of the ancient practice of yoga.

Includes both physical practice and readings related to the discipline, as well as a survey of a variety of forms of the practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 12 credits

DANC 104 Ballet Technique I 2.0 Credits

Introduces ballet dance vocabulary including alignment, stretching and strengthening, line, flexibility and movement phrases.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 16 credits

DANC 105 Modern Dance Technique I 2.0 Credits

Introduces modern dance vocabulary, including stretching and strengthening exercises, alignment, movement phrases, and basic locomotor skills. Includes performances and discussion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 16 credits

DANC 106 Jazz Dance Technique I 2.0 Credits

Introduces jazz dance style, concentrating on body isolations, movement vocabulary and the development of movement phrases.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

DANC 107 Hip-Hop Dance Technique I 2.0 Credits

Introduces hip-hop dance technique, vocabulary, movement principles, muscle control, and body alignment. Includes appreciation for funk and hip-hop with historical and cultural contexts.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

DANC 108 Dance Improvisation I 2.0 Credits

A studio course in creative movement. Uses contact and structured improvisational problems, interaction between dances and the elements of time, space and force.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

DANC 109 African Dance Technique I 2.0 Credits

This studio course is designed to explore the aesthetic, movement, music and rituals found in African Dance forms.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

DANC 114 Philadelphia Dance, Let's Go! 3.0 Credits

Philadelphia Dance Let's Go! exposes students to a variety of dance performance opportunities available in the Philadelphia region. Through research, discussion, and attendance at dance productions, students will enhance their abilities to discuss, evaluate and enjoy dance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC 115 Introduction to Dance 3.0 Credits

A studio and classroom course. Examines the elements of dance through study and participation in classical, theatrical, and social forms. Includes readings, films, and discussion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 116 Dance and Fitness 3.0 Credits

This course explores areas of health, fitness and wellness, including nutrition, cardiovascular health, strength training, flexibility, psychological wellness, and injury prevention. Topics will be covered through a combination of kinesthetic and academic approaches.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 117 Foundations of Somatic Theory and Practice 3.0 Credits

This course, for beginner through advanced, teaches you to maximize your potential for dance, sports, yoga, martial arts or any movement practice, through readings, exercises and assignments that build core strength, flexibility and efficient action.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 131 Dance Practicum in Performance 1.0 Credit

Provides practical experience as a dancer in a Department of Performing Arts dance production. Includes helping with preperformance production, attending all rehearsals, and performing in the concerts. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC 132 Dance Practicum in Production 1.0 Credit

Provides practical experience in dance production, including participation in publicity, costume construction, lighting design, box office, and program production for a Drexel University Dance Ensemble concert. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC 133 Dance Practicum in Choreography 1.0 Credit

Covers the process of developing an idea into a finished dance through close work with the artistic director, including selecting dancers and music; teaching the movement; planning costumes, lighting, and sets; polishing the work; and presenting it to an audience during a Drexel University Dance Ensemble concert. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC 135 Rhythmic Study for Dance 3.0 Credits

Covers rhythmic structures that can accompany dance, including sight reading and eurhythmics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 204 Ballet Technique II 2.0 Credits

Studio course in intermediate level ballet technique. Further develops students' alignment, line, muscular stamina, flexibility, movement vocabulary and artistry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 16 credits

Prerequisites: DANC 104 [Min Grade: D] or DANC 140 [Min Grade: D]

DANC 205 Modern Dance Technique II 2.0 Credits

Covers advanced modern dance vocabulary including stretching and strengthening exercises, alignment, movement phrases and performance quality.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 16 credits

Prerequisites: DANC 105 [Min Grade: D] or DANC 150 [Min Grade: D]

DANC 206 Jazz Dance Technique II 2.0 Credits

Covers advanced jazz dance style, concentrating on body isolations, movement vocabulary, and the development of movement phrases, syncopation and flexibility.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

Prerequisites: DANC 106 [Min Grade: D] or DANC 160 [Min Grade: D]

DANC 207 Hip-Hop Dance Technique II 2.0 Credits

Advanced hip-hop dance technique, vocabulary, movement principles, muscle control, and body alignment. Includes appreciation for funk and hip-hop with historical and cultural contexts.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

Prerequisites: DANC 107 [Min Grade: D] or DANC 170 [Min Grade: D]

DANC 208 Dance Improvisation II 2.0 Credits

A studio course in advanced creative movement. Uses improvisational problems and improvisational dance making to study momentum, speed, alignment, contact, sound, group work, and dramatic intention.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DANC 108 [Min Grade: D] or DANC 180 [Min Grade: D]

DANC 209 African Dance Technique II 2.0 Credits

This studio course is an advanced exploration of the aesthetic, movement, music and rituals found in African Dance forms. It builds on principles of African I and introduces more complex and physically demanding repertory.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

Prerequisites: DANC 109 [Min Grade: D] or DANC 190 [Min Grade: D]

DANC 215 Dance Appreciation 3.0 Credits

Teaches students to look at dance as an art form, emphasizing the ability to analyze and understand various dance styles. Includes films, readings, performances, and discussion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DANC 115 [Min Grade: D]

DANC 216 Introduction to Laban Movement Analysis 3.0 Credits

This course introduces the principles of movement analysis by Rudolph Von Laban including an exploration of effort - shape, space and body as introduced by physical therapist Irmgard Bartenieff.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 221 Survey of Dance and Movement Therapy 3.0 Credits

This course investigates the use of dance as a diagnostic and therapeutic tool for psychological health and recovery.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 222 Dance Pedagogy 3.0 Credits

This course explores the social and physical development of children as it relates to the teaching of dance. Develops a repertoire of techniques for teaching children and adults.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 223 Dance Pedagogy I: Foundations of Dance Pedagogy 3.0 Credits

This course explores the theoretical foundations for dance teaching and learning. Teaching methodologies and practices will be developed through academic and embodied coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 225 Dance Repertory 2.0 Credits

This course allows dancers to synthesize their technical abilities with their knowledge of dance history as they learn the works of major historical choreographers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 6 credits

DANC 235 Dance Composition I 3.0 Credits

Explores the basic traditional forms of solo and group composition through improvisation, manipulation of movement phrases and critique.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 250 Screendance 3.0 Credits

This course is a practical introduction to Screendance for dancemakers interested in extending their experience in dance into a new technological realm. Screendance connects film (and filmmaking) with dance (and dancemaking) in an evolving hybrid performative practice. Through creative projects, students will develop their cinematic style and increase proficiency with both filming and editing movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC 260 Injury Prevention for Dance 3.0 Credits

This course uses physical and intellectual exploration to create individual flexibility and injury prevention plans that meet the student's goals. It is particularly targeted to dancers who use their bodies intensively. Techniques for injury prevention and recovery are emphasized.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 304 Ballet Dance Technique III 2.0 Credits

Studio course in advanced level ballet technique. Further develops students' alignment, line, muscular stamina, flexibility, movement vocabulary, artistry and critical analysis of ballet movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 16 credits

Prerequisites: DANC 204 [Min Grade: D] or DANC 141 [Min Grade: D]

DANC 305 Modern Dance Technique III 2.0 Credits

This course covers advanced modern dance vocabulary, including stretching and strengthening exercises, alignment principles, movement phrases, and increasingly complex locomotor skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 16 credits

Prerequisites: DANC 205 [Min Grade: D] or DANC 151 [Min Grade: D]

DANC 306 Jazz Dance Technique III 2.0 Credits

This course covers advanced jazz dance styles for highly experienced students, concentrating on body isolations, movement vocabulary and the development of movement phrases, syncopation and flexibility.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 8 credits

Prerequisites: DANC 206 [Min Grade: D] or DANC 161 [Min Grade: D]

DANC 307 Hip- Hop Technique Class III 2.0 Credits

Advanced Hip-Hop choreography & dance technique, movement principles, muscle control, and body alignment. Hip-Hop III includes exploring choreographic phrases and compositions like those featured in music videos, movies, and other professional presentations of Hip Hop dance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: DANC 207 [Min Grade: D]

DANC 309 African Technique Class III 2.0 Credits

This studio course is designed to explore, embody and create through projects the aesthetic, movement, music, and cultural rituals found in African dance forms.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DANC 209 [Min Grade: D]

DANC 315 Twentieth Century Dance 3.0 Credits

Covers the history of Western theatrical dance from the beginning of the century to contemporary times. Emphasizes the development of modern dance in the United States. Includes films, performances, and discussion. This is a writing intensive course.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 316 Dance Kinesiology 3.0 Credits

This course will provide an introduction to the musculoskeletal system and basic health information. Students will gain an understanding of anatomy and kinesiology and will explore how these topics are related to dance, normal daily activities, injury prevention, and healthy lifestyle choices. The kinesiological concepts presented in this course will be applied using the context of dance movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 323 Dance Pedagogy II: Dance Education for Children and Youth 3.0 Credits

This course explores the theoretical and practical issues surrounding dance teaching and learning for children and youth in PK-8, private studio and community engaged settings.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 335 Dance Composition II 3.0 Credits

This course explores the advanced forms of solo or group choreography including narrative, abstract and musical interactions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: DANC 235 [Min Grade: D] or DANC 240 [Min Grade: D]

DANC 415 Dance Aesthetics and Criticism 3.0 Credits

This course is designed to introduce students to the concepts of aesthetics which affect the ways in which dance is created, performed and viewed. Issues of dance criticism and how this pertains to aesthetic judgment will also be addressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DANC 215 [Min Grade: D] or DANC 201 [Min Grade: D]

DANC 416 Survey of Somatic Practices 3.0 Credits

This course investigates a range of integrative mind/body practices for physical well-being and optimal performance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (DANC 316 [Min Grade: D] or DANC 360 [Min Grade: D]) and (DANC 117 [Min Grade: D] or DANC 261 [Min Grade: D])

DANC 423 Dance Pedagogy III: Dance Education for Adolescents and Adults 3.0 Credits

This course explores the theoretical and practical issues surrounding dance teaching and learning for adolescents, adults and senior adults in secondary education, private studio and community engaged settings.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 481 Senior Seminar in Dance 1.0 Credit

Senior Seminar prepares graduating Dance students for a successful transition after graduation and provide strategies to contribute to the field of dance. This course will also prepare students for a culminating senior project experience.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DANC 491 Senior Project in Dance 1.0 Credit

Senior Project is the capstone course for Dance Majors in which the student presents a project in one of three areas: a presentation, scholarly research paper, or a major performance. The students will be required to utilize the skills, techniques, and concepts that they learned prior to their senior year in Drexel's Dance Program and present a project that reflects the students' strength, concentration, and passion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 3 credits

Prerequisites: DANC 481 [Min Grade: D]

DANC I199 Independent Study in Dance 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC I299 Independent Study in DANC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC I399 Independent Study in DANC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC I499 Independent Study in DANC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC T180 Special Topics in Dance 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC T280 Special Topics in Dance 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC T380 Special Topics in Dance 0.5-3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DANC T480 Special Topics in Dance 0.5-3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Data Science

Courses

DSCI 351 Recommender Systems 3.0 Credits

Recommender systems are electronic commerce information filtering systems to predict items that the users may have interest in. The goal of this course is to provide an overview of recommender systems, including content-based and collaborative algorithms for recommendation, programming of recommender systems, and evaluation and metrics for recommender systems. The course introduces all relevant topics of Recommender Systems: overview, non-personalized recommendation, content-based recommending, neighborhood-based collaborative filtering, recommender system evaluation and advanced topics. Students will gain hands-on experiences with assignments and a term project.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 212 [Min Grade: D]

DSCI 471 Applied Deep Learning 3.0 Credits

The goals of this course are to introduce basic theory of deep learning in data science applications, to understand how deep learning algorithms work at a high level, and to apply deep learning algorithms to key data science problems in different disciplines. The course introduces all relevant topics in deep learning: neural networks, backpropagation, convolution neural networks, recurrent neural networks and deep reinforcement learning. Students will be exposed to various representative algorithms in the concept level and learn their trade-offs. Students will gain hands-on experiences with assignments and a term project. Students will be prepared to attack new problems using various deep learning methods.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 213 [Min Grade: D] and MATH 201 [Min Grade: D]

Design & Merchandising

Courses

DSMR 100 Computer Imaging I 3.0 Credits

The course explores the fundamentals of computer design software including Adobe Photoshop, Illustrator and InDesign. Projects include graphics creation and manipulation; image acquisition, text creation and manipulation; typography; input and output options and control; hardware/software/system fundamentals; and troubleshooting as they relate to the creative industries.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 103 Introduction to the Fashion Industry 3.0 Credits

Introduces the materials and methods used to design, develop, and market the fashion product, including current vocabulary and foundation of knowledge about industry practices and career opportunities.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 201 Analysis of Product 3.0 Credits

This course examines the product development process from concept to consumer. Students will analyze the global supply chain and learn about sustainable product strategies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 210 Presentation Techniques Design and Merchandising 3.0 Credits

In Presentation Techniques students learn the various types of presentations used within a professional workplace environment. Students learn methods and practice public speaking, storytelling, rhetoric, and digital design skills to create slide decks, white papers, and short videos related to a relevant prompt specific to the fashion lifestyle industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D]) and (VSCM 100 [Min Grade: D] or DSMR 100 [Min Grade: D] or WEST 100 [Min Grade: D]) and DSMR 211 [Min Grade: D] and COM 230 [Min Grade: D]

DSMR 211 Digital Design for Design and Merchandising 3.0 Credits

This course builds skills and processes in using digital design tools and industry research and their application in the development of a range of merchandising presentations. Students learn to use an array of Adobe Creative Suite tools, trend intelligence and retail analytics to present curated, balanced, and strategic product offerings.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 100 [Min Grade: D] or DSMR 100 [Min Grade: D] or WEST 100 [Min Grade: D]

DSMR 215 Digital Commerce & Promotion 3.0 Credits

The Internet has changed nearly every aspect of how lifestyle brands operate in the 21st century. Digital marketing, social media, and e-commerce have become crucial to merchandising fashion apparel, accessories, home fashion and beauty business growth. In this course students will gain a deeper understanding of how the digital economy works, and they will develop the critical insights necessary to design a brand strategy to succeed in e-commerce, digital, and social media marketing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 230 Textiles for Design and Merchandising 3.0 Credits

Examines the textile manufacturing industry and the fundamental processes involved in producing natural and man-made fabrics as they relate to Design & Merchandising. Includes basic terminology and production processes as well as selection and evaluation of fabrics based on aesthetics, performance and care characteristics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is DSMR.

DSMR 231 Retail Operations 3.0 Credits

Examines retail philosophies within an operational context, including understanding how consumption, present and future, determines a retailer's strategy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

DSMR 232 Merchandise Planning and Buying 4.0 Credits

Provides a working knowledge of merchandise planning, flow, and distribution in the retail setting. Covers profitable merchandise and assortment planning and control in both conceptual and technical formats. Final project incorporates six-month financial, classification, and assortment planning.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DSMR 231 [Min Grade: D]

DSMR 233 [WI] Branding and Retail Strategies 3.0 Credits

Students will perform an in-depth analysis of theoretical and applied retail product and brand research. Qualitative, quantitative and triangulation methods of research will be discussed. The course focuses on researching, writing and presenting various topics in a professional environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 300 Design and Merchandising Trends and Impact 3.0 Credits

An exploration of a specialized area of the industry which is relevant to the zeitgeist.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 12 times for 39 credits

Prerequisites: DSMR 231 [Min Grade: D]

DSMR 310 Merchandising Operations & Management 3.0 Credits

This course will focus on the apparel & non-apparel management functions that exist between the merchandising, design, production and promotion elements of the product supply chain. Students will utilize retail analytics, trend intelligence, excel applications and assortment and allocation planning to execute merchandising strategies, sales plans and margin goals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DSMR 232 [Min Grade: D]

DSMR 311 Visual Merchandising 3.0 Credits

Visual Merchandising combines design skills, consumer psychology and marketing principles to create window displays, floor merchandising and plan-o-grams in a retail environment that entices consumers to buy. Students will investigate related areas of store planning and design, point-of-purchase display, fixture design, and topics on trend in the industry. Students will apply the principles and elements of design in merchandise presentation, analysis and experimentation and field research. Methods of promoting and selling merchandise, analyzing leading retail firms, employing basic methods of displaying merchandise, and developing a basic understanding of the use of special materials and lighting will be integrated into experiential projects outside of the classroom.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: DSMR 232 [Min Grade: D]

DSMR 315 [WI] Media Merchandising I 3.0 Credits

In Media Merchandising I students learn the process of creating, designing, and publishing a digital publication. The students develop all content organized around themes of school, city, fashion, product, and technology, and the various intersections as it relates to design and merchandising.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: VSST 103 [Min Grade: D] and DSMR 210 [Min Grade: D] and DSMR 211 [Min Grade: D] and ENGL 103 [Min Grade: D]

DSMR 316 Media Merchandising II 3.0 Credits

Media Merchandising II is a continuation of Media Merchandising I, where students learn to engage in strategic decision making related to digital content such as, informational articles, interviews, photography, graphic design, social media, interactive media and paid advertisement. The results of the student's learning process is a premier fashion lifestyle digital publication.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: DSMR 315 [Min Grade: D]

DSMR 319 Beauty Merchandising & Marketing 3.0 Credits

Learn how beauty products are developed, merchandised, packaged and marketed. This course will cover the history of the industry, iconic brands, and walk through the process of product ideation, development/testing, merchandising and distribution. Students will understand the importance of packaging and presentation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 4 times for 15 credits

DSMR 321 [WI] Fashion Show Production I 3.0 Credits

This course is an examination of the Fashion Show as a sales and marketing tool and as a historically important event in the evolution of the fashion industry. An understanding of all behind-the-scenes aspects of a professional fashion show will be discussed. This course introduces a hands-on experience in addition to academic course work. Especially for students interested in event planning, public relations and marketing, this course provides experience that will be valuable as students enter the workplace.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

DSMR 324 Retail Intersections: Social & Cultural Issues 3.0 Credits

Those who participate in the business of fashion such as retailers, merchants, designers, manufacturers and stylists must evolve in order to sell to customers. Throughout their lives, students are exposed to retailing, merchandising, buying, design, sales, branding, promotions, manufacturing and other such fields. For those interested in the study of retailing, fashion and merchandising, it is essential to understand landmark research and theoretical concepts behind the influences of this field and how social change, innovations and with the evolution of a multicultural marketplace, shifts have occurred over generations, and into the 21st century. This conceptual and theoretical course will expose students to a diverse range of clients and consumers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DSMR 231 [Min Grade: D]

DSMR 330 Immersive Media and Merchandising 3.0 Credits

This multi-discipline course is bringing together brand strategy & merchandising (D&M) with the immersive media experience of the Digital Media program. Students will explore digital solutions for the business of fashion and develop solutions using immersive media in virtual & real space. Groups will combine students from Design and Merchandising & Digital Media to explore opportunities to plan and implement immersive solutions specific to the textile, fashion, and lifestyle industries.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 12 times for 39 credits

Prerequisites: DSMR 310 [Min Grade: C] or ENTP 440 [Min Grade: C]

DSMR 332 Product Styling for Digital Commerce 3.0 Credits

Styling is the practice of visual communication from briefs for a particular aesthetic for large-scale photo shoots, product photography or flat-lays. These skills are applicable skills for product styling, and photography styling for ecommerce, covering the latest in design trends; practical case studies and expert styling tips, tricks and advice. Student teams will combine their knowledge of photography and merchandising to understand and execute photo shoots for a broad range of ecommerce categories including apparel, beauty, footwear, jewelry, home décor, food, and electronics. The course will culminate with a photoshoot; conceptualized and created from start to finish.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 4 times for 15 credits

DSMR 333 Fashion Product Development and Sourcing 3.0 Credits

Provides an overview of the development of knitted and woven, apparel and non-apparel products. The execution of line development will include market research, sourcing, costing, markup planning and category analysis. Students will evaluate global supply chains and circularity using product lifecycle management technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: DSMR 231 [Min Grade: D]

DSMR 410 Career Strategies for Design and Merchandising 3.0 Credits

Course develops skills that enable the student to put into place an effective job search strategy. Specifically geared to the D&M professions, students develop comprehensive area of expertise including networking, industry research, and industry hiring trends.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

DSMR 464 Merchandising Analytics 3.0 Credits

An integral part of today's retail environment is data analytics. This real-world data-driven course highlights a variety of critical retail metrics and analyses that will demonstrate and support the importance of being a data-driven decision-making business. The course will utilize technology to enhance the understanding of the use of data to make key business decisions in retail buying and planning.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: DSMR 310 [Min Grade: D]

DSMR 475 Design and Merchandising in the Circular Economy 3.0 Credits

This course will examine the sustainability of the fashion system from concept to consumer. Topics will include new technologies, sourcing and supply chains, business models, consumer behavior, and new roles and opportunities within the fashion system that support a circular economy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 477 [WI] Design and Merchandising Seminar 3.0 Credits

Provides reading and discussion of pertinent topics of current concern in the professional area of design and merchandising.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is DSMR.

Cannot enroll if classification is Freshman

DSMR 485 Retail and Merchandising Seminar Leadership 3.0 Credits

This course will be taught in a seminar format and feature talks from various leadership areas in the retail, merchandising, and lifestyle product areas. Topics will consider how managers and leaders must develop teams to understand corporate culture, retail management & analysis, product quality, customer service, human resources, merchandising strategies, and future goals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DSMR 496 [WI] Senior Problem in Design and Merchandising 3.0 Credits

Provides an opportunity for the student to research, independently or within a group, an idea within the field of design-merchandising, synthesizing material and developing a presentation of that concept.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: PROD 215 [Min Grade: D]

DSMR I199 Independent Study in Design & Merchandising 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR I299 Independent Study in Design & Merchandising 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR I399 Independent Study in Design & Merchandising 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR I499 Independent Study in Design & Merchandising 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR T180 Special Topics in Design & Merchandising 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR T280 Special Topics in Design & Merchandising 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR T380 Special Topics in Design & Merchandising 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DSMR T480 Special Topics in Design & Merchandising 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Digital Media

Courses

DIGM 100 Digital Design Tools 3.0 Credits

Students learn the basics of visual design within the digital realm.

Software tools such as Adobe Photoshop and Illustrator are utilized.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DIGM 105 Overview of Digital Media 3.0 Credits

Surveys the history, theory, practice, technologies, and related social issues associated with the growth of digital media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DIGM 131 Introduction to Scripting for the Digital Content Creation Pipeline 3.0 Credits

This course introduces fundamental scripting concepts through the exploration of modern scripting languages commonly used in disciplines related to digital content creation (DCC) pipelines.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DIGM 250 Professional Practices 3.0 Credits

Provides a professional orientation to the field through an exploration of a variety of digital media projects. In addition to lecture and discussions, allows students to take active part in role plays and presentations to achieve an understanding of the importance of team building, team work, and team management in all phases of digital media production from proposals to product delivery.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

DIGM 308 [WI] Digital Cultural Heritage 3.0 Credits

Digital Cultural Heritage is a growing pursuit including Digital Media, Digital Humanities, Computer Science, and Archeology. It has components in academic research, museology, tourism, economic development as well as new media technology development and applications. This class will investigate this emerging and exciting field and explore its possibilities in the context of Philadelphia's cultural heritage.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

DIGM 350 [WI] Digital Storytelling 3.0 Credits

By surfing the internet and playing computer games, by lectures, assigned readings, class screening, and research projects, this class explores the impact of digital media on art, design and daily living.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

DIGM 451 [WI] Explorations in New Media 3.0 Credits

Through class presentations, field trips, discussions, readings, screenings and guest speakers; this class bridges artistic and technical aspects of new media in theory and practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

DIGM 475 [WI] Seminar: The Future of Digital Media 3.0 Credits

Focuses on current and anticipated issues in digital media. Involves reading and discussion of news, product announcements, articles, and predictions related to digital media. Provides a comprehensive and up-to-date understanding of digital media, including its likely directions in the immediate future and long-term possibilities.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 371 [Min Grade: D] (Can be taken Concurrently) or

DIGM 451 [Min Grade: D]

DIGM 490 Digital Media Senior Project 3.0 Credits

In this course students produce professional-level media assets for a team based senior project in a simulated real-world production environment. It requires a project that demonstrates the integration of the academic and practical knowledge the student has acquired in the overall field as well as in one or more specializations. Students will refine their understanding of the production, delivery and presentation of quality digital media production through implementation of professional best practices, and practice and perfect written, oral, and visual presentation skills through the power of collaboration, teamwork and shared missions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: (ANIM 378 [Min Grade: D] or GMAP 377 [Min Grade: D] or IDM 372 [Min Grade: D] or VRIM 320 [Min Grade: D]) and (DIGM 451 [Min Grade: D] or DIGM 475 [Min Grade: D])

DIGM 491 Digital Media Senior Project Studio 1.0 Credit

In this course Digital Media senior project teams will meet with an appointed advisor on the technical details of their specific project requirements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 3 credits

DIGM I199 Independent Study in Digital Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM I299 Independent Study in Digital Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM I399 Independent Study in Digital Media 2.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM I499 Independent Study in Digital Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM T180 Special Topics in Digital Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM T280 Special Topics in Digital Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM T380 Special Topics in Digital Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

DIGM T480 Special Topics in Digital Media 0.0-3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Economics

Courses

ECON 201 Principles of Microeconomics 4.0 Credits

What is produced in an economy? How is it produced? Who gets the product? When do markets succeed or fail? To answer these and many other fundamental questions related to the real-world behavior of consumers and firms, this course will teach you how to think like an economist. It will introduce you to economics and microeconomic theory with an emphasis on policy and empirical applications. You will develop skills, insights, and working knowledge of economics that are crucial for successful decisions by consumers, business executives, policymakers, entrepreneurs, and global leaders.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ECON 202 Principles of Macroeconomics 4.0 Credits

Examines measurement, growth, and fluctuation of aggregate economic activity. Includes national income accounting and explains determination of output, employment, and price level. Also provides an introduction to international economics, money and banking, and economic policy. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: D] (Can be taken Concurrently)

ECON 203 [WI] Survey of Economic Policy 4.0 Credits

This course will introduce students to the application of economic principles for a variety of policy-relevant topics covered in more advanced economics classes. Examples of applications may include the analysis of financial and economic crises, mergers, free trade agreements, social security, and unemployment.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 202 [Min Grade: D] (Can be taken Concurrently) and ECON 201 [Min Grade: D]

ECON 240 Economics of Health Care Systems 4.0 Credits

Examine the health care industry from an economic perspective, including demand, cost-benefit analysis, insurance, supply constraints, and the role of the government.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ECON 248 Mathematical Models in Economics 2.0 Credits

The purpose of the Mathematical Models in Economics course is to cover basic calculus optimization as applied in economics contexts to prepare students for intermediate level economics courses. While the main tools for the course are obviously math tools, they are math used in business and economic analysis, modeling, and research. The course will go over applications of unconstrained and constrained optimization to microeconomics, macroeconomics, and econometrics and make the connections between the tools we cover and their uses. That will also include both single and multi-variate calculus applications and the conditions for optimality. Economic interpretation of the math is more important than the math itself and the real focus of the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 102 [Min Grade: C] or MATH 117 [Min Grade: C] or MATH 121 [Min Grade: C]) and ECON 201 [Min Grade: C]

ECON 250 Game Theory and Applications 4.0 Credits

Introduces the basic ideas of game theory with a minimum of mathematics; and discusses application to economics, politics, business, behavioral science, philosophy, population biology and engineering.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 201 [Min Grade: C] or STAT 205 [Min Grade: C] or MATH 107 [Min Grade: C] or MATH 310 [Min Grade: C] or MATH 311 [Min Grade: C]

ECON 260 Economics of Small Business 4.0 Credits

Discusses economic topics relevant to the role and varieties of small businesses in industrialized economies, and to government policy with respect to small business.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C]

ECON 270 Using Big Data to Solve Economic and Social Problems 4.0 Credits

This course shows how big data can be used to understand and address some of the most important social and economic problems of our time. The course introduces students to research questions and policy applications in economics and social science in a non-technical manner that does not require prior coursework in economics or statistics, making it suitable both for students exploring economics for the first time as well as for more advanced students. The course will cover topics such as equality of opportunity, education, innovation and entrepreneurship, health care, climate change, tax policy, globalization, and the COVID-19 pandemic. In the context of these topics, the course will also introduce the basics of data science, including regression, causal inference, and machine learning.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

ECON 301 Microeconomics 4.0 Credits

Examines theory of the firm and theory of the consumer in a rigorous fashion. Also covers risk and uncertainty, price determination, market failures, and analysis of various government policies.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C] and (MATH 102 [Min Grade: C] or MATH 117 [Min Grade: C] or MATH 121 [Min Grade: C])

ECON 321 Macroeconomics 4.0 Credits

Provides an in-depth introduction to dominant theories behind short-run economic fluctuations and long-run economic growth. Employs both mathematical and graphical tools to discuss determination of output, employment, and price level in the aggregate economy. Also covers effectiveness of monetary and fiscal policies in dealing with unemployment and inflation.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C] and ECON 301 [Min Grade: C] and (MATH 102 [Min Grade: C] or MATH 117 [Min Grade: C] or MATH 121 [Min Grade: C])

ECON 322 [WI] Economics Seminar 4.0 Credits

Requires research and writing of a scholarly paper on a topic in economics approved by an appointed faculty adviser.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 301 [Min Grade: C] and ECON 321 [Min Grade: C]

ECON 324 Economics of Happiness 4.0 Credits

This course will discuss applications of survey studies of subjective well-being or "happiness" to economics and public policy, with some of the philosophic issues that arise from this.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: D] and ECON 202 [Min Grade: D]

ECON 326 [WI] Economic Ideas 4.0 Credits

Covers the history of economic thought and development of different schools of thinking in economics.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C]

ECON 330 Managerial Economics 4.0 Credits

Covers applied economics relevant for decision-making processes. Emphasizes profit management, demand and cost analysis, pricing, and government policy.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C]

ECON 331 International Macroeconomics 4.0 Credits

This course covers fundamental issues in open economy macroeconomics. We will learn about how fiscal and monetary policy work when the economy is open to international trade in goods and services and to international capital flows. We will also study the effects of these policies on the current account and the exchange rate. The course treatment will be mainly theoretical. However, we will frequently refer to features of the international financial markets data, and we will use examples, case studies, readings, videos and policy applications to illustrate the findings of the theory and/or to try to bridge the gap between the predictions of theoretical models and real world developments.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C]

ECON 334 Public Finance 4.0 Credits

This course explores the role of government in the economy. Students will analyze the rationales for government policies as well as their implications for equity and efficiency. Much of the course will center on current policy issues related to the national debt, Social Security, education, environmental protection and taxation. Both theoretical applications and empirical findings will be discussed.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C] and (MATH 102 [Min Grade: C] or MATH 121 [Min Grade: C])

ECON 336 Labor Economics 4.0 Credits

Develops an understanding of how labor institutions operate to determine wages and employment. Examines alternative policy questions involving unemployment and inflation, collective bargaining, investment in education and training, and other labor-related questions. Requires students to apply theoretical and empirical abilities to research a labor-related issue and improve the ability to think clearly and communicate effectively.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C]

ECON 338 Industrial Organization 4.0 Credits

Examines observational studies of industries with respect to competitive or non-competitive structure, conduct, and performance. Considers implications of profitability, technological innovation, antitrust policy, and competitiveness in trade. Reviews problems of measurement and sources of data.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and (MATH 102 [Min Grade: C] or MATH 121 [Min Grade: C])

ECON 342 Economic Development 4.0 Credits

Covers topics including driving forces of economic growth, economic planning, income distribution and poverty, labor migration, capital markets and saving, international debt problems and global economic crisis. Emphasizes underlying theories and realities of economic growth and development of less developed economies and emerging economies.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C]

ECON 344 Comparative Economic Systems 4.0 Credits

Covers theory and contemporary practices of capitalism, socialism, fascism, and the welfare state as economic systems.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C]

ECON 348 Mathematical Economics 4.0 Credits

Discusses the application of mathematics in economic models, with extensive discussion of economic applications of linear algebra and calculus. Considers implications of the assumptions of maximization of profits and utility. Stresses mathematical models and techniques useful in statistical applications of economics.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and (MATH 102 [Min Grade: C] or MATH 121 [Min Grade: C])

ECON 350 [WI] Applied Econometrics 4.0 Credits

Applies statistics to economics, with emphasis on the special problems of statistical analysis of economic data, sources of data, and examples of applications and models. Covers forecasting the impacts of changing economic policy and of developments in industrial markets using economic-statistical models.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C] and (STAT 201 [Min Grade: C] or MATH 311 [Min Grade: C])

ECON 351 Resource and Environmental Economics 4.0 Credits

Examines the microeconomic and quantitative aspects of markets for both renewable and exhaustible resources, and the interaction between the energy and resource sectors of the economy and between the productive sectors of the economy and the natural environment, with evaluation of major public policy initiatives and issues in these areas.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C]

ECON 354 Money and Banking 4.0 Credits

This is a course about the role of money and financial intermediation in modern economies and therefore the environment in which businesses operate. The course is organized around three sets of questions. First, what is money and why is it necessary? How can seemingly worthless paper serve a key purpose in a market economy? Second, what is the role of banks, both historically and in the more complex financial system of today? What are the origins of banking panics such as those experienced at the onset of the Great Depression or during the 2007-08 financial crisis? Third, how do central banks conduct monetary policy and what types of policies should the Federal Reserve and other government agencies follow to prevent financial crises?.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 321 [Min Grade: C] or FIN 325 [Min Grade: C]

ECON 360 Time Series Econometrics 4.0 Credits

Introduce time-series econometric models and provide tools for empirical analysis using time-series economic and financial data, with specific emphasis on application and forecasting.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: D] and ECON 202 [Min Grade: D] and ECON 350 [Min Grade: D]

ECON 361 Health Economics 4.0 Credits

This course covers the economics of health and health care. Students will study how health is produced, how health insurance markets work, the government role in health care, cost benefit analysis, and the markets for medical education, pharmaceuticals and physician and hospital services. Students will learn to analyze health systems on grounds of efficiency and equity, and to assess the credibility of research in health economics and health policy. This course should be of interest to students who are interested in public policy issues surrounding health, health care, health in developing nations and health care reform.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C]

ECON 365 Behavioral Economics 4.0 Credits

This course provides a systematic introduction to behavioral economics, the field aimed at modeling and understanding how individuals make decisions based on psychological and experimental evidence. The course will introduce the main behavioral patterns underlying some of the most important areas of economic decision making. Examples include consumption and saving decisions, choice under risk, as well as social and strategic interactions. Students will also learn the models that try to explain these behaviors and their applications to policy making.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C]

ECON 366 Topics in Behavioral Economics 4.0 Credits

This course covers important topics in behavioral economics, the field aimed at modeling and understanding how individuals make decisions based on psychological and experimental evidence. The course focuses on behavioral insights about social and strategic interaction, behavioral industrial organization, behavioral economic policy and experimental economics. The course will also introduce students to empirical analysis of choice data and to the design and implementation of experiments.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C]

ECON 370 Experiments and Causality in Economics 4.0 Credits

This course covers state-of-the-art statistical techniques for identifying causal effects. Students will study these techniques by applying them to data used in published papers from a variety of fields in economics and social science (e.g. health, labor, environment, business, taxation).

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: (STAT 201 [Min Grade: C] or MATH 311 [Min Grade: C]) and ECON 350 [Min Grade: C]

ECON 380 Economic Crises: The American Experience 4.0 Credits

This class examines the economic and political events of the U.S. in the 19th, 20th and early 21st centuries. The course combines economics, politics, and history to get a wide (but by no means comprehensive) view of the issues, politics, and events that have shaped the course of the US economy for the last 100+ years. Special attention will be given to economic panics and crises and how financial markets respond to calamity, including what gave rise to panics and crises, and their aftermath, along with a study of how they shaped future institutions, regulations, and policy.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: B] and ECON 202 [Min Grade: B]

ECON I199 Independent Study in Economics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON I299 Independent Study in Economics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON I399 Independent Study in Economics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON I499 Independent Study in Economics 0.5-5.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON T180 Special Topics in Economics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON T280 Special Topics in Economics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON T380 Special Topics in Economics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ECON T480 Special Topics in Economics 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Education Human Resource Development

Courses

EHRD 205 Organizational Learning & Strategy 3.0 Credits

The purpose of this course is to help learning professionals understand how to align learning functions with strategic goals of the organization in order to support leadership functions. Students will develop an understanding of learning in, by, and across organizations, explore barriers to change, and discuss and apply specific tools and processes to facilitate and sustain change and tighten the alignment of organizational learning and strategy.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EHRD 460 Principles of Adult Learning 3.0 Credits

This course explores in-depth the analysis of relevant theories relating to the contemporary application of adult learner materials and methods. Many adult education theories and practices are explored to provide the participants with a broad understanding of Andragogy (the art and science of teaching adults) and how it relates to the field.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Education Learning Technologies

Courses

EDLT 101 Learning, Culture & Technology Workshop I 3.0 Credits

The Workshops (EDLT 101, 201, 301) are comprised of a set of three project-based courses that will provide innovative, rigorous, and immersive educational experiences in diverse learning environments that focus on emerging technologies, authentic and situated learning and contextual factors. Students will observe, document, analyze, and describe complex learning situations, develop different learning designs, and an e-portfolio, and explore social and cultural perspectives on learning.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 201 Learning, Culture and Technology Workshop II 3.0 Credits

The Workshops (EDLT 101, 201, 301) are comprised of a set of three project-based courses that will provide innovative, rigorous, and immersive educational experiences in diverse learning environments that focus on emerging technologies, authentic and situated learning and contextual factors. Students will observe, document, analyze, and describe complex learning situations, develop different learning designs, and an e-portfolio, and explore social and cultural perspectives on learning.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 238 New Media Literacies 3.0 Credits

This course provides an in-depth exploration of new media literacies including the practices and concepts of fan fiction writing, online social networking, video gaming, appropriation and remixing, tinkering and making, transmedia navigation, multitasking, performance, distributed cognition, and collective intelligence. It examines literacy as a sophisticated set of meaning-making activities situated in specific social spaces. Students will learn how new media are changing the dimensions of school literacies and challenge traditional ways of learning and communicating.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 250 Sociocultural Perspectives on Learning 3.0 Credits

This course will focus on knowing and learning from sociocultural perspectives and will include emphasis on both recent research and seminal literature. The course will begin with an introduction to sociocultural research and then explore how these theories can be used to understand how learning occurs in various disciplines.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 301 Learning, Culture & Technology Workshop III 3.0 Credits

The Workshops (EDLT 101, 201, 301) are comprised of a set of three project-based courses that will provide innovative, rigorous, and immersive educational experiences in diverse learning environments that focus on emerging technologies, authentic and situated learning and contextual factors. Students will observe, document, analyze, and describe complex learning situations, develop different learning designs, and an e-portfolio, and explore social and cultural perspectives on learning.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 302 Learning Experience Design 3.0 Credits

This course will prepare students with the foundation of Learning Experience Design (LXD) as an area of inquiry and practice, and as a practical career endeavor. Learners will acquire a foundational understanding of human computer interaction and user experience design by applying design thinking methods and skills involved in creating interactive learning systems for diverse audiences by using appropriate standards for accessibility.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 303 The Learning Sciences 3.0 Credits

This course draws from research in the cognitive sciences, education, and computer sciences. It covers three broad themes around sociocultural, design, and cognition domains. Learners are expected to become competent in understanding cognitive and sociocultural perspectives on learning, as well as perspectives on the design of learning environments for teaching and learning in both school and non-school settings. In addition, the relevance and impact of the learning sciences on specific learning technologies is explored and demonstrated.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 304 Learning Engineering 3.0 Credits

This course will prepare students to pursue learning engineering as an academic field of inquiry and a practical career endeavor. Learners will be enabled to understand and apply a knowledge of the Learning Sciences, Design Thinking, Data Analyses, and Systematic Design in building a foundation for the creation of Experiences, Environments, and Technologies that will enhance learning within the social and cultural contexts and the intersectional influences of the lived world.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 310 Making Culture: Designing/Maker-Centered Learning Environments 3.0 Credits

This course will explore the emerging maker movement on several levels. Through reading and project-based activities, learners will examine and understand the culture and structure of the maker movement and deepen their understanding in how the culture of a makerspace has a direct impact on learning. The course will be characterized by interpersonal collaboration and knowledge co-construction as a community of learners.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 312 Using and Integrating Learning Technologies 3.0 Credits

This course covers learning theories and recent research relevant to emerging trends in technology and their possible effects on learning. Students will demonstrate strategies for using and integrating technologies in the design, implementation, integration, and assessment of technology-based applications in formal and informal learning settings. Students will also investigate the role of leadership and innovation in technology related change in education and learning.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 325 Design for Learning with Digital Media 3.0 Credits

Investigates the relationship among learning sciences, theory, technology, and design in the creation of learning goals and experiences. Special emphasis is placed on the integration of technology in order to enhance effective learning. Learners will design learning activities, create them, implement them, and assess their effectiveness with digital tools. Issues in digital citizenship, collaboration, affordability, and continuous learning will also be examined.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 326 Technology Applications for Learning 3.0 Credits

Investigates the application of digital technologies as learning tools from the perspectives of design, development, implementation, and assessment. Provides learners with an understanding of the instructional versatility and limitations of digital technologies through hands-on experience with applications in their subject-matter fields. Addresses issues concerning integrating digital technologies into a variety of formal and informal learning settings.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 339 Future Pedagogies 3.0 Credits

This course introduces learners to learning and designing experiences for complex domains. Students explore current pedagogies and how to assess the progress of learning. Students learn how to think about and design learning environments to facilitate different types of knowledge to support novice to expert learners.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 341 Foundations of Game-Based Learning 3.0 Credits

In this course, students will explore the rationale of game-based learning, the history of games and learning, the role of digital media, game types, and games as an affinity space for social learning. Students will demonstrate their understanding of why games are powerful environments for learning, identity formation, and motivation. Students will explore the relevance of game-based learning from the perspective of educators, designers, and researchers. Students will examine the application of game-based learning in informal and formal learning environments. Students will learn about the current practices, trends, and gaps in game-based learning research and practice.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 343 Play and Learning in a Participatory Culture 3.0 Credits

Students examine games, emerging media, and learning in the context of participatory culture. Students focus on play, its role in learning in social spaces, and the current research around these practices. Students study the issues relating to how schools, organizations, and society are responding to the challenges of emerging technologies.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 344 Integrating Games and Pedagogical Content Knowledge 3.0 Credits

Students use the technological, pedagogical, and content knowledge (TPACK) educational technology framework. Students explore game design systematically by framing game genres as forms of pedagogy as they consider educational content. Students demonstrate their understanding of the interplay of technology, pedagogy, and content in the gaming environment.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 352 Instructional Design: Project Management 3.0 Credits

This course will lead students through the full lifecycle of an instructional design project. Students will learn to develop a project's scope, work with stakeholders, develop schedules, identify accountability, and consider the pedagogical factors in their project. They will then move through the development, design and implementation phases; using formative feedback and multiple iterations to complete their project.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 354 Learning In and Out of Schools 3.0 Credits

The term "informal learning environments" (ILEs) is often used to describe places and activities where learning occurs outside of more formal settings such as schools, universities, etc. Examples of ILEs include after school activities, museums, zoos, and so on. This course is an introduction to ILEs and theories related to understanding how learning occurs within them. The course will also consider similarities and differences between learning in and out of schools.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 355 Learning with Social Media and Mobiles 3.0 Credits

This course prepares students to use social media tools based on a more relevant pedagogy of 21st century learning and change. Students examine the culture, theory, and research of networking and connectivity, use mobile strategies for augmented learning, and design an Action Plan that incorporates social media for learning outcomes.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 391 Learning Analytics: Lenses on Students, Teaching, and Curriculum Enactment 3.0 Credits

This course will prepare students to use data collected from classrooms and online programs to understand and help guide instructional practice. Using a range of information (ex: assessments, game/simulation telemetry, engagement with learning management systems, collaboration/communication data, and administrative/demographic information) students will develop skills in developing dashboards, evaluating grading, and developing authentic datasets about practice. This course is targeted to course designers/developers, teachers, lead teachers/professional learning community coordinators, and media center specialists.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 395 Learning through the Lifespan 3.0 Credits

This course will prepare students with a foundation of Lifelong Learning and continuous education as an area of inquiry and practice, and as a practical career endeavor. Learners will acquire a thorough understanding of lifelong learning environments, lifespan development, applications for social, cultural, and community contexts, as well as emerging issues and challenges.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 396 Lifelong Learning Models & Best Practices 3.0 Credits

This course will prepare students with the knowledge and understanding necessary for the creation and implementation of effective Lifelong Learning strategies and tactics, markets and marketing, assessment, and management practices by examining current and future models.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 491 Senior Project I 3.0 Credits

The Senior Project courses (EDLT 491, 492, 4933) are a set of three courses intended to immerse student teams in the design, implementation, and evaluation of a substantial project. Most educational design research involves teams in their creation, so it is essential to develop those skills. Students collaborate on an extended project to better understand project and time management issues related to large design projects. The courses also facilitate students' integrating materials from other courses in service of better learning environments.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDLT 492 Senior Project II 3.0 Credits

The Senior Project courses (EDLT 491, 492, 4933) are a set of three courses intended to immerse student teams in the design, implementation, and evaluation of a substantial project. Most educational design research involves teams in their creation, so it is essential to develop those skills. Students collaborate on an extended project to better understand project and time management issues related to large design projects. The courses also facilitate students' integrating materials from other courses in service of better learning environments.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDLT 491 [Min Grade: D]

EDLT 493 Senior Project III 3.0 Credits

The Senior Project courses (EDLT 491, 492, 4933) are a set of three courses intended to immerse student teams in the design, implementation, and evaluation of a substantial project. Most educational design research involves teams in their creation, so it is essential to develop those skills. Students collaborate on an extended project to better understand project and time management issues related to large design projects. The courses also facilitate students' integrating materials from other courses in service of better learning environments.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDLT 491 [Min Grade: D] and EDLT 492 [Min Grade: D]

Electrical & Computer Engineering

Courses

ECE 101 Electrical and Computer Engineering in the Real World 1.0 Credit

This seminar introduces students to highly visible and compelling applications of ECE through the use of familiar real-world applications. The course will highlight some of the high-impact advances of ECE and the importance of ECE in our daily lives. Fundamental concepts, such as electricity, light, computing, networking, and signal processing will be introduced in this context and explained at an introductory level. This course is intended to inspire students to pursue ECE and will lead them directly into ECE 102.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECE 102 Applications of Electrical and Computer Engineering 2.0 Credits

Introduces the basic fundamentals of ECE through the use of real-world applications. The course will introduce Signals and Systems, Analog electronic basics, as well as Digital numbers and systems. The course will introduce students to basic ECE material, preparing the students for ECE 200 and ECE 201.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECE 105 Programming for Engineers II 3.0 Credits

This course will cover advanced usage and understanding of programming concepts using Python. By the end of the course, students will not only possess strong programming capabilities but will also have a firm grasp on scientific computing fundamentals.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D] or CS 171 [Min Grade: D]

ECE 121 Introduction to Entertainment Engineering 3.0 Credits

This introductory survey course will focus on the four prevailing entertainment media: music, images, video, and games. We will explore how each medium is represented digitally and reveal the technologies used to capture, manipulate and display such content. Technical standards used in everyday entertainment devices (mp3, H.264, JPEG 1080p, HDMI) will be explained in layman's terms. The goal is to provide students with technical literacy for using digital media.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECE 200 Digital Logic Design 4.0 Credits

Number systems and representation, two's complement arithmetic, digital logic devices, switching algebra, truth tables, minimization of Boolean functions, combinational logic design and analysis, sequential circuit analysis and design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECE 201 Foundations of Electric Circuits I 4.0 Credits

Covers basic electric circuit concepts and laws; circuit theorems; mesh and node methods; analysis of first-order electric circuits; forced and natural response; sinusoidal steady state analysis; complex frequency.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is CAE or classification is Freshman

Prerequisites: PHYS 102 [Min Grade: D]

ECE 203 Programming for Engineers 3.0 Credits

Fundamentals of computer organization; rudiments of programming including data types, arithmetic and logical expressions, conditional statements, control structures; problem solving techniques for engineers using programming; object-oriented programming; arrays; simulation of engineering systems; principles of good programming practice.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ECE 231 Linear Algebra and Matrix Computations 3.0 Credits

Provides an overview of systems and modeling; specifically using linear algebra for model definition. Specific emphasis will be placed on developing models of engineering systems and the use of computational tools and techniques. Computing component focuses on the use of Python for solving contemporary engineering problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

ECE 232 Solving Dynamic Systems 3.0 Credits

Provides an overview of dynamic systems and modeling; specifically using differential equations to model physical or first principle systems. Specific emphasis is placed on developing models of engineering systems and using computational tools for finding solutions to these problems. Conventional solutions of linear and non-linear differential equations/systems will be covered as well as state space formulation and solutions using eigenvalues and vectors. The Laplace transforms is introduced to solve Linear Time Invariant systems. Basic feedback control laws are introduced in the context of state variable formulation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 231 [Min Grade: D] or ENGR 231 [Min Grade: D]

ECE 301 Foundations of Electric Circuits II 4.0 Credits

Covers analysis of operational amplifiers, second-order electric circuits; ac power; and an introduction to the Laplace transform.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 201 [Min Grade: D] and (ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or ECE 232 [Min Grade: D] or CAEE 232 [Min Grade: D] or MATH 210 [Min Grade: D])

ECE 302 Design with Embedded Processors 3.0 Credits

A project-based course on design and implementation of mixed signal systems with embedded processors (digital, analog and software) with applications in signal processing, control, wireless and Internet of Things.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 203 [Min Grade: D] or ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D] or CS 171 [Min Grade: D]

ECE 303 ECE Laboratory 3.0 Credits

This course has an emphasis on measurement systems, and develops both theory and application. The software and digital and analog hardware used are relevant to both electrical and computer engineers. Multi-week design projects and design teams are used to prepare students for Senior Design work.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECE 301 [Min Grade: D] or ECE 201 [Min Grade: D]) and ENGR 113 [Min Grade: D]

ECE 304 Remote Sensing and Control 3.0 Credits

This course will teach students the various steps involved in the construct a fundamental remote monitoring and control system over a local area network and Bluetooth/Bluetooth Low Energy, from the ground up. The course will use hardware and software to accomplish this goal to enhance the student learning experience.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 303 [Min Grade: D]

ECE 310 Machine Learning Engineering Practicum 3.0 Credits

This course emphasizes how to gather data then train, test, and deploy practical machine learning systems using modern software libraries, with an emphasis on scikit-learn, Keras on TensorFlow, and TensorFlow Agents. After garnering working familiarity with learning architectures including linear regression, support vector machines, decision trees, and deep neural networks, students will shift to practicing techniques that leverage state of the art published models via transfer learning. This is a hands-on project-focused course integrating coding activities into lectures. To provide the broadest applicability, datasets will range from rich text, to financial time series, to sound, images, and video, as well as data garnered through game play.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 105 [Min Grade: D] or CS 172 [Min Grade: D]

ECE 350 Introduction to Computer Organization 3.0 Credits

This course will teach students the various steps involved in the construction of a full-fledged computer system, both hardware and software aspects, from the ground up. The course will use hardware and software projects to accomplish this goal. Students will design and simulate a hardware processing pipeline. A virtual machine, compiler, and assembler, for a simple object-based language will also be developed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECE 105 [Min Grade: D] or CS 172 [Min Grade: D]) and (ECE 200 [Min Grade: D] or CS 270 [Min Grade: D])

ECE 361 Probability and Data Analytics for Engineers 4.0 Credits

This course will cover topics related to probability and statistics. Probability topics include sample space and probability, discrete and continuous random variables (single and multiple), and their properties and applications to modeling, and the central limit theorem. Topics in statistics will include parametric and non-parametric hypothesis testing, data analytics and related topics, computational approaches and bootstrapping.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 232 [Min Grade: D] or MATH 262 [Min Grade: D] or ECE 232 [Min Grade: D] or CAEE 232 [Min Grade: D] or MATH 210 [Min Grade: D]

ECE 370 Electronic Devices 3.0 Credits

Covers mobility; electrons/holes; conductivity; drift; diffusion; recombination and generation; continuity equation; basic theory of PN junctions; forward and reverse biases; I-V relation; switching behavior; ac operation; capacitance of a PN junction; applications of PN junctions to solar cells, rectifiers, and photodetectors; basic operation of a BJT; regions of operation, calculation of I-V relations; switching behavior, small signal models; basic operation of metal oxide semiconductor (MOS); operation of MOSFETs and JFETs.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D]

ECE 371 Foundations of Electromagnetics for Computing & Wireless Systems 3.0 Credits

This course focuses on physical laws that govern electromagnetic field distributions and related RF (radio frequency) and transmission line circuits. It covers electrostatic and magnetostatic fields, circuit modeling concepts including inductance and capacitance, and distributed electrical circuits and transmission lines.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 301 [Min Grade: D] and MATH 291 [Min Grade: D]

ECE 380 Fundamentals of Power and Energy 3.0 Credits

Covers single-phase, steady-state, lossless circuit models of generation, transformer, lines, loads, electric power systems, integration of renewable energy and interfaces between AC and DC systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 301 [Min Grade: D]

ECE 391 Introduction to Engineering Design Methods 1.0 Credit

Introduces the design process, including information retrieval, problem definition, proposal writing, patents, and design notebooks. Includes presentations on problem areas by experts from industry, government, and education.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

ECE 403 Computing and Control 3.0 Credits

The computer in the loop is examined for binary inputs and outputs taking into account processing and actuator delays. The concept of stability is introduced and the inherent delay introduced by computer systems and software on stability is explored. The use of interrupts to implement fixed-rate sampling is introduced along with practical implementation of PID controllers. The Kalman filter is introduced as a stochastic state observer under measurement uncertainty as well as the extended Kalman filter to address non-linear systems. Students will perform laboratory projects and present a final group project.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 301 [Min Grade: D] and ECE 303 [Min Grade: D] and ECE 361 [Min Grade: D]

ECE 413 Neuromorphic Computing 3.0 Credits

This course will cover the principles of neuromorphic computing. Topics will cover 1) fundamentals of spiking neural network (SNN), which mimics the computation in mammalian brain; 2) supervised and unsupervised learning algorithms for SNN; 3) novel applications of SNN, including in vision and time series processing; 4) architectures for implementing SNN in hardware, aka neuromorphic hardware; 5) introduction to non-volatile memory technologies to implement synaptic processing in neuromorphic hardware; 6) software stacks for neuromorphic computing; and 7) design challenges in dependable neuromorphic computing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 310 [Min Grade: C] and ECE 350 [Min Grade: C]

ECE 430 Software Defined Radio Laboratory 3.0 Credits

This laboratory course takes a Software-Defined Radio (SDR) implementation approach to learn about modern analog and digital communication systems. Software defined radio uses general purpose radio hardware that can be programmed in software to implement different communication standards. The course covers basic principles of wireless radio frequency transmissions and leverage this knowledge to build analog and digital communication systems. Knowledge of these techniques and systems will provide a platform that can be used in the class project for further exploration of wireless networking topics such as cybersecurity, cognitive radio, smart cities, and the Internet of Things.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECE 431 Modern Transistors 3.0 Credits

This course discusses the physics of the operation of modern transistors. It covers the operational principles of Bipolar Junction Transistors (BJTs), Heterojunction Bipolar Transistors (HBTs), Field Effect Transistors, (FETs), starting with MOSFETs. High Electron Mobility Transistors (HEMT) will also be discussed. Students will perform independent individual research on an (opto)electronic device of their choice, which they present to class through written and oral reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 370 [Min Grade: C]

ECE 432 Modern Photonics 3.0 Credits

This course will teach students the principles that underline the interaction of light and matter, leading to the understanding of the basis of operation of photonic devices such as lasers, LEDs, solar cells, and photodetectors. The course starts with how understanding of light spectrum that is generated due to heat started the development of the field of quantum mechanics by Max Planck. This is then to include a quantum theory of light, on which basis absorption, stimulated and spontaneous emission are explained. Interaction of light with semiconductors is analyzed and shows how lasers, LEDs and photodetectors work, and how modern photonics is able to solve great challenges of humanity, such as lighting or optical data communication.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 370 [Min Grade: C]

ECE 434 Introduction to Multimedia Forensics and Security 3.0 Credits

This course introduces students to fundamental concepts in multimedia forensics and security. Topics covered include an introduction to digital image processing and compression, information hiding, watermarking, image and video forgery detection, and source identification.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 361 [Min Grade: D]

ECE 471 Introduction to VLSI Design 3.0 Credits

This is an introductory course where systematic understanding, design and analysis of digital VLSI integrated circuits will be covered. The course will begin with a review of CMOS transistor operation and semiconductor processes. Logic design with CMOS transistor and circuit families will be described. Specifically, layout, design rules, and circuit simulation will be addressed. Performance metrics will be analyzed in design and simulation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D] or CS 270 [Min Grade: D]

ECE 472 Custom VLSI Design & Analysis I 3.0 Credits

This is the first of two courses offered on Custom Very Large Scale Integration (VLSI) circuit and systems design and analysis. An understanding of VLSI integrated circuits is achieved through circuit design and analysis. This course focuses exclusively on high performance digital CMOS VLSI circuit and systems design, although some topics on mixed-signal circuits are also addressed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 471 [Min Grade: D] or ECE 471 [Min Grade: D]

ECE 473 Custom VLSI Design & Analysis II 3.0 Credits

This is the second of two courses offered on Custom VLSI circuit and systems design and analysis. An understanding of VLSI integrated circuits is achieved through circuit design and analysis. This course focuses exclusively on high performance digital CMOS VLSI circuit and systems design, although some topics on mixed-signal circuits are also addressed. The primary focus is on-chip power management. Power generation techniques are discussed and different power converters are analyzed. Power distribution networks are presented with a focus on the different distribution architectures and output impedance characteristics. Techniques to reduce power supply noise are also provided. A secondary focus examines substrate noise in mixed-signal systems and techniques to reduce substrate noise.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 471 [Min Grade: D] or ECE 471 [Min Grade: D]

ECE 481 RF Passive Networks 4.0 Credits

This course will teach students the concepts of reflection and transmission on distributed transmission lines of TEM, quasi-TEM, and TE/TM from electromagnetic fields and related to phenomenological scalar V/I in frequency and time domains, while the graphical technique using Smith Chart is employed for design of narrowband and broadband distributed/lumped impedance matching techniques. Multi-port network concepts of S/Z/Y matrices and utility of ABCD and T matrices are introduced from network perspective. Design, analysis, and synthesis of power dividers, dual directional couplers, and variety of filter design using insertion loss technique and their distributed realization at RF frequencies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 371 [Min Grade: D] or ECE 304 [Min Grade: D]

ECE 482 RF Transceiver Electronics 4.0 Credits

This course will teach students the concepts of RF transceivers using active microwave circuits and discuss their interactions with radiating systems. The course covers linear RF electronic circuits of switches, phase shifters (dispersive and non-dispersive), limiters, amplifiers, oscillators (fixed and variable frequency), Mixer (single and balanced), and multipliers (resistive and reactive) realized using semiconductor devices (diodes/transistors). CAD simulations are a practical learning component and is designed to prepare students for various industrial design and telecommunication applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 481 [Min Grade: D]

ECE 483 Radiation and Lightwave Engineering 4.0 Credits

This course will teach students the concepts of antennas and photonics using electromagnetics and discuss their utility in design of telecommunications and remote sensing. Antennas are introduced in terms of E&M fields (radiation pattern, polarization), circuits (radiation impedance/admittance, efficiency, bandwidth), and system concepts (directive gain). Examples of line antenna (short electric/magnetic dipoles, arbitrary length dipoles, small loops, travelling and standing wave), array antennas (linear and planar), and aperture radiators (slot, patch, and reflectors). Lightwave propagation in optical fibers (step index, graded index, polarization maintaining) and dielectric structures (slabs, ridge waveguide, buried waveguides) are discussed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 371 [Min Grade: D] or ECEE 304 [Min Grade: D]

ECE 491 [WI] Senior Design Project I 3.0 Credits

Introduces the design process, including information retrieval, problem definition, proposal writing, patents, and design notebooks. Includes presentations on problem areas by experts from industry, government, and education.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

ECE 492 [WI] Senior Design Project II 3.0 Credits

Continues ECE 491. Requires written and oral progress reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECE 491 [Min Grade: D]

ECE 493 [WI] Senior Design Project III 3.0 Credits

Continues ECE 492. Requires written and oral final reports, including oral presentations by each design team at a formal Design Conference open to the public and conducted in the style of a professional conference.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECE 492 [Min Grade: D]

ECE I199 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE I299 Independent Study in Electrical & Computer Engineering 12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE I399 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE I499 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE T180 Special Topics in ECE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE T280 Special Topics in ECE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE T380 Special Topics in ECE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECE T480 Special Topics in ECE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Electrical & Computer Engineering - Power Engineering

Courses

ECEP 352 Electric Motor Control Principles 4.0 Credits

Introduces machinery principles, magnetic circuits, three-phase circuits, the electrical and economic structure of the power industry, ac and dc machine fundamentals, and power electronic converters and their interfaces with electric motors. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 370 [Min Grade: D] (Can be taken Concurrently) or (ECE 201 [Min Grade: D] or ECES 211 [Min Grade: D])

ECEP 354 Energy Management Principles 4.0 Credits

Covers principles of power engineering, including the electrical and economic structure of the power industry (distribution, subtransmission, and bulk transmission levels; environmental issues; the electrical system analysis; the thermal system analysis; links between electromechanics and thermodynamics; and safety issues). Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 370 [Min Grade: D] (Can be taken Concurrently) or (ECE 201 [Min Grade: D] or ECES 211 [Min Grade: D])

ECEP 371 Introduction to Nuclear Engineering 3.0 Credits

This course introduces the student to the fundamental topic of nuclear engineering. This course should be the first course for students interested in the nuclear engineering minor, as all of the topics will be discussed in greater detail in other courses. Topics include atomic and nuclear structure, binding energy, reaction kinetics and energetics, and radioactive decay.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: C] or PHYS 115 [Min Grade: C]

ECEP 372 Radiation Detection and Measurement 3.0 Credits

Introduces students to the fundamentals of radiation detection, and applications of radiation detection equipment.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] or PHYS 115 [Min Grade: D]

ECEP 380 Introduction to Renewable Energy 3.0 Credits

Introduction to Renewable Energy is an undergraduate survey course for engineers, scientists and others interested in energy systems and applications. The course introduces students to the mix of current major electric power sources and the pressures that are forcing a transition to renewable sources. Wind and solar energy will be studied in detail, with others as time allows. Course culminates with an integrating off-grid energy system design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 122 [Min Grade: D] and (PHYS 102 [Min Grade: D] or PHYS 115 [Min Grade: D] or PHYS 154 [Min Grade: D])

ECEP 402 Theory of Nuclear Reactors 4.0 Credits

Introduces students to atomic and nuclear physics, radiation interaction with matter, components of nuclear reactors, neutron diffusion and moderation, nuclear reactor theory, and heat removal from nuclear reactors.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 201 [Min Grade: D] or PHYS 115 [Min Grade: D]) and (ENGR 232 [Min Grade: D] or MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D] or ECE 232 [Min Grade: D] or CAEE 232 [Min Grade: D])

ECEP 403 Nuclear Power Plant Design & Operation 3.0 Credits

Introduces students to the design of nuclear power plants. Topics covered include electrical transmission, non-nuclear related equipment, fluid flow, heat transfer, thermodynamics, heat exchangers, pump, valves, piping and nuclear reactor design. Course includes a final project which is the design of a nuclear power plant.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D]

ECEP 404 Introduction to Nuclear Engineering 2.0 Credits

Introduces the fundamental scientific, technical, social and ethical issues in nuclear engineering; nuclear reactions and radiation, radiation protection and control, nuclear energy production and utilization, nuclear fuel cycle, nuclear fuel cycle, nuclear materials, controlled fusion and thermonuclear plasma systems, basics of plasma physics and plasma chemistry, nuclear waste management, nuclear reactor safety, analysis of severe nuclear accidents, risk assessment and related issues of engineering ethics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] and (ENGR 210 [Min Grade: D] or CHE 206 [Min Grade: D] or MEM 210 [Min Grade: D])

ECEP 406 Introduction to Radiation Health Principles 3.0 Credits

This course is intended to impart radiation safety knowledge to the nuclear engineering student. A fundamental knowledge of radiation safety is critical for all nuclear engineers.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] or PHYS 115 [Min Grade: D]

ECEP 411 Power Systems I 4.0 Credits

Covers steady state generator, transformer and transmission line modeling used for balanced steady state power system analysis including three-phase to single-phase model conversion, per-unit analysis, generator and line loadability, transformer and transmission line voltage regulation and reactive compensation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 352 [Min Grade: D]

ECEP 412 Power Systems II 4.0 Credits

Covers y-bus based analysis of power systems including steady-state power-flow models and algorithms, economic dispatch of power generation, load-frequency control and introduction to transient stability analysis including time-domain simulation and equal area criterion.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 411 [Min Grade: D]

ECEP 413 Power Systems III 3.0 Credits

Covers Z-bus-based analysis of power systems including symmetrical component networks of generators, transformers, transmission lines and loads, symmetrical and unbalanced three-phase bus and line faults, and an introduction to power system protection.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 412 [Min Grade: D]

ECEP 421 Modeling and Analysis of Electric Power Distribution Systems 3.0 Credits

Introduction to power distribution systems; balanced and unbalanced systems, component and load modeling, radial and weekly meshed topologies; algorithms for unbalanced power studies including radial and general structure solver.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECEP 352 [Min Grade: C]

Corequisite: ECEP 411

ECEP 422 Power Distribution Automation and Control 3.0 Credits

Focuses on distribution management systems and their application: including optimizing network operation - capacitor placement and control, network reconfiguration, service restoration. Modern solution technologies are addressed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEP 421 [Min Grade: C]

ECEP 423 Service and Power Quality Distribution Systems 3.0 Credits

Focus on power distribution systems: service and power quality assessment including stat estimation, voltage quality, trouble call analysis, service restoration, component and system reliability assessment.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEP 422 [Min Grade: C]

ECEP 431 Advanced Electromagnetic Energy Conversion I 4.0 Credits

Covers theory and operation of alternating current machinery, with emphasis on design alternatives and the effects of design on performance. Includes construction of machine models from laboratory measurements.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 352 [Min Grade: D]

ECEP 432 Advanced Electromagnetic Energy Conversion II 4.0 Credits

Covers dynamic behavior and transient phenomena of rotating machines and the mathematical models used to describe them, generalized machine theory, measurement of parameters for the mathematical models, and measurement of dynamic and transient behavior.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 431 [Min Grade: D]

ECEP 441 Protective Relaying 3.0 Credits

Covers operating principles of electromechanical and static relays, fault clearance, and protection of individual parts of a power system. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEP 411 [Min Grade: D] (Can be taken Concurrently) and ECEP 352 [Min Grade: D]

ECEP 451 Power Electronic Converter Fundamentals 3.0 Credits

Fundamentals of power electronics that include waveforms, basic power switch properties and magnetic circuits. Introduction to basic power electronic converter circuits: diode and phase-controlled rectifies and inverters; switch-mode converters. Applications to DC and AC power supply systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 352 [Min Grade: D]

ECEP 452 Experimental Study of Power Electronic Converters 3.0 Credits

Experimental study of common power electronic converters: diode rectifiers, phase-controlled rectifies, switch-mode inverters. Both hardware and software studies. Additional lectures on: Study of DC-DC switch-mode converters.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEP 451 [Min Grade: D]

ECEP 453 Applications of Power Electronic Converters 3.0 Credits

Provides a first look at various power electronic applications in residential, commercial and industrial sites. Examples include utility application such as static var compensators (SVC), thyristor switch capacitors (TSC), high voltage direct-current (HVDC) transmission systems among others. In addition, fundamentals of motor drives and their controls are covered. Examples include induction, DC synchronous and specialized motors.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEP 451 [Min Grade: D]

ECEP 461 High Voltage Laboratory 1.0 Credit

Requires students to perform four basic experiments to become familiar with high-voltage techniques and then do a high-voltage design project of their own choosing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEP 352 [Min Grade: D]

ECEP 471 Power Seminar I 0.5 Credits

Discusses current developments in power system operation and research, concentrating on current and future energy sources.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ECEP 472 Power Seminar II 0.5 Credits

Discusses current developments in power system operation and research, concentrating on generating stations, transmission lines, and substations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ECEP 473 Power Seminar III 0.5 Credits

Discusses current developments in power system operation and research, concentrating on distribution, security, and economics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ECEP 480 Solar Energy Engineering 3.0 Credits

Covers design of grid-connected and battery backup grid-connected photovoltaic systems. Both electrical and mechanical aspects are included. Topics include system components (solar cells, charge controllers, maximum power point trackers, inverters, etc.), system economics, computer and web-based design aids, electrical codes and standards, externalities of PV systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: ECEE 352 [Min Grade: D] or CHE 431 [Min Grade: D] or ECEP 380 [Min Grade: D] or ECE 370 [Min Grade: D]

ECEP 497 Research in Power Systems 0.5-12.0 Credits

Requires independent study in a topic approved by the faculty.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEP I199 Independent Study in Electrical & Computer Engineering - Power Eng 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEP I299 Independent Study in Electrical & Computer Engineering - Power Eng 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEP I399 Independent Study in Electrical & Computer Engineering - Power Eng 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEP I499 Independent Study in Electrical & Computer Engineering - Power Eng 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

ECEP T180 Special Topics in ECEP 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEP T280 Special Topics in ECEP 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECEP T380 Special Topics in ECEP 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEP T480 Special Topics in ECEP 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Electrical & Computer Engineering - Computers

Courses

ECEC 201 Advanced Programming for Engineers 3.0 Credits

This course will cover advanced usage and understanding of programming concepts using the C programming language within a Linux development environment. C will serve as a foundation for future embedded firmware and system level software authorship as well as a means to better understand the underlying program execution model and memory organization used by modern computing systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D] or ECE 203 [Min Grade: D] or CS 171 [Min Grade: D]

ECEC 204 Design with Microcontrollers 3.0 Credits

Offers hands-on experience in the design of controllers that incorporate microcontrollers as an embedded component in a larger system. The microcomputer topics to be studied will include architecture, software, programming and interfaces.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECE 200 [Min Grade: D] or CS 270 [Min Grade: D]) and (ECEC 201 [Min Grade: D] or ECEC 301 [Min Grade: D])

ECEC 302 Digital Systems Projects 3.0 Credits

Studies the theory of digital system design and the topdown design methodology using hardware description language and software tools for simulation, synthesis and Field Programmable Gate Array (FPGA) implementation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (ECE 105 [Min Grade: D] or CS 172 [Min Grade: D] or ECE 203 [Min Grade: D]) and (ECE 200 [Min Grade: D] or CS 270 [Min Grade: D])

ECEC 352 Secure Computer Systems: Design Concepts 4.0 Credits

Covers concepts of secure computation, including economics vs. faults, errors, and hidden messages; mathematical foundations of secure computing; design issues in fault-tolerant computing; and testability and cryptography.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEC 302 [Min Grade: D] and MATH 221 [Min Grade: D]

ECEC 353 Systems Programming 3.0 Credits

This course introduces computer systems, including interaction of hardware and software through the operating system, from the programmer's perspective. Three fundamental abstractions are emphasized: processes, virtual memory, and files. These abstractions provide programmers a common interface to a wide variety of hardware devices. Topics covered include linking, system level I/O, concurrent programming, and network programming.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: D] or ECEC 201 [Min Grade: D]

ECEC 355 Computer Organization & Architecture 3.0 Credits

This course will cover the principles of designing microprocessors using solid engineering fundamentals and quantitative cost/performance trade-offs. Topics will cover computer performance from hardware and software perspective, instruction set architectures focusing on RISC-V, arithmetic for computers, processor datapath and control, single cycle microarchitectures, and pipeline architectures. The course will introduce issues in pipeline design and techniques to solve these issues.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 201 [Min Grade: D]

ECEC 356 Embedded Systems 4.0 Credits

Lectures will cover theoretical concepts of embedded and cyber#physical systems including discrete and continuous dynamics, hybrid systems, state machines, concurrent computation, embedded systems architecture and scheduling. Lab involves programming embedded applications for the decentralized software services architecture using C# and the Microsoft Robotics Software Development Kit (SDK) together with the hardware image processing and tracking capabilities of the Kinect sensor.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 204 [Min Grade: D] or ECEC 304 [Min Grade: D]

ECEC 357 Introduction to Computer Networks 3.0 Credits

History of the Internet; introduction to packet switching, circuit switching and virtual circuit switching; statistical multiplexing; protocol layering; metrics of network performance including bandwidth, delay and loss; medium access protocols and Ethernet; routing algorithms; end-to-end issues; flow and congestion control; an overview of application layer protocols.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 105 [Min Grade: D] or ECEC 201 [Min Grade: D] or CS 171 [Min Grade: D]

ECEC 402 Digital System Projects Embedded Design 3.0 Credits

A project-based course on real-time applications using Field Programmable Gate Array (FPGA), embedded processors (software), IP (Intellectual Property) cores library and custom IP cores.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 302 [Min Grade: D]

ECEC 411 Computer Hardware 3.0 Credits

Covers the design and performance of computer hardware devices, including direct memory access, priority arbitration, double buffering, and bus standards. Fall.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECEC 355 [Min Grade: D]

ECEC 412 Modern Processor Design 3.0 Credits

This course introduces modern processor design in a systematic manner. It discusses dynamically scheduled superscalar techniques including advanced branch prediction, performance analysis of static and dynamic branch prediction techniques, cache design principles, cache replacement policies, techniques to exploit instruction-level parallelism via out-of-order execution, and techniques to tolerate long memory latencies via speculative and run-ahead executions. The course provides a comprehensive coverage of modern practices in processor design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 355 [Min Grade: D] or CS 281 [Min Grade: D]

ECEC 413 Introduction to Parallel Computer Architecture 3.0 Credits

This course provides an introduction to the fundamental principles and engineering trade-offs involved in designing modern parallel computers (multi-processors). Topics covered include, but are not limited to, shared-memory and message-passing programming, cache-coherence, synchronization, scalable distributed memory multi-processors, and interconnection techniques.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 355 [Min Grade: D] or CS 281 [Min Grade: D]

ECEC 414 High Performance Computing 3.0 Credits

This course is an introduction to high performance computing, including both concepts and applications. Course contents will include discussions of different types of high performance computer architectures (multi-core/multi-threaded processors, parallel computers, etc.), the design, implementation, optimization and analysis of efficient algorithms for uni-processors, multi-threaded processors, and parallel computers, and high performance programming.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 355 [Min Grade: D] or (CS 281 [Min Grade: D] and CS 282 [Min Grade: D])

ECEC 421 Introduction to Operating Systems I 3.0 Credits

Covers basic concepts of computer operating systems, including multiprocessing and multiprogramming systems, lock operations, synchronization, and file structures.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 353 [Min Grade: C] or CS 283 [Min Grade: C]

ECEC 422 Introduction to Operating Systems II 3.0 Credits

Further develops the topics of ECEC 421. Spring.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEC 421 [Min Grade: D]

ECEC 431 Introduction to Computer Networks 3.0 Credits

Covers topics in computer and telecommunications network design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 200 [Min Grade: D] and CS 260 [Min Grade: D]

ECEC 432 Internet Architecture and Protocols 3.0 Credits

Covers architecture, protocols, and services of the Internet with an analytical approach focused on design principles; Internet architecture and topology; architecture of web and mail servers; router architectures; routing protocols; multicasting; multimedia over IP and associated protocols; Quality-of-Service issues in the Internet.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 357 [Min Grade: D] or CS 472 [Min Grade: D]

ECEC 433 Network Programming 3.0 Credits

Covers application layer protocol and how applications use the transport layer; principles and practice of network programming; the client-server model; concurrent processing; introduction to sockets and related functions client and server software design with examples; principles, issues and challenges in e-mail and web application protocols; security protocols; and network life system concepts.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 357 [Min Grade: D]

ECEC 441 Robotic Computer Interface & Control I 3.0 Credits

Covers fundamentals of robotics systems, including mechanics, actuators, sensors, kinematics, and inverse kinematics. Fall.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECEC 356 [Min Grade: D]

ECEC 442 Robotic Computer Interface & Control II 3.0 Credits

Covers robot dynamics, Lagrangian and Newton Euler methods, linear control of robots, path planning, and computer implementation. Winter.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEC 441 [Min Grade: D]

ECEC 443 Robotic Computer Interface & Control III 3.0 Credits

Covers robot-computer interface methods, including redundancy, optimal control, robustness, nonlinear control, adaptive control, and multiprocessor control. Spring.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEC 442 [Min Grade: D]

ECEC 451 Computer Arithmetic 3.0 Credits

This course provides an introduction to number representations used in computer arithmetic, issues of complexity in arithmetic operations, fixed point arithmetic, floating point arithmetic, and residue number systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D] and ECEC 355 [Min Grade: D]

ECEC 453 Image Processing Architecture 3.0 Credits

This course covers applications of computing techniques and hardware in image (still and video) processing. Methods of compression (lossless, lossy), video compression, JPEG standards, MPEG standards, processing requirements, and implementations for multimedia.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D] and ECES 301 [Min Grade: D] and ECES 303 [Min Grade: D]

ECEC 455 Intelligent System Architectures 3.0 Credits

This course outlines the principles of designing the architectures for intelligent systems. Methods of knowledge representation are compared for a variety of engineering problems. Methods of sensing and behavior generation are demonstrated for applications in large engineering and information systems including autonomous robots. Principles of goal-oriented computers are discussed, and modules of intelligent systems architectures are described. Theoretical fundamentals and practical techniques for learning are also covered.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MATH 221 [Min Grade: D] and ECEC 355 [Min Grade: D]

ECEC 457 Security in Computing 3.0 Credits

The course introduces ideas from Cryptography and Fault Tolerant Computing. Cryptography studies how to artificially create distortions that being interwoven with computations mask them from eavesdropping. Fault Tolerance studies techniques of suppressing effects of natural noises that operate in computation channels. The course deals with both some introductory issues in Public Key Cryptography and some important aspects of designing Fault Tolerant Systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 355 [Min Grade: D]

ECEC 459 Testing of Hardware 3.0 Credits

Testing has become the largest expense item in the semiconductor industry. There is rapidly being developed new techniques in testing, design for test and built-in self-test because no existing set of techniques can satisfy the existing and future needs. The course reviews, in a unified way, important issues in testing and diagnosis of hardware. Together with the "Security in Computing" course, it brings a design engineer student to the state of the art level in the field.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 355 [Min Grade: D]

ECEC 471 Introduction to VLSI Design 3.0 Credits

This is an introductory course where systematic understanding, design and analysis of digital VLSI integrated circuits will be covered. The course will begin with a review of CMOS transistor operation and semiconductor processes. Logic design with CMOS transistor and circuit families will be described. Specifically, layout, design rules, and circuit simulation will be addressed. Performance metrics will be analyzed in design and simulation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D] or CS 270 [Min Grade: D]

ECEC 472 Custom VLSI Design & Analysis I 3.0 Credits

This is the first of two courses offered on Custom Very Large Scale Integration (VLSI) circuit and systems design and analysis. An understanding of VLSI integrated circuits is achieved through circuit design and analysis. This course focuses exclusively on high performance digital CMOS VLSI circuit and systems design, although some topics on mixed-signal circuits are also addressed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 471 [Min Grade: D]

ECEC 473 Custom VLSI Design & Analysis II 3.0 Credits

This is the second of two courses offered on Custom VLSI circuit and systems design and analysis. An understanding of VLSI integrated circuits is achieved through circuit design and analysis. This course focuses exclusively on high performance digital CMOS VLSI circuit and systems design, although some topics on mixed-signal circuits are also addressed. The primary focus is on-chip power management. Power generation techniques are discussed and different power converters are analyzed. Power distribution networks are presented with a focus on the different distribution architectures and output impedance characteristics. Techniques to reduce power supply noise are also provided. A secondary focus examines substrate noise in mixed-signal systems and techniques to reduce substrate noise.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 471 [Min Grade: D]

ECEC 474 ASIC Design I 3.0 Credits

This course will focus exclusively on digital CMOS Application Specific Integrated Circuit (ASIC) systems design and automation. The ASIC physical design flow, including logic synthesis, floorplanning, placement, clock tree synthesis, routing and verification will be presented. These back-end physical design flow steps will also be covered through hands-on practice using industrial VLSI CAD tools. Contemporary design practices will be reviewed and presented in experiments.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D] and (ECEC 355 [Min Grade: D] or CS 281 [Min Grade: D])

ECEC 475 ASIC Design II 3.0 Credits

Design and analysis of Application Specific Integrated Circuits (ASICs) will be covered from a systems design perspective. System timing, arithmetic building block and memory block design processes will be presented. Design tasks in a quarter-long, small-complexity processor design project will cover the back-end of the IC design flow range, from RTL synthesis to timing and power analysis. Projects will be performed in a hierarchical group, similar to an industrial setting, with other graduate and undergraduate students.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 474 [Min Grade: D]

ECEC 476 Hardware Security & Trust 3.0 Credits

The course covers a broad range of current topics in the areas of security and protection of modern integrated circuits. The covered material includes cryptographic processor and processing overhead, physical and invasive attacks, side-channel attacks, physically unclonable functions, hardware-based true random number generators, watermarking of intellectual property, FPGA security, passive and active metering for prevention of piracy, access control, and emerging threats to current and next-generation technologies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEC 471 [Min Grade: D] or ECEC 571 [Min Grade: D]

ECEC 486 Cell and Tissue Image Analysis 3.0 Credits

Theory of supervised and unsupervised pattern recognition techniques, with practical programming projects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 361 [Min Grade: D]

ECEC 487 Pattern Recognition 3.0 Credits

Theory of supervised and unsupervised statistical pattern recognition, presented through practical programming techniques.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 361 [Min Grade: D]

ECEC 497 Research In Computer Engineering 0.5-12.0 Credits

Computer engineering students only. Requires independent research in a field approved by the faculty.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is CE.

ECEC I199 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEC I299 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEC I399 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEC I499 Independent Study in Electrical & Computer Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is CE.

Cannot enroll if classification is Freshman or Sophomore

ECEC T180 Special Topics in Electrical & Computer Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEC T280 Special Topics in Electrical & Computer Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEC T380 Special Topics in ECEC 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEC T480 Special Topics in ECEC 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Electrical & Computer Engineering - Electroph

Courses

ECEE 304 Electromagnetic Fields & Waves 4.0 Credits

Covers vector calculus, Coulomb's Law, Gauss' Law, Ampere's Law, Maxwell's equations, Electromagnetic (EM) fields in devices, EM fields in circuits, EM fields in machinery, EM waves, biological effects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 291 [Min Grade: D]

ECEE 352 Analog Electronics 4.0 Credits

Teaches the fundamentals of electronic circuit analysis and design by means of practical projects, such as a dc power supply and an audio amplifier. Covers design with discrete components as well as integrated circuit design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 370 [Min Grade: D]

ECEE 354 Wireless and Optical Electronics 4.0 Credits

Covers propagation of waves in various media as it relates to wireless communications: reflection, transmission, polarization, wave packets, dispersion, radiation and antennas, microwave electronic devices, optical wave guides, and fiber optics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 301 [Min Grade: D] and (ECEE 304 [Min Grade: D] or ECE 371 [Min Grade: D])

ECEE 421 Advanced Electronics I 4.0 Credits

Application-and design-focused course. Analyzes feedback in electronic circuits such as operational amplifiers. Covers design and applications of active filters and other typical electronic circuitry. Includes experiments in the design of multistage transistor circuits, feedback loops, operational amplifiers, and active filters.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEE 352 [Min Grade: D]

ECEE 422 Advanced Electronic Circuits I 3.0 Credits

Application-and design-focused course. Covers analysis and design of communication circuits and non-linear active circuits; oscillators, mixers, IF and RF amplifiers; and AM and FM modulators.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEE 421 [Min Grade: D]

ECEE 423 Advanced Electronics Circuits II 3.0 Credits

Application-and design-focused course. Covers non-linear circuits; function and wave form generators; log-amp, multipliers, dividers, power amp, and phase-lock loops; and design of electronics needed to implement different logic circuit families.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEE 421 [Min Grade: D]

ECEE 434 Digital Electronics 4.0 Credits

Covers basic digital integrated circuit building blocks (inverters, nor and nand logic), CMOS logic gates (dc and transient behavior), drivers, and digital circuits and systems (PLA, gate array, memory). Experiments in semiconductor material characterization, device characterization, circuit and device simulations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 370 [Min Grade: D]

ECEE 441 Lightwave Engineering I 3.0 Credits

Covers fundamentals of wave propagation, including propagation in various fiber wave guides and field distributions, diffraction, attenuation, dispersion, information capacity, and other analytic and design considerations in fiber systems. Fall.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEE 304 [Min Grade: D]

ECEE 442 Lightwave Engineering II 3.0 Credits

Covers operating principles, construction, and characteristics of sources, couplers, and detectors used in optical systems. Includes equivalent circuit models and principles of generation, transmission, and reception. Winter.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEE 441 [Min Grade: D]

ECEE 443 Lightwave Engineering III 3.0 Credits

Covers applications of devices and systems in such areas as data, voice, and image trans-mission; industrial automation; process control; medicine; and computers. Includes basic measurement systems. Spring.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEE 442 [Min Grade: D]

ECEE 451 Electroacoustics 3.0 Credits

Applications-oriented course. Covers fundamentals of vibrating systems; equations of motion; acoustical, electrical, and mechanical analogs; properties of waves in fluids; acoustic impedance and plane wave transmission; application to design of transducers; and application of acoustic waves in medical imaging, non-destructive testing, and the biomedical field.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

ECEE 471 RF Components and Techniques 4.0 Credits

This course covers microwave networks (Z, Y, S, T ABCD Parameters), signal flowgraph, impedance matching techniques (lumped and distributed, quarter wave transformers), circulators and isolators, directional couplers (branch line, Wilkinson, Lange, slot waveguide), and filters (lowpass, bandpass, bandstop, highpass). CAD laboratory and design projects are an integral part of this course.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEE 354 [Min Grade: D]

ECEE 472 RF Electronics 4.0 Credits

This course covers static and dynamic characteristics of transistors, unipolar (MOSFET, MESFET, HEMT), bipolar (BJT, HBT), LNA design and realization, power amplifiers, distributed amplifiers, switches, limiters, phase shifters, detectors, mixers, oscillators (Colpitts, YIG turned, reflection, transmission, DRO). CAD laboratory and design projects are an integral part of this course.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEE 471 [Min Grade: D]

ECEE 473 Antennas and Radiating Systems 4.0 Credits

This course covers short and magnetic dipole, radiation pattern, radiation resistance, directivity and gain, line antennas (dipoles, monopoles, V and inverted V antennas), helix, Yagi-Uda, log-periodic, aperture antennas (slot, horn and reflector), printed circuit antennas (patch and spiral), and phased antennas. CAD laboratory and design projects are an integral part of this course.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEE 471 [Min Grade: D]

ECEE 497 Research in Electrophysics 0.5-12.0 Credits

Requires independent research in a topic approved by the faculty.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE I199 Independent Study in Electrical & Computer Engineering - Electroph 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE I299 Independent Study in Electrical & Computer Engineering - Electroph 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE I399 Independent Study in Electrical & Computer Engineering - Electroph 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE I499 Independent Study in Electrical & Computer Engineering - Electroph 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

ECEE T180 Special Topics in ECEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE T280 Special Topics in ECEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE T380 Special Topics in ECEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEE T480 Special Topics in ECEE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Electrical & Computer Engineering - Systems

Courses

ECES 201 Introduction to Audio-Visual Signals 4.0 Credits

This introductory engineering course will focus on the digital signal representations commonly used in prevailing entertainment media: audio, images, and video. It will explore how each medium is represented digitally and convey the signal processing concepts used in storing, manipulating, transmitting, and rendering such content. The goal of the course is to provide non-engineering students with a fundamental understanding of core digital signal processing methods.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

ECES 301 Signals and Systems I 4.0 Credits

This course covers time and frequency domain analysis of both continuous and discrete time signals and systems. Topics covered include a discussion of fundamental signals and basic system properties, convolution, the Fourier series, the Fourier transform, and introductory filtering. Students will learn to design and analyze the input output relationships of linear time-invariant signals, and will discuss applications in the field of electrical engineering.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 201 [Min Grade: D] and (ENGR 231 [Min Grade: D] or MATH 261 [Min Grade: D] or MATH 201 [Min Grade: D] or ECE 231 [Min Grade: D] or CAEE 231 [Min Grade: D])

ECES 302 Transform Methods and Filtering 0.0-4.0 Credits

Covers the Fourier series and the Fourier transform, sinusoidal steady-state analysis and filtering, discrete-time systems and the Z-transform, discrete Fourier transform, network functions and stability, magnitude, phase, poles and zeroes, Nyquist criterion, the Nyquist plot and root loci, stability of one-ports, sensitivity, worst-case design and failure-tolerance.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECE 232 [Min Grade: D] or MATH 262 [Min Grade: D] or MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D] or CAEE 232 [Min Grade: D]) and ECE 201 [Min Grade: D]

ECES 303 Signals and Systems II 3.0 Credits

This course introduces Laplace & Z-transforms & their corresponding region of convergence as extensions of Fourier transform (FT) to deal with signals & systems (continuous & discrete) with no FT. It also covers the fundamentals of the highly used discrete Fourier transforms (DFT) and its fast computation. The fast Fourier transform (FFT) is also presented to digitize the FT of discrete signals. Optimal, uniform, & compandor quantizer, which complements the sampler, are also introduced to discretize the signal's range for achieving full digitization of the signal (the digitizer). To close the loop, all FT, regular and generalized, continuous & discrete are tied together.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 361 [Min Grade: D], BMES 310 [Min Grade: D] (Can be taken Concurrently) or (ECES 301 [Min Grade: D] or ECES 302 [Min Grade: D])

ECES 304 Dynamic Systems and Stability 4.0 Credits

Covers linear time-invariant circuits and systems; two-and multi-terminal resistors, operational-amplifier circuits, first-order circuits, linear and nonlinear second-order systems, state equation and state variables, eigenvalues and eigenvectors, zero-input response, qualitative behavior of $\dot{x}=Ax$ (stability and equilibria), qualitative behavior of $\dot{x}=f(x)$, phase portraits, equilibrium states.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 301 [Min Grade: D]

ECES 306 Analog & Digital Communication 4.0 Credits

Covers signal sampling and reconstruction; modulation, angle modulation; digital communications systems, digital transmission.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (ECES 301 [Min Grade: D] or ECES 302 [Min Grade: D]) and ECE 361 [Min Grade: D]

ECES 352 Introduction to Digital Signal Process 3.0 Credits

Covers discrete-time signals, analog-digital conversion, time and frequency domain analysis of discrete-time systems, analysis using Z-transform, introduction to digital filters, discrete-time Fourier transform, Discrete Fourier Transform (DFT), and Fast Fourier Transform (FFT).

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 301 [Min Grade: D]

ECES 354 Wireless, Mobile & Cellular Communications 4.0 Credits

Covers concepts of wireless systems; propagation effects, including loss, dispersion, fading, transmission, and reception; mobile systems, including design of base units and mobile units; micro cells and pico cells; cell division, including frequency use and reuse; concepts of FDMA, TDMA, and CDMA; error rates and outage probability; and circuits and components for wireless and mobile systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 306 [Min Grade: D]

ECES 356 Theory of Control 4.0 Credits

Covers the foundations of control theory. Includes experiments and demonstrations during lectures and labs that may be jointly held, taking advantage of multimedia and computer-controlled apparatus.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 304 [Min Grade: D]

ECES 358 Computer Control Systems 4.0 Credits

Reviews principles of applications of computer control systems to a variety of industries and technologies, including manufacturing processes, robotic cells, machine cells, chemical processes, network control, investment portfolio control, and real-time expert and learning systems for diagnostics and quality control.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 356 [Min Grade: D]

ECES 411 Convex Optimization in Engineering Systems 3.0 Credits

Covers fundamental of convex optimization including convex sets, convex functions, linear and nonlinear constraints, complementary slackness, Lagrange multipliers, Lagrangian duality, and quadratic programming. Focuses on applications (e.g., signal processing, communications, computer networking, and portfolio management). Focuses on use of Matlab or equivalent software.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECES 301 [Min Grade: D] and ECES 303 [Min Grade: D] and (ENGR 361 [Min Grade: D] or ECE 361 [Min Grade: D])

ECES 412 Simulation of Stochastic Engineering Systems 3.0 Credits

Covers algorithms for generation of pseudo-random numbers, generation of random variates using the inverse transform, acceptance rejection techniques, Monte Carlo simulation, basics of point and interval estimation and hypothesis testing. Coverage of Markov chains, Markov chain Monte Carlo, Metropolis algorithm, simulated annealing, as time permits. Applications include computer networks, statistical physics, derivative pricing. Focus on use of Matlab or equivalent software.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECES 301 [Min Grade: D] and ECES 303 [Min Grade: D] and (ENGR 361 [Min Grade: D] or ECE 361 [Min Grade: D])

ECES 413 Strategies for Repeated Games 3.0 Credits

Covers the gambler's ruin problem, optimality of bold play for subfair games, the Martingale betting system, Kelly betting and the maximum growth rate in superfair games, the multi-armed bandit and its generalizations, Parrondo's paradox for coupled subfair games, basics of auction theory. Focus on use of Matlab or equivalent software.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ECES 301 [Min Grade: D] and ECES 303 [Min Grade: D] and (ENGR 361 [Min Grade: D] or ECE 361 [Min Grade: D])

ECES 421 Communications I 3.0 Credits

Covers analog communications, including linear modulation methods (AM, DSB, SSB), exponential modulation (FM, PM), and noise effects on analog communication systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 306 [Min Grade: D]

ECES 422 Communications II 3.0 Credits

Covers analog (PAM, PPM) and digital (PCM, DM) pulse modulation systems, entropy, source coding, and channel coding.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 421 [Min Grade: D]

ECES 423 Communications III 3.0 Credits

Covers digital transmission systems, baseband and passband, spread-spectrum communications, and basics of wireless and mobile systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECES 422 [Min Grade: D]

ECES 434 Applied Digital Signal Processing 4.0 Credits

This course explores digital signal processing (DSP) concepts through the context of current applications, which range from video encoding to human genome analysis. Topics such as sampling, aliasing, and quantization, are considered in terms of the constraints of particular applications. Discrete-time linear systems, frequency-domain analysis, and digital filtering using Discrete Fourier Transform are examined in-depth and realized through application-specific lab projects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 303 [Min Grade: D]

ECES 435 Recent Advances in Digital Signal Processing 4.0 Credits

Digital signal processing algorithms once thought to be impractical are now implemented in devices, such as household appliances & mobile phones. This course explores the computationally-intensive DSP methods including short-time linear prediction, cepstral analysis, and complex phase reconstruction as well as alternative signal representations and transforms, including the Hilbert, Chirp, and Discrete Cosine Transforms. Laboratory projects will focus on the implementation of these methods.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 303 [Min Grade: D]

ECES 436 Multi-disciplinary Digital Signal Processing 4.0 Credits

The applications of digital signal processing (DSP) span a wide range of problem domains and disciplines. This course explores the multi-disciplinary aspects of DSP by focusing on a core set of common methods applicable to problems in many fields, such as periodicity detection, signal and power spectrum estimation, and data modeling. Laboratory projects will utilize experiments drawn from a diversity of fields, including medicine, music analysis, image processing, voice/data communications and robotics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 303 [Min Grade: D]

ECES 441 Bioinformatics 3.0 Credits

This course will focus on developing the computational, algorithmic, and database navigational skills required to analyze genomic data that have become available with the development of high throughput genomic technologies. We will also illustrate statistical signal processing concepts such as dynamic programming, hidden markov models, information theoretic measures, and assessing statistical significance. The goals will be achieved through lecture and lab exercises that focus on genomic databases, genome annotation via hidden markov models, sequence alignment through dynamic programming, metagenomic analyses, and phylogenetics with maximum likelihood approaches.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ECES 444 Systems and Control I 4.0 Credits

This course focuses on the state space approach to systems analysis and control for use in such applications as: Automated Equipment, Robotics, Motor Control, Process Control and Aerospace. A brief review of Classical Controls provides the seaway for state space modeling as well as state variable feedback and observer based state control. Optimal Control (Performance Index for gain selection) as well as System Identification techniques and Lagrangian Dynamics are introduced. The course includes a set of laboratory experiments where students get hands-on experience with the core theoretical material.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 356 [Min Grade: D]

ECES 445 Systems and Control II 4.0 Credits

This course focuses on Linear Quadratic Gaussian Control for use in such applications as: Automated Equipment, Robotics, Motor Control, Process Control and Aerospace. The course introduces the Kalman Filter as a stochastic observer and then extends on applying it to target tracking, system identification and use in control.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 356 [Min Grade: D] and ECE 361 [Min Grade: D]

ECES 446 Systems and Control III 4.0 Credits

This course introduces nonlinear systems and some commonly used industrial non-linear control techniques relevant to such applications as: Automated Equipment, Robotics, Motor Control, Process Control and Aerospace. Foundation topics include: equilibrium and stability of nonlinear systems, analysis of limit cycles and region of attraction, Lyapounov stability, Nyquist stability for limit cycle analysis. Control techniques include topical solutions: Model Reference Adaptive control; Adaptive Disturbance Rejection Control, Robust and H-infinity Control, and Fuzzy Logic Control.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 356 [Min Grade: D]

ECES 450 Statistical Analysis of Metagenomics 3.0 Credits

This course focuses on developing the computational and database navigational skills required to analyze genomic data. The goals will be achieved through lecture and exercises on genomic databases, programming for importing and pre-processing genomic data, high performance programming for analysis of high-throughput metagenomic analyses, and use of high-performance computing for phylogenetic reconstruction.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ECES 461 Medical Robotics 3.0 Credits

This course reviews the emerging multidisciplinary field of Medical Robotics. The course, which runs as a seminar, will review the technological, clinical, ethical and market perspectives of this rapidly evolving area of robotics and automation. A large variety of recent, clinically proven, therapeutic, and diagnostic medical automation systems and tools will be introduced, demonstrated, and analyzed. A brief review of introductory robotics concepts, terminology and background will be provided during the first few weeks of this seminar/course.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 356 [Min Grade: D]

ECES 462 Medical Robotics II 3.0 Credits

This course will review the emerging, multidisciplinary field of Medical Robotics. The course includes multiple site/field visits to observe Medical Robot systems demonstrations and interaction with the medical team and system manufacturers.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECES 461 [Min Grade: D]

ECES 497 Research in Systems Engineering 0.5-12.0 Credits

Electrical engineering students only. Requires independent research in a topic approved by the faculty.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

ECES 499 Supervised Study in Systems Engineering 0.5-20.0 Credits

Requires independent study in a topic approved by the faculty.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ECES I199 Independent Study in Electrical & Computer Engineering - Systems 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES I299 Independent Study in Electrical & Computer Engineering - Systems 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES I399 Independent Study in Electrical & Computer Engineering - Systems 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES I499 Independent Study in Electrical & Computer Engineering - Systems 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES T180 Special Topics in ECES 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES T280 Special Topics in ECES 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES T380 Special Topics in ECES 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECES T480 Special Topics in ECES 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Electrical Engineering Lab

Courses

ECEL 301 [WI] Electrical Engineering Laboratory 2.0 Credits

Offers laboratory experiences in each of the five ECE tracks: computers, controls/robotics, electronics, power and energy, and telecommunications. Each lab consists of a stand-alone module containing: lecture material providing basic theory, references, and laboratory experiments.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECE 200 [Min Grade: D] and ECE 201 [Min Grade: D]

ECEL 302 ECE Laboratory II 2.0 Credits

Offers laboratory experiences in each of the five ECE tracks: computers, controls/robotics, electronics, power and energy, and telecommunications. Each lab consists of a stand-alone module containing: lecture material providing basic theory, references, and laboratory experiments. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEL 301 [Min Grade: D]

ECEL 303 ECE Laboratory III 2.0 Credits

Offers laboratory experiences in each of the five ECE tracks: computers, controls/robotics, electronics, power and energy, and telecommunications. Each lab consists of a stand-alone module containing: lecture material providing basic theory, references, and laboratory experiments.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECEL 302 [Min Grade: D]

ECEL 304 ECE Laboratory IV 2.0 Credits

This course offers laboratory experience, using both modeling software and digital and analog hardware relevant to both electrical and computer engineers. Multi-week design projects and design teams are used to prepare students for Senior Design work.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEL 303 [Min Grade: D]

ECEL 311 ECE Laboratory Methods I 3.0 Credits

Introduces students to MATLAB and PSpice, industry standard CAD software for electronics (analog and digital) and systems engineers. Solve DC bias, DC sweep, AC sweep, and transient problems in PSpice and MATLAB. Build and design simple digital circuits.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECE 200 [Min Grade: D] and ECE 201 [Min Grade: D]

ECEL 312 ECE Laboratory Methods II 3.0 Credits

Covers introduction to transistor circuits, PSpice simulations of active devices, transfer function analysis, Bode analysis, active filter analysis and design. Programming and use of Microprocessors and/or FPGA. Perform measurements on devices and circuits.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ECEL 301 [Min Grade: D] or ECEL 311 [Min Grade: D]

ECEL 401 Lightwave Engineering Laboratory 3.0 Credits

Teaches fundamentals of interaction of light with matter. Waves and photons. Interference and diffraction. Optical fibers and free-space optics. Introduces students to optical communication and imaging.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECEL 301 [Min Grade: D] and ECEL 302 [Min Grade: D] and ECE 370 [Min Grade: D]) or (ECEL 311 [Min Grade: D] and ECEL 312 [Min Grade: D] and ECEE 304 [Min Grade: D])

ECEL 402 Nano-Photonics Laboratory 3.0 Credits

Teaches a fundamental knowledge of nanophotonic materials, devices, and applications in a hands-on laboratory setting. Introduces students to photonic bandgaps, photonic crystals, optical sensing methods, holography methods and materials, concepts of surface plasmons and Plasmon resonance.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECEL 301 [Min Grade: D] and ECEL 302 [Min Grade: D] and ECEE 304 [Min Grade: D]) or (ECEL 311 [Min Grade: D] and ECEL 312 [Min Grade: D] and ECEE 304 [Min Grade: D])

ECEL 403 Bio-Photonics Laboratory 3.0 Credits

Teaches the fundamentals of the interaction of light with matter. Introduces students to different types of optical detection for biomedical applications. Quantized states of matter, Energy levels of atoms and molecules, Absorption, Scattering, Fluorescence, Imaging of cells and molecules, Spectroscopy, and Cancer precursors.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECEL 301 [Min Grade: D] and ECEL 302 [Min Grade: D] and ECEE 304 [Min Grade: D]) or (ECEL 311 [Min Grade: D] or ECEL 312 [Min Grade: D] or ECEE 304 [Min Grade: D])

ECEL 404 Software Defined Radio Laboratory 3.0 Credits

This course introduces students to the concept of software defined radio using the USRP hardware platform and GNU Radio software. Functional blocks of wireless communications systems will be discussed, programmed in Python, and tested on hardware.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECEL 301 [Min Grade: D] and ECEL 302 [Min Grade: D] and ECES 301 [Min Grade: D] and ECES 303 [Min Grade: D]) or (ECEL 311 [Min Grade: D] and ECEL 312 [Min Grade: D] and ECES 301 [Min Grade: D] and ECES 303 [Min Grade: D])

ECEL 405 Digital Systems Laboratory 3.0 Credits

Students will gain practical knowledge of digital systems and signal processing by designing, simulating, constructing, testing and refining a digital audio recording system.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (ECEL 301 [Min Grade: D] and ECEL 302 [Min Grade: D] and ECES 301 [Min Grade: D]) or (ECEL 311 [Min Grade: D] and ECEL 312 [Min Grade: D] and ECES 301 [Min Grade: D])

ECEL I199 Independent Study in Electrical Engineering Lab 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL I299 Independent Study in Electrical Engineering Lab 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL I399 Independent Study in Electrical Engineering Lab 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL I499 Independent Study in Electrical Engineering Lab 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL T180 Special Topics in ECEL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL T280 Special Topics in ECEL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL T380 Special Topics in ECEL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ECEL T480 Special Topics in ECEL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Electrical Engineering Technology Courses

EET 102 Introduction to Engineering Technology 3.0 Credits

The main objective of this course is to introduce the basic concepts and the fundamentals of Engineering Technology (ET). Students are introduced to the four tracks (electrical, mechanical, industrial, and biomedical) in ET and work on the selected topics designed to enhance the problem solving techniques.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EET 201 Circuit Analysis I 4.0 Credits

Introduction to the key electrical terms, basic laws and theorems of electric circuits by concentrating on Direct Current (DC) circuit analysis, power, and energy.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D]) and (MATH 110 [Min Grade: D] or MATH 121 [Min Grade: C-] or MATH 105 [Min Grade: C-])

EET 202 Circuit Analysis II 4.0 Credits

Introduction to time domain (transient) analysis of R, L, C elements and energy storage in L and C circuits. The response of source-free RL, RC, and RLC circuits are developed followed by response to constant voltage and current sources.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D]

EET 204 Introduction to Nanotechnology 3.0 Credits

The course is an introduction to the physical, chemical and biological principles of nanotechnology. The course provides information on prevalent nanofabrication methods and materials, and familiarizes the students with the tools of nano measurements. The history, societal impact and the involvement of nanotechnology in everyday life are also discussed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (CHEM 111 [Min Grade: D] or CHEM 101 [Min Grade: D]) and (CHEM 113 [Min Grade: D] or CHEM 101 [Min Grade: D]) and (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D] or PHYS 151 [Min Grade: D])

EET 205 Digital Electronics 4.0 Credits

The objective of this course is to introduce AET students to fundamentals of digital electronics starting with the binary number system and proceeding to logic gates, Boolean algebra, combinational logic circuits, and the basic arithmetic units used in digital computers such as adders, counters and shift registers.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D]

EET 206 Analog Electronics I 4.0 Credits

Students are introduced to linear circuit analysis of passive and active semiconductor components, modeling of non-linear circuit elements, light and heat-dependent semiconductor devices, biasing of three-terminal devices, and semiconductor small-signal models.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D] and EET 202 [Min Grade: D]

EET 207 Introduction to Laboratory and Process Control 3.0 Credits

This course introduces students to programming techniques used to control laboratory experiments and industrial processes. The emphasis is on applications of LabView and C in real-world measurements and embedded systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EET 208 Introduction to Programming for Embedded Systems 3.0 Credits

This course introduces students to programming techniques used in embedded systems. The emphasis is on applications of C in real-world measurements, analysis, and embedded systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EET 209 Fundamentals of Virtual Instrumentation 3.0 Credits

This course introduces students to programming techniques used to monitor and control laboratory experiments and industrial processes. The emphasis is on applications of LabVIEW in real-world measurements and embedded systems, as well as on the practical aspects of interfacing a computer to various instruments including timing issues, real-time data acquisition and instrument control, instrument status, and acquisition speed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EET 307 Basic Power Systems I 3.0 Credits

Fundamentals of single-phase and three-phase power systems; introduction to symmetrical components and sequence impedances; power transfer modeling; the per-unit system; power transmission line impedance and admittances.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: EET 104 [Min Grade: D]

EET 310 Industrial Application of Nanotechnology 3.0 Credits

This course introduces students to nanotechnology materials, devices, and processes from the perspective of product development and process engineering, manufacturing scale-up, quality assurance, and reliability. Laboratory projects provide students with hands-on experience in fabricating and characterizing nanomaterials and nanodevices, and their applications for renewable energy, solid-state lighting, novel functional materials, and biomedical engineering.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 111 [Min Grade: D] and CHEM 113 [Min Grade: D]

EET 311 Modeling of Engineering Systems 4.0 Credits

Course introduces students to development and application of ordinary differential equations to systems analysis with emphasis on electrical systems. Particular attention is paid to the derivation of differential equations from given practical circuits used in industrial applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D] and EET 202 [Min Grade: D]

EET 313 Signals and Systems I 4.0 Credits

Course introduces students to applications of the systems analysis to the design of useful circuits and devices used in industrial applications. Covers time and frequency domain circuit analysis (transfer function, convolution) to determine response of the system to the arbitrary input.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 311 [Min Grade: D]

EET 317 Analog Electronics II 4.0 Credits

Students are introduced to four-layer diodes, power amplifiers, differential amplifiers, linear and non-linear operational amplifiers, feedbacks, oscillators, and active filters. Class discussions include practical circuits, troubleshooting, and case studies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 206 [Min Grade: D]

EET 319 PLC Fundamentals 4.0 Credits

Introduces the fundamentals of programmable logic controllers, and PLC application in process control. The course includes both lecture and laboratory aimed at applying fundamental principles to practical projects. The emphasis is on the basics of ladder logic, including timers, counters, and program control.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 205 [Min Grade: D]

EET 320 Renewable Energy Systems 3.0 Credits

This course provides an introduction to energy systems and renewable energy resources, with a scientific examination of the energy field and an emphasis on alternate energy sources and their technology and applications. The class explores society's present needs and future energy demands, examines conventional energy sources and systems, including fossil fuels and then focuses on alternate, renewable energy sources such as solar, wind power, geothermal and fuel cells.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D]) and MATH 110 [Min Grade: C]

EET 322 Energy Conversion 4.0 Credits

The course covers the fundamentals and the principles of electrical machines and transformers, with an emphasis on their application and installation. The course covers transformer, dc, ac and special machines. Novel energy conversion techniques such as Fuel Cell and Batteries are also discussed.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 202 [Min Grade: D]

EET 323 Electrical Systems Design 3.0 Credits

This course covers the basics of industrial systems, including safety, grounding, protection, lighting, distribution, commonly found in residential, commercial and industrial environment. The course formulates the application of standards and codes such as NEC, NEMA and IEEE.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 202 [Min Grade: D]

EET 324 Power Electronics 4.0 Credits

The course covers the basics of the industrial and power electronics over a spectrum of applications and provides an introduction to the emerging technologies in these fields. The course is accompanied by laboratory using hardware and software simulation tools.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 202 [Min Grade: D]

EET 325 Microprocessors 3.0 Credits

Introduces student to fundamentals of microprocessing using an application-oriented approach. Includes fundamental principles and system requirements supplemented with specific implementation examples and practical circuits with detailed design considerations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 205 [Min Grade: D]

EET 333 [WI] Non-Destructive Evaluation of Materials 4.0 Credits

The course presents principles of Ultrasound Nondestructive Evaluation (NDE) of Materials combining hands-on laboratory experience with lectures. Students learn the physical principles and fundamentals of ultrasound material characterization. Students also learn industrial applications of NDE techniques and procedures and become familiar with detection and characterization of defects in materials, such as flaws and cracks.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 153 [Min Grade: D] or PHYS 101 [Min Grade: D]) and (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D])

EET 335 Acoustic Emission 4.0 Credits

The course presents principles of acoustic emission using practical applications in various industries. Physical principles of acoustic emission generation, propagation and detection in engineering materials and structures are presented. This includes principles of stress and strain and the underlying materials science of material deformation, crack growth and failure. Students learn how these principles are utilized to build technical applications of acoustic emission considered as an NDE method.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 153 [Min Grade: D] and PHYS 154 [Min Grade: D]

EET 401 Applied Microcontrollers 4.0 Credits

The course is an introduction to microcontroller hardware and software with an emphasis on embedded control applications. Topics covered include microcontroller architectures, programming, analog and digital input/output, timing, debugging and PC-based software development tools.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 205 [Min Grade: D]

EET 402 Control Engineering 3.0 Credits

The course covers fundamental of control theory and their applications, including, linear systems and feedback, linear system operation and stability, standard methods applicable to the linear systems and basic for designs and applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 311 [Min Grade: D] and EET 313 [Min Grade: D]

EET 404 Signals and Systems II 3.0 Credits

Introduces the analysis of electric circuits under steady sinusoidal conditions, applications of Laplace transformation and complex frequency analysis, and Fourier analysis for representing an arbitrary time function as a sum of sinusoidal functions.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 313 [Min Grade: D] and EET 311 [Min Grade: D]

EET 406 Communication Systems 3.0 Credits

This course introduces AET student to fundamentals of Communication Systems using an integrated approach to analog and digital communications. Design and applications of contemporary communication systems are emphasized via the reduction theory to practice.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 311 [Min Grade: D] and EET 313 [Min Grade: D]

EET 407 Power Systems Fundamentals 3.0 Credits

The course covers the basic principles of the power systems, electric grid, methods to analyze electric grid systems and basic power system protection and stability.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 202 [Min Grade: D] and EET 322 [Min Grade: D]

EET 409 Optical System Design 3.0 Credits

This course introduces ET students to fundamentals of optics and optical systems using an application-oriented approach. Special attention is given to fundamental principles of optical systems and their requirements supplemented with specific applications-based examples.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 154 [Min Grade: D]

EET 412 Electronics Manufacturing 4.0 Credits

This course is a survey of the electronics industry including the science, technology, economics and business of electronics manufacturing. The aim is to provide students with a working knowledge of how electronic products are made starting with basic 'feedstock' materials and producing sophisticated electronic components and systems. The course covers electronic materials, integrated circuit manufacture, packaging, electronics assembly (printed circuit boards), and testing, as practiced in industry.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 101 [Min Grade: D] and EET 202 [Min Grade: C] and EET 204 [Min Grade: D] and EET 205 [Min Grade: C] and EET 206 [Min Grade: C]

EET I199 Independent Study in Electrical Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET I299 Independent Study in Electrical Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET I399 Independent Study in Electrical Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET I499 Independent Study in Electrical Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET T180 Special Topics in EET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET T280 Special Topics in EET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET T380 Special Topics in EET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EET T480 Special Topics in EET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Engineering Management

Courses

EGMT 230 Introduction to Global Engineering 2.0 Credits

This course introduces the student to a broad range of contemporary issues (economic, political and cultural) that engineers face in meeting the challenges of globalization. This is a discussion focused course and is intended to expose the engineers to concepts and challenges facing today's global engineers. Topics include understanding globalization, communicating across cultures, peace engineering, and developmental engineering. Students in this course will also be asked what it means to be an engineer today and to understand their role and potential for impact. The course will feature guest speakers and students will engage in various case study analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EGMT 295 Survey of Mentorship 1.0 Credit

This course is the first in the leadership development course sequence, which is part of the Peer Mentor program. This course sequence is designed to develop and enhance the leadership skills among engineering students, emphasizing communication among peer groups and other undergraduate students. As the first course in the sequence, it is focused on the mentor-mentee relationship as it relates to leadership development. Students in this class will be assigned freshman mentees with whom they will be working during the fall term.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EGMT 296 Survey of Leadership 1.0 Credit

EGMT 296: Survey of Leadership is the second course in the leadership development course sequence which is part of the Peer Mentor program. This course sequence is designed to develop and enhance the leadership skills among engineering students, emphasizing communication among peer groups and other undergraduate students. As the second course in the sequence, EGMT 296: Survey of Leadership builds upon the foundational leadership concepts of trust, communication, and mentorship covered in EGMT 295: Survey of Mentorship. The course also focuses on self-awareness, team dynamics, and emotional intelligence, which is the ability of a person to adapt his or her leadership style based on situational needs.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EGMT 345 Introduction to Peacebuilding for Engineers 3.0 Credits

Developed in partnership with professional peacebuilders from the PeaceTech Lab and USIP's Academy for International Conflict Management and Peacebuilding in Washington DC, this course introduces engineering students to the concepts and skills practiced in the field of international peacebuilding and conflict transformation. This course provides students with first-hand accounts of peacebuilders describing the challenges and opportunities in their work, short presentations outlining key theories and concepts that guide that work, and opportunities to think about how this knowledge, skills, and attitudes can be applied to real-life peacebuilding dilemmas.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EGMT 350 Conflict Management for Engineers 3.0 Credits

As the pace of science and technology innovation increases, so too does the role of engineers in solving some of the world's toughest challenges. The prevention of violent conflict and the pursuit of a sustainable peace is just such a challenge. Developed in partnership with professional peacebuilders from the PeaceTech Lab and the US Institute of Peace's Academy for International Conflict Management and Peacebuilding in Washington DC, this course introduces engineering students to the concepts and skills they will need in order to use technology expertise in service of conflict-affected communities. This course provides students with an introduction to the theory and practice of conflict analysis, strategic peacebuilding, and negotiation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EGMT 404 [WI] Introduction to Engineering Management Communications 3.0 Credits

Excellence in design is as important to managerial communications as it is for any engineering endeavor. By applying this concept to the challenges that new engineering managers face, the course encourages engineers to aspire to professional competence in writing and speaking as they prepare for management. This helps them in both marketing their job skills and publishing and promoting innovative ideas and solutions. Students learn the rhetoric of managerial communication to affect workplace behavior on multiple levels, effect profitable technological and business outcomes, and promote the success of new products and systems. The basic skills of composition and grammar are also stressed: developing and organizing content, building effective reporting formats, and editing to achieve style and correctness.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

EGMT 462 Introduction to Engineering Management 3.0 Credits

Introduces the general theory of management, including the processes of planning, organizing, assembling resources, supervising, and controlling.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

EGMT 465 Introduction to Systems Engineering 3.0 Credits

Determining technical requirements for engineering systems and planning technical product design and requirements. Analyzing the functionality, interoperability, and sustainability of new engineering systems. Integrating disparate engineering components for overall system optimization. Planning for testing and evaluation of engineering systems to evaluate conformance with technical requirements. Planning optimized organizational structure for execution of complex engineering programs.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

EGMT 470 Engineering Leadership Capstone 2.0 Credits

This course aims to improve students' leadership, problem solving, and communications skills through mentorship, scholarship, and civic engagement. It requires students to utilize the skills developed through their degree programs to solve a problem in the local community. Students will then present their solution to the relevant parties at the end of the term.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (EGMT 295 [Min Grade: D] and EGMT 296 [Min Grade: D]) or (ORGB 320 [Min Grade: D] and EGMT 404 [Min Grade: D] and EGMT 462 [Min Grade: D])

EGMT I199 Independent Study in Engineering Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT I299 Independent Study in Engineering Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT I399 Independent Study in Engineering Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT I499 Independent Study in Engineering Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT T180 Special Topics in EGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT T280 Special Topics in EGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT T380 Special Topics in EGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

EGMT T480 Special Topics in EGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Engineering, General

Courses

ENGR 111 Introduction to Engineering Design & Data Analysis 3.0 Credits

This course introduces students to engineering design and concepts in data collection, analysis, modeling, and presentation that are central to all fields of engineering. Students will gain exposure to a variety of engineering disciplines through introduction of problems and experiments from different fields.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ENGR 113 First-Year Engineering Design 3.0 Credits

In this course, students will focus on applying the engineering design process to problems of particular interest in the various engineering fields. A key component of the course is a term-long project where students will work in teams to solve an engineering problem.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 111 [Min Grade: D]

ENGR 131 Introductory Programming for Engineers 3.0 Credits

An introduction to the fundamentals of programming and algorithmic problem solving with applications in engineering. Emphases include (a) producing clear, robust, and efficient code, and (b) conceptualizing and designing computational algorithms to solve engineering problems. Upon completion, students will possess the programming skills necessary to perform computational analysis in any engineering discipline. This course is designed for students without any prior programming experience.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

ENGR 132 Programming for Engineers 3.0 Credits

An introduction to the fundamentals of programming and algorithmic problem solving with applications in engineering. Emphases include (a) producing clear, robust, and efficient code, and (b) conceptualizing and designing computational algorithms to solve engineering problems. Upon completion, students will possess the programming skills necessary to perform computational analysis in any engineering discipline. This course is designed for students with some high-school Computer Science or programming experience in any language.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ENGR 210 Introduction to Thermodynamics 3.0 Credits

Introduces thermodynamics from a classical point of view. Covers work, heat, entropy, thermodynamic properties, equations of state, and first and second law analysis of closed systems, control volumes, and selected thermodynamic cycles.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 122 [Min Grade: D] and PHYS 101 [Min Grade: D]

Corequisite: EXAM 081

ENGR 220 Fundamentals of Materials 4.0 Credits

Introduces materials and their properties; atomic view and architecture of solids; atomic motion in solids, mechanical, magnetic, electrical and optical properties of materials. Corrosion and degradation of solids.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 101 [Min Grade: D] and MATH 122 [Min Grade: D] and PHYS 101 [Min Grade: D]

Corequisite: EXAM 081

ENGR 231 Linear Engineering Systems 3.0 Credits

Provides an overview of systems and modeling; specifically using linear algebra as the model. Specific emphasis will be placed on developing models of engineering systems and the use of computational tools for solutions of the problems. The focus of the lab will be the use of MATLAB for solution of contemporary engineering problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

Corequisite: EXAM 081

ENGR 232 Dynamic Engineering Systems 3.0 Credits

Provides an overview of dynamic systems and modeling; specifically using differential equations as a model. Specific emphasis will be placed on developing models of dynamic systems and the use of computational tools for solutions of the problems. The focus of the lab will be the use of MATLAB for solution of contemporary engineering problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 231 [Min Grade: D]

Corequisite: EXAM 081

ENGR 280 Introduction to Global Engineering 2.0 Credits

Introduces students to a broad range of contemporary issues (economic, political, and cultural) engineers face in meeting the challenges of globalization. In addition to responding to weekly presentations, students will engage in and report on an in-depth case study.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ENGR 361 Statistical Analysis of Engineering Systems 3.0 Credits

Probability, random variables, reliability, quality control, design of experiments, regression/correlation, ANOVA and related topics, hypothesis testing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

ENGR 370 Vertically Integrated Projects 0.0-4.0 Credits

The Vertically-Integrated Projects (VIP) Program will operate in a research and development context. Undergraduate students who join VIP teams will earn academic credit for their participation in design/discovery efforts that assist faculty and graduate students with research and development issues in their areas of expertise. Permission of the instructor required.

College/Department: College of Engineering

Repeat Status: Can be repeated 9 times for 40 credits

ENGR 491 Senior Project Design I 2.0 Credits

Introduces the design process, including information retrieval, problem definition, proposal writing, patents, and design notebooks. Includes presentations on problem areas by experts from industry, government, and education.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENGR 492 Senior Project Design II 2.0 Credits

Continues ENGR 491. Requires written and oral progress reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CIVE 491 [Min Grade: D]

ENGR 493 Senior Project Design III 4.0 Credits

Continues ENGR 492. Requires written and oral final reports, including oral presentations by each design team at a formal Design Conference open to the public and conducted in the style of a professional conference.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENGR I199 Independent Study in Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR I299 Independent Study in Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR I399 Independent Study in Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR I499 Independent Study in Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR T180 Special Topics in Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR T280 Special Topics in Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR T380 Special Topics in Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENGR T480 Special Topics in Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

English

Courses

ENGL 101 Composition and Rhetoric I: Inquiry and Exploratory Research 3.0 Credits

Develops students' abilities to use writing as a tool for inquiry. Introduces genre theory, writing as a process, revision, and strategies of primary and secondary research. Reviews grammar, style, and documentation conventions. Engages students in reflection and promotes positive attitudes toward writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENGL 102 Composition and Rhetoric II: Advanced Research and Evidence-Based Writing 3.0 Credits

Advances students' development in the writing processes. Promotes a critical evaluation and integration of information into their own writing as they research complex and open-ended issues. Identifies the relationships between rhetorical situations, the status of claims, and the need for evidence and warrants. Continues review of grammar, style, and documentation conventions. Encourages collaboration and effective search strategies of the Internet and library resources. Promotes students' reflective analysis and a positive attitude toward writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or AP36 4 or AP37 4

ENGL 103 Composition and Rhetoric III: Themes and Genres 3.0 Credits

Advances students' development in the writing and research processes and their understanding of how genres of writing shape meaning. Some courses may focus on the student's academic and discipline-specific experiences; Others may be based on literary or social themes. Promotes a critical reading of texts, reflective analysis, and a positive attitude toward writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 102 [Min Grade: D]

ENGL 105 Honors Freshman English 3.0 Credits

Develops students' abilities to read and write expository and persuasive academic discourse. Teaches students the components of the writing process and strategies to think and read critically and to present a written argument. Requires students to write expository and persuasive essays and research papers and to keep a journal to express their responses to the material read and studied in the course.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HONR.

ENGL 111 English Composition I 3.0 Credits

Equivalent to the university requirement of ENGL 101. Develops multilingual (non-native speakers of English) students' abilities to use writing as a tool for research and reflection. Introduces the concept of genre, writing as a process, reflection on students' own and others' work, revision, and approaches to primary and secondary research. Reviews grammar, organization, style, and documentation conventions. Promotes positive attitudes toward writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APE 2 or ESL 110 [Min Grade: D]

ENGL 112 English Composition II 3.0 Credits

Equivalent to the university requirement of ENGL 102. Advances multilingual (non-native speakers of English) students' abilities to use of writing as a tool for research and reflection and their understanding of writing as a process. Develops the critical evaluation and integration of information into students' own writing as they research social, political, and educational open-ended issues. Continues review of grammar, organization, style, and documentation conventions. Enhances effective strategies for secondary research and collaboration skills. Promotes positive attitude towards writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 111 [Min Grade: D]

ENGL 113 English Composition III 3.0 Credits

Equivalent to the university requirement of ENGL 103. Advances multilingual (non-native speakers of English) students' development in the reading, writing, and research processes. Some courses may focus on the student's academic and discipline-specific experiences, while others may be based on literary or social themes. Enhances multilingual students' ability to read texts critically and to reflect on their own and others' writing, scholarly and literary works, and social events. Promotes a positive attitude toward writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 112

ENGL 195 English Freshman Seminar 3.0 Credits

This course introduces freshman majors to the practice and study of the English major. It is a foundation for further study as well as a course about how we learn. It prepares the student to be successful in upper-division courses and to become familiar with the basic tools of the discipline. It encourages the creative and critical thinking that is a hallmark of the English major.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENGL 200 [WI] Classical to Medieval Literature 3.0 Credits

A survey of Greek and Roman literature (Homer, Aeschylus, Euripides, Virgil and Cicero), up to and including the Medieval period (Aquinas, Cavalcanti, Chaucer, and Dante).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 201 Renaissance to the Enlightenment 3.0 Credits

A survey of Western literature from the Renaissance to the Enlightenment, focusing on works by Cervantes, Erasmus, Rabelais, Petrarch, Voltaire, Rousseau, Swift and Pope.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 202 [WI] Romanticism to Modernism 3.0 Credits

A survey of Western literature of the 19th and 20th centuries focusing on the major periods of Romanticism (Blake, Coleridge and Keats), Realism (Balzac and Ibsen), and Modernism (Kafka, Borges and Woolf).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 203 [WI] Survey of World Literature 3.0 Credits

A survey of nonwestern literatures produced before the modern era in Asia, Africa, and the Middle East, representing the more important periods and genres.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 204 Post-Colonial Literature 3.0 Credits

A survey of nonwestern literatures written since the 20th century by writers from Asia, Africa, and the Middle East, and focusing on the effects of social, aesthetic and contemporary events on artistic creation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 205 [WI] American Literature I 3.0 Credits

A survey of American literature from Colonial times through the Civil War, including works by such writers as Anne Bradstreet, Emily Dickinson, Frederick Douglass, Cotton Mather, Ralph Waldo Emerson, Nathaniel Hawthorne, Herman Melville, Henry David Thoreau and Walt Whitman.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 206 [WI] American Literature II 3.0 Credits

A survey of American literature from the Civil War through the 21st century, including works by such writers as Kate Chopin, W.E.B. Du Bois, T.S. Eliot, William Faulkner, F. Scott Fitzgerald, Henry James, Philip Roth, Mark Twain and John Updike.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 207 [WI] African American Literature 3.0 Credits

Introduces students to African-American Literature, from the mid-18th century to the present. Provides a basic understanding of social, political and cultural influences and an awareness of the African-American literary tradition.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 211 [WI] British Literature I 3.0 Credits

A historical survey of British literature from its beginning to the end of the eighteenth century. Students will read texts selected to represent major authors, forms and thematic material that illustrates the development of English literature through the medieval and Renaissance periods and seventeenth and eighteenth centuries.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 212 British Literature II 3.0 Credits

A historical survey of British literature from the turn of the nineteenth century to the present; students will read texts selected to represent major authors, forms and thematic material of the Romantic, Victorian and modern periods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 214 Readings in Fiction 3.0 Credits

A basic course, which focuses on fiction as a genre through the study of a variety of short stories and fiction, organized by theme, period or form. One of three genre courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 215 [WI] Readings in Poetry 3.0 Credits

A basic course which focuses on poetry as a genre through the study of a variety of poems organized by theme, period or form. One of three genre courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 216 [WI] Readings in Drama 3.0 Credits

A basic course which focuses on drama as a genre through the study of a variety of plays organized by theme, period or form. One of three genre courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 220 LGBT Literature and Culture 3.0 Credits

This course examines writing in English by lesbian, gay, bisexual, transgender (LGBT), and sexual minority authors. Learning from LGBT literature in a variety of forms and genres will help students cultivate sophisticated knowledge about sexual orientation, gender identity and expression, homoeroticism and homophobia, HIV/AIDS, the relationship of art and politics, and the intersections of sexuality, gender, race, class, and nation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 230 Jewish Humor in Literature and Film 3.0 Credits

This course explores the unique role of Jewish humor in literature and film in the 20th and 21st centuries in relationship to aspects of Jewish life ranging from assimilation to antisemitism, through a selection of novels, short stories, essays, plays, and film. Some of the authors whose works we may discuss and analyze include Philip Roth, Neil Simon, and Melissa Broder in addition to filmmakers such as Mel Brooks, Woody Allen, the Coen Brothers, and Sasha Baron Cohen.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

ENGL 250 Intro to Digital Humanities 3.0 Credits

This course introduces students to the digital humanities through two main practices of inquiry: the reading and discussion of theory, and guided hands-on experimentation with computational methods. Digital humanities is broadly defined as the use of digital tools and methods to conduct humanities research, as well as the study of digital tools and methods. Readings and activities will encompass interdisciplinary humanities topics in literature and history, such as archival studies, media and material culture studies, history of the book, Black studies, feminist and queer theory, and disability studies. Previous experience with digital humanities methods is not required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

ENGL 300 [WI] Literature & Science 3.0 Credits

This course studies the impact of scientific and technological change on works of literature and art produced in various historical periods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 301 English Major Colloquium 1.0 Credit

This 1-credit variable topics course for English majors explores specialized issues in literature and writing such as: an author or major work; a significant moment in the history of writing, literature, or criticism; or a controversial or debated issue in writing or literary studies. English majors must take 3 different ENGL 301 colloquium topics as part of their major requirements.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 5 times for 6 credits

Restrictions: Can enroll if major is ENGL.

ENGL 302 Environmental Literature 3.0 Credits

This course explores the relatively recent discipline of Ecocriticism and considers the literary relationship between human beings and the natural environment--both altered and unaltered by human activity. The approach is interdisciplinary in its investigation of the relationships among science, culture, and personal observation. Students will read a selection of seminal texts of American environmental literature.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 303 Science Fiction 3.0 Credits

Provides reading and discussion of works illustrating the development of modern science fiction.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 304 Young Adult Fiction 3.0 Credits

This course introduces students to young adult (YA) fiction and to secondary sources useful for the appreciation of it. Topics discussed include: young adults as an audience, the genres of YA fiction, keeping up with YA fiction, literary and psychological theory applied to YA fiction.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 305 [WI] The Mystery Story 3.0 Credits

A study of the mystery story, from its inception as a genre in the 19th century to the present, through short stories and novels.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 306 Literature of Baseball 3.0 Credits

An examination of novels, short stories, and poetry about our "national pastime" that illuminate American ideals and values, history and culture from 1845 to the present. A study of how the game's symbols and rituals, its history and mythology help us understand American belief systems and ideologies.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 307 Literature of Genocide 3.0 Credits

Genocide is defined as "acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group" (U. N. Office on Genocide Prevention). This course will feature literature, film, and articles, by survivors themselves, historians and other writers, about major genocides and their perpetrators. Topics may include cases from any part of the world or century up to the present.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 308 [WI] The Literature of Business 3.0 Credits

In this advanced reading course, students read literary works about business and work and write analytically about these works, grounding that analysis in nonfiction readings from business publications. Course writing assignments ask students to respond to problems and issues raised in the texts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D] and ENGL 103 [Min Grade: D]) or ENGL 105 [Min Grade: A]

ENGL 310 [WI] Period Studies 3.0 Credits

This is a variable topics course, focusing on the literature of a particular period (i.e., Classical Literature; Victorian Literature; the Harlem Renaissance).

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 312 Research Project Development 1.0-3.0 Credit

A seminar-style course in which students work on a research or creative project of their own choosing. They acquire knowledge and skills related to the development of researchable original ideas in the domains of humanities areas like literature and philosophy, or social science areas like communication, history or psychology, or a creative work or portfolio.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

ENGL 315 [WI] Shakespeare 3.0 Credits

This course focuses on Shakespeare's major plays and sonnets, providing the historical and cultural contexts that gave rise to his work.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 320 [WI] Major Authors 3.0 Credits

A course focused on intensive study of one or more authors, for example: Jane Austen; Joseph Conrad; Hemingway, Faulkner and Fitzgerald; Writers of the Harlem Renaissance; Carlos Fuentes and Gabriel Garcia Marquez.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 323 Literature and Other Arts 3.0 Credits

A variable topics course which studies relationships between literature and one or more of the visual arts, theater or music (i.e., Surrealism; Memoir and Documentary Film; The Faust Legend). May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 325 Topics in World Literature 3.0 Credits

A variable topics course which focuses on a particular national or regional literature within its cultural, historical and political contexts (i.e., African Literature; French Literature; Latin American Literature). May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 330 The Bible as Literature 3.0 Credits

This course provides a close reading of selected books of the Old and New Testaments alongside selected literary works to discover both the literary qualities of these texts and their influence on literature.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 335 Mythology 3.0 Credits

This course investigates the specific forms mythological stories have taken in the literature, art and ritual of some or all of the following: Greece, Rome, Iceland, Mesopotamia and Native American and European cultures in the United States.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 340 [WI] Classical Rhetoric 3.0 Credits

A study in the theory and practical application of Greek and Roman rhetorical strategies in composition. Focuses on influential figures, terminology, the five canons, and the ancient composition processes known as "progymnasmata" to look at historical texts, the rhetoric of popular media, and the students' writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D]

ENGL 345 American Ethnic Literature 3.0 Credits

A variable topics course which studies the literature of one or more of the United States ethnic populations within their historical and cultural contexts. May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 350 Jewish Literature and Civilization 3.0 Credits

Focuses on the Jewish Bible, a classic literary document of Western civilization, deemed by many people of the world as fundamental to their religion; stresses aspects of cultural diversity and awareness.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 355 [WI] Women and Literature 3.0 Credits

This course focuses on literature written by, and/or about women and considers issues relating to women's place in literary history.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 360 [WI] Literature and Society 3.0 Credits

This course examines the relationship between literature and the society it reflects and helps shape.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 365 Topics in African American Literature 3.0 Credits

A variable topics course designed to further develop the ideas first presented in the African American Literature survey by exploring, in much more depth, significant authors, periods, and genres within the African American literary and cultural tradition. Topics include Science and Technology in African American Literature; the Slave Narrative; and Black Travel Writing.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 370 Topics in Literature and Medicine 3.0 Credits

This is a variable topics course which focuses on aspects of illness, healing, care-giving, aging, grief, and mortality as presented in narrative. Exploration of how literary construction and analysis affect understanding of these experiences. Topics include 'Illness and Healing in Literature' and 'The Physician in Literature and Film.'

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

ENGL 380 Literary Theory 3.0 Credits

This course examines literary theoretical thinking, and focuses on twentieth century structuralism, post-structuralism, and contemporary theory. We will examine the ways in which language is conceived and reconceived by major theoretical writers and the implications of this rethinking for conceptualizations of history, politics, ideology, sexuality, and trauma, among others.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENGL.

Cannot enroll if classification is Freshman or Sophomore

Prerequisites: (ENGL 101 [Min Grade: C] or ENGL 111 [Min Grade: C]) and (ENGL 102 [Min Grade: C] or ENGL 112 [Min Grade: C]) and (ENGL 202 [Min Grade: C] or ENGL 203 [Min Grade: C] or ENGL 204 [Min Grade: C] or ENGL 205 [Min Grade: C] or ENGL 206 [Min Grade: C] or ENGL 211 [Min Grade: C] or ENGL 212 [Min Grade: C] or ENGL 214 [Min Grade: C])

ENGL 395 [WI] Special Studies in Literature 0.0-3.0 Credits

This is a variable topics course, providing intense literary study on a specific theme.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

ENGL 470 Capstone Seminar in Health and Medical Humanities 3.0 Credits

This seminar gives students the opportunity to synthesize, contextualize, and deepen their understanding of how disciplines in the humanities and the social sciences approach the experiences and implications of illness, aging, mortality and healing. Regular guest lecturers, discussion of assigned readings, student presentations, and written projects.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CMDH.

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: D]

ENGL 490 Seminar in English and American Literature 3.0 Credits

An advanced course with variable topics in British or American Literature stressing textual analysis, cultural and historical contexts and research; provides students with intensive preparation for advanced and professional studies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if classification is Junior or Senior.

ENGL 492 Seminar in World Literature 3.0 Credits

An advanced course with variable topics in World Literature stressing textual analysis, cultural and historical contexts and research; provides students with intensive preparations for advanced and professional studies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if classification is Junior or Senior.

ENGL 495 Senior Project in Literature 3.0 Credits

Open to English Majors only, the senior project in literature should reflect the student's interest in a specific subject, author or theme and should demonstrate the student's research, critical and analytical expertise at an advanced, pre-professional level.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENGL.

ENGL I199 Independent Study in ENGL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL I299 Independent Study in ENGL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL I399 Independent Study in ENGL 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL I499 Independent Study in ENGL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL T180 Special Topics in English 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL T280 Special Topics in English 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL T380 Special Topics in English 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENGL T480 Special Topics in English 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

English as a Second Language

Courses

ESL 001 Foundations of University Study 0.0 Credits

High intermediate to advanced English as a second language course. This course provides ESL students with a foundation for University success through developing academic communication skills and strategies and promoting awareness of the academic and co-curricular culture of the American university.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

Restrictions: Can enroll if major is ESL or major is IG.

ESL 002 Foundations of Academic Writing 0.0 Credits

This course introduces ESL students to the academic essay and the process approach to writing as well as reading for different purposes.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 003 Foundations of Academic Reading 0.0 Credits

This course introduces ESL students to the skills of critical reading for information, specifically summarizing and evaluating source material.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 004 International Gateway Foundations of Academic Writing for Chemistry 201 0.0 Credits

This course provides International Gateway students with support for success in the CHEM 201 course through developing academic skills and strategies to participate in the sciences.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 005 Reading and Vocabulary I 0.0 Credits

Reading and Vocabulary level 1 is a foundational English as a second language course (CEFR Level A1), which is designed to prepare students to read phrases and simple sentences related to everyday life. Successful completion of this course is necessary to enroll in the next level.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 006 Writing and Grammar I 0.0 Credits

Writing and Grammar level 1 is an introductory English as a second language course (CEFR Level A1), which is designed to introduce students to basic grammar and sentences.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

ESL 010 Listening and Speaking I 0.0 Credits

Low beginning English as a second language. Provides intensive instruction in the development of the following skills: speaking and listening in everyday situations, vocabulary, pronunciation, and grammatical functions. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 012 English in Everyday Life 0.0 Credits

Low beginning English as a second language. Prepares students who have trouble talking with and understanding native English speakers in everyday situations such as going to the store or the bank, asking for directions, using the telephone, etc. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 013 Beginning Grammar 0.0 Credits

Beginning English as a second language. Provides instruction and practice in such areas of English grammar as simple verb tenses, sentence structure, modals, and irregular verbs. Placement testing is required. Offered all terms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL.

ESL 020 Listening and Speaking II 0.0 Credits

High beginning English as a second language. Provides intensive instruction in the development of the following skills: speaking and listening (participating actively in spoken interactions and responding appropriately), vocabulary related to topics in the course, pronunciation and intonation patterns, and grammatical functions. Placement testing is required. Offered all terms. The course meets 7.5 hours per week.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 021 Reading and Writing II 0.0 Credits

High beginning English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, vocabulary development, non-academic paragraph writing, basic grammatical structures and mechanics, and the ability to communicate ideas orally and in writing. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 022 Pronunciation and Conversation 0.0 Credits

High beginning to low intermediate English as a second language. Emphasizes vocabulary, pronunciation, and idioms. Gives students a chance to improve and practice their spoken communication skills. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 023 Intermediate Grammar III 0.0 Credits

Low intermediate English as a second language course. Provides instruction and practice in such areas as present, past, and future tense verbs, question structures, nouns and pronouns, and modals. Placement testing is required. Offered as needed. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 024 Presentations with Stories & Legends 0.0 Credits

Beginning to low intermediate. English as a second language. Provides instruction and practice in reading comprehension, writing, listening, and presentations using stories from a variety of sources. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL.

ESL 025 Reading and Vocabulary II 0.0 Credits

Reading and Vocabulary level 2 is a low-beginner English as a second language course (CEFR Level A2), which is designed to prepare students to read basic texts related to everyday life. Successful completion of this course is necessary to enroll in the next level. Classes meet 6 hours per week.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

ESL 026 Writing and Grammar II 0.0 Credits

Writing and Grammar level 2 is a beginner English as a second language course (CEFR Level A2), which is designed to prepare students to write basic discourse using simple and progressive tenses. Classes meet 7.5 hours per week.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

ESL 029 Writing and Grammar III 0.0 Credits

Writing and Grammar level 3 is a high-beginner English as a second language course (CEFR Level A2+), which is designed to prepare students to write short paragraphs using simple and progressive tenses. Classes meet 7.5 hours per week.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

ESL 030 Listening and Speaking III 0.0 Credits

Low intermediate English as a second language. Provides intensive instruction in the development of the following skills: pronunciation (sounds, stress, intonation), vocabulary, listening/speaking (participating and responding appropriately in discussions, following directions, completing listening activities), grammatical competence, and repair of communication breakdown. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 031 Reading and Writing III 0.0 Credits

Low intermediate English as a second language. Provides intensive instruction in the development of the following skills: reading comprehension, inferring, vocabulary development, academic paragraph and essay format, grammatical structures and mechanics, and the ability to communicate ideas orally and in writing. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 032 English for Business Purposes 0.0 Credits

Intermediate English as a second language. Provides communication skills needed to do business with English speakers. Topics include small talk and telephone skills, participation in business meeting, presentations, communication through business letters and memos, and business negotiation. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 034 Understanding the News Media 0.0 Credits

Intermediate to advanced English as a second language. Emphasizes listening, discussion, and reading skills as students learn to read newspaper articles and listen to news from a variety of sources. Provides instruction on how the news is made and evaluated. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL.

ESL 035 Intermediate Vocabulary Development 0.0 Credits

Intermediate English as a second language course. Provides strategies to improve academic, general, and technical vocabulary; to discover common roots in English words; and to improve reading skills. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 036 TOEFL iBT Listening & Speaking 0.0 Credits

High intermediate to advanced English as a second language. Prepares students to take the Internet-based TOEFL (Test of English as a Foreign Language) for academic purposes. Provides instruction in the listening and speaking sections of the TOEFL. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Can enroll if major is ESL or major is IG.

ESL 037 Intermediate Grammar IV 0.0 Credits

High intermediate English as a second language course. Provides instruction and practice in such areas as comparative structures, passive voice, gerunds and infinitives, and clause structures. Placement testing is required. Offered as needed. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 038 Intermediate Exploring American Life & Language 0.0 Credits

Intermediate English as a second language course. Students evaluate aspects of United States culture and history as presented in selected drama, literature, and music. Additional presentations and writing assignments support development of fluency in speaking and writing skills. Placement testing for this course is required. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 039 Reading and Vocabulary III 0.0 Credits

Reading and Vocabulary level 3 is a high-beginner English as a second language course (CEFR Level A2+), which is designed to prepare students to read and comprehend topics related to everyday life. Successful completion of this course is necessary to enroll in the next level. This is the third course in an eight-course sequence on developing academic reading skills. Students have to complete level two or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Classes meet 6 hours per week.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

ESL 040 Listening and Speaking IV 0.0 Credits

High intermediate English as a second language. Provides intensive instruction in the development of the following skills: pronunciation/fluency (sounds, stress, intonation, linking, phrasing), vocabulary, listening/speaking (participate appropriately in spoken interactions, understand news, mini-lectures), repair of communication breakdown, and grammatical competence. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 041 Writing and Grammar 4 0.0 Credits

Writing and Grammar level 4 is a low-intermediate English as a second language course (CEFR Level B1), which is designed to prepare students to write extended paragraphs in several common modes. This is the fourth course in an eight-course sequence on developing writing skills. Students have to complete level three or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ESL 042 Reading and Vocabulary 4 0.0 Credits

Reading and Vocabulary level 4 is a low-intermediate English as a second language course (CEFR Level B1), which is designed to prepare students to read and comprehend adapted basic readings. This is the fourth course in an eight-course sequence on developing academic reading skills. Students have to complete level three or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 6-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 043 Intermediate Presentation Skills 0.0 Credits

Intermediate English as a second language course. Provides instruction on preparing, delivering, and evaluating presentations. Explores ways to engage audience and improve performance. Builds confidence through speaking skill development. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 044 Skills for College Success 0.0 Credits

High intermediate to advanced English as a second language. Addresses academic skills topics such as listening to lectures and note taking, reading textbooks and synthesizing information, conducting research, and expanding awareness of the United States academic environment. Placement testing is required. Offered all terms.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

Restrictions: Can enroll if major is ESL or major is IG.

ESL 045 TOEIC Preparation 4-6 0.0 Credits

High intermediate to advanced English as a second language. Introduces skills and strategies that are helpful in taking the TOEIC test. Improves listening and reading comprehension skills. Focuses on analyzing types of test questions commonly asked and learning strategies for answering the questions. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 048 TOEFL iBT Reading & Writing 0.0 Credits

High Intermediate to advanced English as a second language. Prepares students to take the Internet Based TOEFL (Test of English as a Foreign Language) for academic purposes. Provides instruction in the reading and writing sections of the TOEFL. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 049 Intermediate Pronunciation and Conversation 0.0 Credits

Intermediate English as a second language course. Provides instruction on pronunciation, word stress, and intonation. Gives students a chance to improve and practice their spoken communication skills. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 050 Listening and Speaking V 0.0 Credits

Low advanced English as a second language. Provides intensive instruction in the development of the following skills: pronunciation/fluency (ease, speed, smoothness of speaking), vocabulary, listening/speaking (participate appropriately in spoken interactions, understand news reports, lectures), repair of communication breakdown, and grammatical competence. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 051 Writing and Grammar 5 0.0 Credits

Writing and Grammar level 5 is an intermediate English as a second language course (CEFR Level B1+), which is designed to prepare students to write multi-draft five-paragraph essays in several common modes. This is the fifth course in an eight-course sequence on developing writing skills. Students have to complete level four or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 052 Reading and Vocabulary 5 0.0 Credits

Reading and Vocabulary level 5 is an intermediate English as a second language course (CEFR Level B1+), which is designed to prepare students to read and respond to adapted readings. This is the fifth course in an eight-course sequence on developing academic reading skills. Students have to complete level four or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 6-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 055 Strategies for Academic Reading 0.0 Credits

Advanced English as a second language. Improves reading comprehension. Provides skills for defining and identifying main and supporting ideas, recognizing transitional words and their role in meaning, and finding organizational patterns. Explores the authors' purpose, opinion, and tone. Placement testing is required. Offered as needed. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 056 GMAT Preparation 5-6 0.0 Credits

Advanced English as a second language. Provides instruction for GMAT reading. Offers strategies to identify key parts of an argument and reviews grammatical and stylistic rules in the sentence correction section. Analyses arguments. Provides instruction for essay writing. Placement testing is required. Offered as needed. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 057 Advanced Vocabulary and Idioms 0.0 Credits

Advanced English as a second language. Provides strategies to improve idiomatic language using authentic sources from a variety of media. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 058 Advanced Exploring American Life & Language 0.0 Credits

Advanced English as a second language course. Students evaluate aspects of United States culture and history as presented in selected drama, literature, and music. Additional presentations and writing assignments support development of fluency in speaking and writing skills. Placement testing for this course is required. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 060 Listening and Speaking VI 0.0 Credits

Advanced English as a second language. Provides intensive content-based instruction in the development of the following skills: pronunciation/fluency (ease, speed, smoothness of speaking), vocabulary, listening/speaking (participate appropriately in spoken interactions, understand news reports, lectures), grammatical competence, repair of communication breakdown. Placement testing is required. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 061 Writing and Grammar 6 0.0 Credits

Writing and Grammar level 6 is an intermediate English as a second language course (CEFR Level B2), which is designed to prepare students to write extended multi-draft essays in a variety of different modes. This is the sixth course in an eight-course sequence on developing writing skills. Students have to complete level five or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 062 Reading and Vocabulary 6 0.0 Credits

Reading and Vocabulary level 6 is an intermediate English as a second language course (CEFR Level B2), which is designed to prepare students to read and respond to adapted readings. This is the sixth course in an eight-course sequence on developing academic reading skills. Students have to complete level five or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 6-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 063 Advanced Grammar VI 0.0 Credits

High advanced English as a second language course. Provides instruction and practice in such areas as usage of passive tense, noun clauses, adjective clauses, gerunds and infinitives, and conditional sentences. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 064 Advanced Presentation Skills 0.0 Credits

Advanced English as a second language course. Provides instruction on preparing, delivering, and evaluating presentations. Explores ways to engage audience and improve performance. Builds confidence through speaking skill development. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 067 Language of Science Technology Engineering and Mathematics 0.0 Credits

High intermediate to advanced English as a second language course. Provides instruction on building academic vocabulary, reading, and oral skills by incorporating authentic materials from a variety of STEM (Science, Technology, Engineering & Math) fields.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 068 Language of Media and Design 0.0 Credits

High Intermediate-Advanced Listening & Speaking. Develops English as a second language communicative fluency in design-related concepts and vocabulary through the use of authentic materials and experiences.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

ESL 069 Advanced Pronunciation and Conversation 0.0 Credits

Advanced Intermediate English as a second language course. Provides instruction on pronunciation, word stress, and intonation. Gives students a chance to improve and practice their spoken communication skills. Placement testing is required. Offered all terms. 3-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 070 Listening and Speaking 7 0.0 Credits

Listening and Speaking level 7 is a high-intermediate English as a second language course (CEFR Level B2+), which is designed to provide intensive instruction in the development of aural and oral skills necessary for academic discussions and presentations. This is the seventh course in an eight-course sequence on developing academic listening and speaking skills. Students have to complete level six or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 071 Writing and Grammar 7 0.0 Credits

Writing and Grammar level 7 is a high-intermediate English as a second language course (CEFR Level B2+), which is designed to prepare students to transition into academic writing. This is the seventh course in an eight-course sequence on developing writing skills. Students have to complete level six or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 072 Reading and Vocabulary 7 0.0 Credits

Reading and Vocabulary level 7 is a high-intermediate English as a second language course (CEFR Level B2+), which is designed to prepare students to read and analyze extended articles written for a general audience. This is the seventh course in an eight-course sequence on developing academic reading skills. Students have to complete level six or take a placement exam before taking this course. Successful completion of this course is necessary to enroll in the next level. Offered all terms.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 073 Introduction to Business Research 0.0 Credits

High-intermediate to advanced level English as a second language. Introduces students to the research process of business related topics and exposes them to American culture and conversation through interaction. Offered as needed. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 074 IELTS Listening and Speaking 0.0 Credits

High intermediate to advanced English as a second language. Prepares students to take the IELTS (International English Language Testing System) for academic and professional purposes. Provides instruction in the listening and speaking sections of the IELTS test. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL or major is IG.

ESL 075 IELTS Reading and Writing 0.0 Credits

High intermediate to advanced English as a second language. Prepares students to take the IELTS (International English Language Testing System) for academic and professional purposes. Provides instruction in the reading and writing sections of IELTS. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ESL.

ESL 076 IELTS (International English Language Testing System) Test Preparation All Skills 0.0 Credits

High intermediate to advanced English as a second language. Prepares students to take the IELTS (International English Language Testing System) for academic and professional purposes. Provides instruction in the listening, speaking, reading, and writing sections of the IELTS test. Placement testing is required.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 0 credits

Restrictions: Can enroll if major is ESL or major is IG.

ESL 080 Listening and Speaking 8 0.0 Credits

Listening and Speaking level 8 is an advanced English as a second language course (CEFR Level C1), which is designed to prepare students to acquire aural and oral skills for academic discussions and presentations at the undergraduate or graduate level. This is the final course in an eight-course sequence on developing listening and speaking skills. Students have to complete level seven or take a placement exam before taking this course. Successful completion of this course will result in the successful completion of the IEP listening and speaking. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 081 Writing and Grammar 8 0.0 Credits

Writing and Grammar level 8 is an advanced English as a second language course (CEFR Level C1), which is designed to prepare students to write at the undergraduate or graduate level. This is the final course in an eight-course sequence on developing writing skills. Students have to complete level seven or take a placement exam before taking this course. Successful completion of this course will result in completion of IEP writing and grammar. Offered all terms. 7.5-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 082 Reading and Vocabulary 8 0.0 Credits

Reading and Vocabulary level 8 is an advanced English as a second language course (CEFR Level C1), which is designed to prepare students to read academic texts for undergraduate and graduate study. This is the final course in an eight-course sequence on developing academic reading skills. Students have to complete level seven or take a placement exam before taking this course. Successful completion of this course will result in completion of IEP reading and vocabulary. Offered all terms. 6-0-0.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 0 credits

ESL 088 Application Process 0.0 Credits

Application Process is an intermediate to advanced course that provides instruction on how to apply to a U.S. college or university. International students who are nonnative speakers of English are the target audience. This 4-week online course is designed for Oman Ministry of Higher Education scholarship recipients and is not part of any degree program.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 089 Writing for the Application 0.0 Credits

Writing for the Application is an intermediate to advanced course that provides instruction in writing personal narrative essays for applying to colleges and universities. This course is designed to introduce content development strategies as well as essay analysis and writing proficiency that can transfer to improved personal narrative writing skills. Classes meet 7.5 hours per week.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 090 English for Medical Purposes 0.0 Credits

High intermediate to advanced English as a second language. Develops participants' communication skills in medical context. Provides an overview of the American healthcare system and the dynamics of the different participants involved in the system. Placement testing is necessary. Offered as needed. 2.5-2.5-0.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 091 Special Topics in English Language & Culture 0.0-10.0 Credits

This course is a beginning to advanced English as a second language course. The focus is on specific issues in English structure and usage. It includes issues of discourse, sociolinguistics, and culture. The course may run from 1 to 10 weeks depending on special program cohort needs. Topics may vary.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ESL 096 Technology and Digital Literacy Academic Fulbright Program 0.0 Credits

This hands-on course walks participants through the different phases of research and helps them utilize technological software applications to help with and enrich each research phase of a given project – whether that be a presentation on a teaching skill or a research paper on specified subject content. This course will develop and refine skills with the use of tools that aid in deep brainstorming, organizing ideas, organizing and storing references, accurately formatting references, visualizing data, storytelling and collaborating – all skills that will play a key role in scholars' Fulbright journeys.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 097 Research and Writing Course Academic Fulbright Program 0.0 Credits

This course will develop participants' skills in research and writing required for graduate level work. The theme is The Bill of Rights and participants are required to: brainstorm multidisciplinary topic areas for research; create research questions; develop primary research protocols (i.e. questionnaires); research secondary sources through web-based research methods; synthesize research; write a paper in groups (approximately 5-7 pages) describing the research design and significant findings, and display the concept of their project for a viewing audience from the Drexel University community.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 098 Communicating Effectively in the American Classroom 0.0 Credits

This course focuses on developing participants' skills for communicating effectively in the U.S. graduate classroom, in particular participating in the forms of oral language such as that needed for understanding lectures, interacting in and leading class discussions, and making academic presentations. Assignments will include: listening and taking notes to lectures, preparing for and contributing to class discussions based on readings, and observing academic lectures and analyzing American classroom dynamics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 099 Challenges in American Culture 0.0 Credits

This course uses readings, interactive discussions, role-plays, and other methods to address both immediate and longer-term acculturation concerns. The first focus is participants' immediate needs regarding health and wellness, safety, housing, and transportation. Initial sessions will also cover foreign student rights in the U.S., healthcare and resources, and J-visa responsibilities. Other topics to be covered: questions emerging from participants' early experiences in the United States; key cultural values such as individualism, egalitarianism, and self-reliance and their impact on communication patterns; non-verbal communication; Academic culture in the U.S.; the history of immigration to Philadelphia; issues and "hot topics" in U.S. political, religious, and social life; and the US Bill of Rights.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ESL 110 Introduction to Academic Discourse 3.0 Credits

The course prepares students for courses requiring English academic communication. The course provides a review of English grammar, an introduction to academic writing, reading, and academic support services. Opportunities to interact with other members of the university community are provided. By departmental approval only.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

ESL 180 Topics in English for Academic Purposes 2.0 Credits

This course focuses on the academic discourse of a particular genre and/or content area in English for Specific Purposes or English for Academic Purposes.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 5 times for 12 credits

Entertainment & Arts Management Courses

EAM 130 Overview of Entertainment and Arts Management 3.0 Credits

Students acquire an understanding of the profit and non-profit organization within a social and governmental context. Of primary focus are the arts organization as an entity, how they are organized and the impact and place they have within the community.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

EAM 200 Introduction to the Music Industry 3.0 Credits

Introduction to the Music Industry gives students a basic overview of the commercial music business with an emphasis on its inherently changing nature and the entrepreneurial mindset that this demands of those involved in it. The goal of the course is to provide a basic introduction to four major areas of the industry: Contracts, Publishing, Touring & Booking, and Recording.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 130 [Min Grade: D]

EAM 211 Strategic Management for Entertainment and Arts Management 3.0 Credits

Explores the concepts of planning and evaluation as it relates to the arts. Instruction will focus on the development of business plans, including research, organization, competition, marketing, staffing, and financial issues (i.e. budgets, etc.). Students present and defend the elements of their plans. Other topics discussed will be leadership skills decision-making, and managing change.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

EAM 215 [WI] Writing for Arts Managers 3.0 Credits

This course provides instruction and practice in a variety of written formats used in arts and entertainment. The course also covers writing for a variety of stakeholders.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 130 [Min Grade: D] and EAM 211 [Min Grade: D]

EAM 220 Law for Entertainment and Arts Management Managers 3.0 Credits

Examines the relationship between the arts and law, including intellectual property (copyrights and contracts), license fees, labor-management and representation agreements, liability, first amendment issues, business entities and fundraising.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D]

EAM 221 Copyrights and Trademarks 3.0 Credits

This law course for EAM students discusses topics relating to copyrights, intellectual property rights, and royalties. The course will review the basic principal tenets of copyright and trademark law and the practical aspects as applied to entertainment and arts-related issues. This course will provide you with a working knowledge of trademarks and copyrights and how these rights impact business issues in the arena of entertainment and art such as how copyright and trademark rights are created and protected, "work for hire" and related ownership issues, and how and when copyright and trademark rights are infringed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 220 [Min Grade: D]

EAM 225 Financial Management for Entertainment & Arts Managers 3.0 Credits

This course explores the major elements of financial accounting in cultural institutions. Students will learn to perform accounting tasks, read and analyze financial statements, implement an effective financial control system in the specific context of arts & cultural organizations. Student will learn how to use financial information as part of a data-informed decision-making process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D] and EAM 130 [Min Grade: D]

EAM 270 Audience Development for Arts 3.0 Credits

This course emphasizes the usefulness and application of marketing theories and concepts to develop audiences and promotes the arts as a valuable social sector, with a focus on marketing planning and strategy development. Focus is placed on marketing research, analysis, planning, strategy development, and development of marketing plans.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D]

EAM 288 eSport Entertainment Management 3.0 Credits

As one of the fastest growing market sectors in electronic media, eSport has become an important field where entertainment management students can apply their skills. This 3-credit course explores the creation, monetization and management of eSport events.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

EAM 295 Streaming Entertainment Management 3.0 Credits

Streaming is transforming the electronic media landscape and providing unique opportunities for managers. This course explores the creative genres succeeding in streaming and how streaming content is conceived, sold, produced, exhibited, and distributed worldwide.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

EAM 301 Gallery and Collection Management 3.0 Credits

Discusses the professional operation of museums and commercial art galleries including advocacy, legal, administration, curatorial, exhibition, and public issues by examining the questions: What are the challenges of managing a museum's collection including acquisition policies, insurance, conservation and storage of art? What resources are needed to manage a gallery?.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

EAM 302 Exhibition Design 3.0 Credits

Discuss key issues in exhibition presentation including visual design elements, accessibility, and approachable presentation strategies. This course also explores theoretical and ethical issues related to museums, art collecting, cultural patrimony, curatorial authority, and diversity.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

EAM 308 [WI] Entertainment Promotion and Branding 3.0 Credits

This course will provide students in-depth information about the essential area of publicity and promotion for the entertainment and arts industries. Through the art of public relations (PR), students will learn to maximize the potential for news coverage in print, electronic (radio, TV) and online sources. Focus will be placed on the process of writing for public relations and promotion in both style and content. By writing multiple drafts of biographies, press releases, pitch letters, students will hone skills to creatively present your message to media outlets, from local to international.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D]

EAM 310 Social Media in Entertainment 3.0 Credits

Social Media In Entertainment teaches students how to develop the strategies for using social media as a marketing tool in the arts and entertainment industries. The goal will be to develop a social media strategy for a specific entity utilizing information on strategies and tactics learned during the course, as well as how to integrate this strategy into an overall marketing plan. Students will learn how to craft a strategy, how to evaluate which social media tools and tactics to use to achieve the most effective results and how to successfully implement the strategy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

EAM 312 Introduction to Fund Development for the Arts 3.0 Credits

This course will provide an introduction to the fundraising process and initial training needs for current and future nonprofit arts organization managers. The focus is a blend of theory and practice in the areas of fund development process, organization, and communication; the primary goal is to prepare students for successfully working with or in nonprofit arts organizations in development / fundraising capacities. Our work will cover: basic sources of funding including online fundraising; board / trustee fiduciary responsibilities; trends, ethics, and innovation in fund development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 130 [Min Grade: D]

EAM 313 Volunteer and Board Management 3.0 Credits

This course continues the work of EAM 312- Intro to Fund Development for the Arts. It will build on that course by focusing on the area of volunteers for nonprofit organizations. Content will examine the board of directors and other volunteers in relation to governing, managing, operating a nonprofit arts entity.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 130 [Min Grade: D]

EAM 315 Content Strategies for Digital Products 3.0 Credits

In this course students will understand content strategy and its business value, as well as how to audit, plan, create, deliver and manage content that effectively promotes a brand message across multiple digital channels.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D]

EAM 321 Box Office and Venue Management 3.0 Credits

Focuses on the operational management tasks. Students explore the marketing and promotional component of box office management, the use of technology and ticket sales, and managing people.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D] and EAM 130 [Min Grade: D]

EAM 322 Performing Arts Touring 3.0 Credits

Performing Arts Touring provides an overview of organizing all types of touring entertainment with a focus on the administrative and management responsibilities including booking, staffing, and decision making. Focus is placed two basic types of touring: music concert tours and performing arts tours such as Broadway shows, ballet companies, small theatrical tours, and similar arts tours. Students learn about unions, contracts, financing, logistics, promotion, ticketing, and other areas associated with arts and entertainment touring.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 130 [Min Grade: D]

EAM 325 Producing for Live Entertainment 3.0 Credits

This course is experience-based and designed to familiarize students with all aspects of producing a live entertainment event and to discuss and develop the necessary skills to do so successfully through practical experience. The course provides an overview of the issues routinely encountered by producers of live events, both commercial and non-profit, through the actual producing of an arts/entertainment event. Skills developed include working creatively with artists; understanding project management, planning and budgeting; revenue projection and management (including possible fundraising); understanding technical and logistical issues around production; and successful execution.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: EAM 130 [Min Grade: D] and EAM 211 [Min Grade: D]

EAM 338 Entertainment Enterprise 3.0 Credits

This course challenges students to learn how to conceive, plan, build and evaluate an entertainment/media business. Expanding upon information about business ideation and formulation, this course provides students with a learning lab where they can apply theory to practice in entertainment, arts and media enterprises.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D]

EAM 340 Artist Representation and Management 3.0 Credits

This course gives an introduction to artist representation in the entertainment and media industry. It will cover all aspects of representation including client selection, career management and strategy for artists, agent/managers' roles and managing your career. The course covers how the industry works both conceptually and politically. Discussions will include topics around the major entertainment companies, their work and focus, and how they compete. The course breaks down the industry into "revenue silos" in which a client can generate money.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: EAM 130 [Min Grade: D] and EAM 211 [Min Grade: D]

EAM 365 Media and Entertainment Business 3.0 Credits

This course focuses on media networks and other major players in the media and entertainment business, examining their interdependence, and discussing major trends and tendencies on the market and their impact on the art and entertainment field.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

EAM 420 Arts, Culture and Society 3.0 Credits

Arts, Culture & Society examines the role of art's impact on society, exploring key cultural and public policy issues including community standards and censorship, and different approaches to public support and funding. Readings, videos, discussions and projects will explore questions as to the social functions of the arts, the use of art for advocacy and patronage over the world, and the impact of art on society and economic development. The geographic focus of this course is global and will compare art, including commercial entertainment and the media, and cultural practices and impacts from various cultures around the world.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 130 [Min Grade: D] and EAM 211 [Min Grade: D]

EAM 422 Human Resources in the Creative Industries 3.0 Credits

This course is designed to give students an overview of the human resources field and to share the many ways that the creative industries conform to and diverge from human resources norms that stem from other fields. In addition to equipping students with a general understanding of how to engage with and manage staff, this course will help students become better stewards of their own careers within the industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 211 [Min Grade: D]

EAM 490 Senior Seminar 3.0 Credits

This course serves as the finale of the student's undergraduate education. Applying all the skills and principles learned at Drexel, each student builds a customized career toolkit and practices essential real-world skills during hands-on scenario exercises. A student may also choose to execute an independent senior capstone project as part of Senior Seminar.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: EAM 422 [Min Grade: D]

EAM I199 Independent Study in Entertainment & Arts Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EAM I299 Independent Study in Entertainment & Arts Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

**EAM I399 Independent Study in Entertainment & Arts Management
0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 4 times for 15 credits

**EAM I499 Independent Study in Entertainment & Arts Management
0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

**EAM T180 Special Topics in Entertainment & Arts Management
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

**EAM T280 Special Topics in Entertainment & Arts Management
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

**EAM T380 Special Topics in Entertainment & Arts Management
0.0-12.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

**EAM T480 Special Topics in Entertainment & Arts Management
1.0-3.0 Credit**

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 5 times for 15 credits

Entrepreneurship and Innovation

Courses

ENTP 100 Innovation Ecosystem 1.0 Credit

This course is designed to introduce students to the numerous and varied innovative activities that are part of Drexel University, University City and the greater Philadelphia region. The course sparks curiosity about innovations and ideas not commonly encountered and stimulates creative thinking about new opportunities.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 105 Entrepreneurial Thinking 3.0 Credits

This course is intended for anyone interested in developing an entrepreneurial mindset for success in starting their own venture, or working in an established company or new start-up venture. Students will develop a mindset that will enable them to build a toolkit to create and evaluate entrepreneurial opportunities, marshal resources, and form teams driven by creativity, leadership, and smart action. In sum, this course is a journey through the fuzzy, front-end of early-stage entrepreneurial activity. This course is not intended to be a complete overview of entrepreneurship; it is an immersion experience for students to cultivate entrepreneurial thinking, not only to find and create opportunities, but in all that they do.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 109 Idea Accelerator I 3.0 Credits

This course is designed for students to learn and implement the steps necessary to accelerate the launch of a new business, process, product, or service. Gain the tools, skills, and demonstrated ability to transform an idea into a reality – better, faster, and cheaper. Supports and strengthens entrepreneurial concepts and strategies: ideation, project planning, requirements gathering, process building, and MVP implementation. This course will cover core capabilities needed by entrepreneurs to single-handedly move from ideation to launch, with less risk, higher probability of success, and increased sustainability.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 201 The Starter's Toolkit 3.0 Credits

This course centers on entrepreneurial practice in terms of the fundamental tools and process for aspiring entrepreneurs. Apply your growing understanding of the foundational tools and process entrepreneurs use to adapt and evolve as the world changes rapidly due to technological, social, and economic transformation. Disruption has shaken every industry, global competition is fierce, job security a thing of the past. Virtually every one of you will engage in the workforce either as an entrepreneur and/ or as a member of an entrepreneurial team. This course offers a backdrop from which to meet that challenge, furnishing tools you will need to recognize and leverage entrepreneurial opportunities: resource use and adaptability, experimentation, customer focus, collaboration, and rational risk-taking.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 205 Ready, Set, Fail 3.0 Credits

Central to developing an entrepreneurial mindset is learning to appreciate risk and the potential for failure. This course will introduce students to forms and causes of failure, and will explore and analyze responses to failure. Students will capitalize on their own experiences with failure to build future success.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 209 Build, Measure, Learn 3.0 Credits

This course is designed to immerse students in the process and mindset associated with the entrepreneurial Build-Measure-Learn cycle through iterative design and prototyping with close customer engagement to ensure students are developing profitable offerings that are aligned with the value proposition of their target customers and marketplace. This involves the fundamental building blocks and methods for creating pre-MVP (minimum viable product) solutions using a wide range of no-code or low-code technology modeling tools in the context of customer discovery, and a continuous learning process as students directly test market interest and operational viability. This approach helps entrepreneurs to ensure that they are using scarce resources wisely during the “bootstrapping” stage of new venture development.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 210 [WI] Leading Start-Ups 3.0 Credits

Entrepreneurs face unique leadership challenges, especially when founding a new company. This course provides the student and aspiring entrepreneur with tools and frameworks necessary for creating strategy, building companies, and assembling human capital with limited resources. By exploring what entrepreneurial leaders actually do, and how they do it, the student will learn through experiential exercises both the challenges and the excitement of starting a new venture.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 215 Building Entrepreneurial Teams 3.0 Credits

The overall goal of this course is to evaluate the different approaches in forming teams during the startup of a new company. We will compare and contrast evidence-based and anecdotal team formation models to determine their advantages and disadvantages as well as their effects on the expected outcomes.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 225 [WI] Mindfulness & Wellbeing 3.0 Credits

Modern-day demands create stress in workers' lives, and gone unmanaged, stress can have devastating physical, psychological and financial implications. Investing in one's psychological and emotional health pays long-term dividends because it buffers the negative effects of stress, and helps individuals become their best selves. Based upon the practice of mindfulness, and the domain of positive psychology, this course teaches students how to cope with contemporary challenges, and to become more proactive and to flourish in their entrepreneurial endeavors despite them.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 250 Ideation 3.0 Credits

Innovation is the driving force behind today's economy and ideation supports an individual's ability to innovate. This course provides students with tools, methods and self-reflection techniques necessary to bring new ideas into reality. Through creative innovation, successful entrepreneurs not only create new ventures but also re-invent companies to remain competitive in an ever-changing market. Students in this course will use ideation techniques to develop new ideas, change or build upon established practices and apply these techniques in approaching and analyzing business situations. Students will be able to apply creative skills more effectively both personally and professionally.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 260 Curiosity, Ecology, Empathy & Ethic 3.0 Credits

Before one can begin to properly address issues of sustainability, they need a foundation in ecosystems and an ability to immerse themselves, without judgment or inhibition, deep within their surroundings. They need to learn how to practice Curiosity, Ecology, Empathy, and Ethic (CEEE). At the roots of our most pressing environmental and social problems is pronounced disconnect between humans and nature and between humans and humans. Using the city of Philadelphia as the extended classroom, this course leads students through an immersive exploration of the city, diving deep into its diverse urban, natural, social, cultural, spontaneous, and other ecosystems. Students will acquire an ecological, empathetic, ethical comprehension of the rich interconnectedness of everything.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 270 Social Entrepreneurship 3.0 Credits

This course examines how social entrepreneurs launch successful ventures to address the world's most challenging social and environmental problems. The course introduces students to frameworks and methodologies that challenge current models to advance original solutions to existing problems. A passion for social change is advanced by adopting a market orientation and data-driven approaches that encompass both social and financial outcomes.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 285 Organizational Development and Change for Corporate Entrepreneurs 3.0 Credits

In today's world, change and innovation are needed at every level of an organization. New processes, organizational designs, dynamic management styles, problem solving techniques, and market creation are not just for new product and service creation. An entrepreneurial mindset is the premise for the fundamental approach to meet the ongoing need for continuous change. Corporate entrepreneurs need to be well-equipped to act as change agents in an organization to diagnose, understand and address the need for change. Every organization is unique and organizational development techniques and processes should be designed specific to each organization. This course takes a deep dive into how corporate entrepreneurs can achieve planned and systematic development and improvement in a complex environment.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 290 An Entrepreneur's Introduction to Land: Its Essence, Ethics, and Opportunity 3.0 Credits

This course is an interdisciplinary primer on the various layers and attributes of land, including its ecology, economics, social context, cultural history, and long-term resource capacity. An understanding of these attributes will open the door to a host of entrepreneurial and social entrepreneurial opportunity. Comprehension of key principles is achieved through hands-on exploration, journaling, field trips, experiential discussion, and real-world projects.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 309 Idea Accelerator II 3.0 Credits

The course will focus on advanced topics related to the platform that are necessary for its long-term use. Students will continue building their MVP with the goal of having an updated MVP with business pitch deck at the end of the semester. This course is designed for you to continue to learn and implement the steps necessary to accelerate the launch of a new business, process, product, or service. This course mimics the real-world scenario of finalizing an MVP and pitch deck on a strict timeline. You will continue to refine the tools, skills, and abilities to transform an idea into a reality – easier, better, faster, and cheaper.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Prerequisites: ENTP 109 [Min Grade: D]

ENTP 325 Early Stage Venture Funding 3.0 Credits

This course provides students with an understanding of the opportunities, challenges and methodologies typically associated with early-stage venture funding. It exposes students to the concepts, common practices and tools related to the funding needs of early-stage ventures with a focus on bootstrapping, friends/family financing, crowdfunding, angel-stage and venture capital investment. This course will also teach students to begin to think like an investor, evaluating startup investment decisions at each stage of a startup's development. In this way, students will be able to critically examine decision criteria around investment decisions, key questions to ask founders, and better understand what founders need to do to create the best possible conditions for favorable investments.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 115 [Min Grade: D] or ACCT 120 [Min Grade: D] or ACCT 110 [Min Grade: D]

ENTP 329 Entrepreneurship & New Technologies 3.0 Credits

This course introduces you to the challenges of assessing the commercial potential of new technologies. While technological innovation can lead to competitive advantage for a new or existing firm, it's usually unclear in the beginning as to whether a new technology can be successful in the marketplace. This includes the complexity of intellectual property management, team development, sources of funding, commercialization pathways and other critical factors. Working in teams, you will assess Drexel-based technologies for their commercial potential and will provide a feasibility assessment to assess how the technology might be successful in the marketplace. You will also examine the implications of certain new technologies from social, ethical and legal perspectives.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 335 Funding for Impact: Bridging Investment and Philanthropy 3.0 Credits

In the dynamic world of modern philanthropy, a new approach has emerged, marrying the strategic rigor of venture capital with the heart and mission of traditional philanthropy. This course delves deep into this intersection, offering students a comprehensive understanding of how venture philanthropy operates, its historical roots, the ethical considerations it brings to the fore, and its transformative potential for the future. Students will explore various topics, from the foundational principles of venture philanthropy and the financial instruments employed to the intricacies of measuring impact and the importance of stakeholder engagement. Through readings, case studies, and discussions, learners will gain insights into the successes and controversies surrounding venture philanthropy initiatives worldwide.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated 1 times for 6 credits

ENTP 340 Managing Entrepreneurial Growth 3.0 Credits

This course teaches students the essential concepts and skills that you need to successfully grow and manage a new business. Because managing growth includes leveraging assets and controlling risks at every stage of a new venture's development, this course focuses on areas that are essential to a new venture's growth, including planning, marketing, talent management, and financial performance. Through case studies and other experiential exercises, students will examine the growth opportunities of new ventures and then develop small business or new venture growth proposals. Students will also examine how firms obtain the necessary physical, financial and human resources necessary to grow a business during its formative years.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 345 Drexel University Innovation Fund Due Diligence Analysis 3.0 Credits

Students will learn how to think and act as venture capital fund analysts by actively participating in the due diligence aspects of Drexel University's Innovation Fund (DUIF). Under the guidance of the course instructor, students will learn critical aspects of venture capital due diligence, meet and engage with DUIF applicants, analyze application materials, develop investment suitability analysis, and draft and present recommendations to the DUIF Selection Committee and External Advisory Committee.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 350 Dynamics of the Family Firm 3.0 Credits

This course studies the unique dynamics of family firms and the complex issues involved with creating, owning, and successfully operating a family business. Students will examine ownership structures, strategic human-resource issues, governance, strategy, marketing, family dynamics, culture, and philanthropy.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 360 Franchising 3.0 Credits

Franchising is rapidly increasing worldwide. There is a growing need among franchise owners for employees with industry experience and know-how, and there are growing opportunities for entrepreneurs who want to start a franchise. Together, these developments present a unique opportunity for the entrepreneur. This course offers various aspects of starting, developing, and managing a franchise.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 365 Navigating Ownership: Exploring 21st Century Organizational Models 3.0 Credits

In the fast-paced world of innovative enterprise, entrepreneurs must understand ownership structures. This course offers a practical experience that will equip you with knowledge necessary to make informed decisions on your entrepreneurial journey. An ownership model determines how the business is owned, managed, and controlled, and governs the relationship between the business and its owners, employees, customers, and other stakeholders. You will delve into traditional structures, including sole proprietorships, partnerships, LLCs, corporations, franchises, and family enterprises, as well as more modern organizational forms including b-corporations, ESOPs, and worker-owned cooperatives. Guided by readings, case studies, and guest lectures, you will examine the benefits and challenges associated with each.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 370 Global Entrepreneurship 3.0 Credits

This course focuses on international opportunity identification for new and emerging companies; market analysis; joint ventures, regional legal and cultural issues and financing foreign ventures. The course will provide students with an understanding of the complexities faced by entrepreneurs doing business in a global environment and with knowledge, which will help them to be successful within the global context. In classroom discussion, emphasis will be placed on entrepreneurship in the Eurozone, Brazil, Russia, India and China, however class projects (and discussion) will touch upon numerous countries across the globe.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 375 3BL - Triple Bottom Line 3.0 Credits

The course seeks to develop students' critical capacities for reflection and action based upon a systems-thinking framework, with respect to social, environmental, and organizational challenges and the ways in which new ventures can address them. Students will learn about the history of the sustainability movement as it is the precursor of modern triple bottom line organizational forms. Lectures and readings provide the history of the sustainability movement, social movements that led to innovation, and alternative perspectives on the global economy. The course addresses the pros and cons of growing and supporting local business vs. engaging with business on a global scale.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

ENTP 385 Innovation in Established Companies 3.0 Credits

This course provides students with an understanding of how companies remain competitive using innovation as the driving force behind product or service development. Entrepreneurs challenge assumptions and create value in established organizations. While most executives would agree that innovation is the key to a sustainable business in the 21st century, few seem to understand how to make it a reality. Students will be introduced to various kinds of internal and joint ventures, such as corporate venture-capital investments, alliances, mergers, and acquisitions to create value and promote entrepreneurship within an organization. Students will develop skills that are important for careers in an entrepreneurial setting and corporate venture activities.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 390 Energy Entrepreneurship 3.0 Credits

This course will provide the groundwork to understanding new venture development in energy markets. Students will develop an appreciation and understanding of the market conditions and policy implications of new ventures in this sector.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 395 Entrepreneurship Practicum 12.0 Credits

The Entrepreneurship Practicum is a one-term experiential learning element within the three-year BA in Entrepreneurship & Innovation degree program. The Practicum provides you with a "hands-on" opportunity to use your learned entrepreneurial skills to develop your new startup idea, to work on the development of a new business idea within a startup company, or to work on new innovations in an existing business or family enterprise.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENTP 105 [Min Grade: D] and ENTP 225 [Min Grade: D]

ENTP 410 [WI] Thought Leadership 3.0 Credits

The individual entrepreneur faces many challenges. This course takes a philosophical and ethical approach to developing the entrepreneurial mindset. This course examines the ethical challenges in a start-up venture or high-growth firm, as illustrated through discussions by guest speakers—serial entrepreneurs. Students will be required to reflect on the varying viewpoints presented by the distinguished experts, and will develop their own approaches and philosophies regarding "the entrepreneur" and the "process of entrepreneurship."

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: ENTP 210 [Min Grade: D], ENTP 270 [Min Grade: D], ENTP 385 [Min Grade: D] (Can be taken Concurrently)

ENTP 440 Launch It!: Early Stage 3.0 Credits

This course is for students seeking to apply an entrepreneurial mindset within for-profit and/or nonprofit ventures in the early stages of growth. Students will be expected to implement and exhibit the entrepreneurial competencies of resilience, opportunity recognition, and ideation in the launch of an initiative, product and/or service within an existing company. With provided scenarios, students will develop research skills to help support and guide the business model validation for a new organizational initiative, or a new product/service commercialization path.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP 445 GreenStart: Applying Entrepreneurship to Cultivate Sustainable Solutions 3.0 Credits

GreenStart is geared to equip students with the knowledge and actual experience of how to launch a green business that addresses an area of sustainability and also has a likelihood of sustainable financial return. The course calls attention to specific areas of environmental need, including climate change impacts, water issues, sustainable food production, native plant production, hydroponics, waste management and re-use, and sustainable urban land use. Students will work in small, diverse teams to quickly generate design solutions ensuring that all voices in the team are heard and counted. By course end, students will move on with the hands-on experience of having brought a green product or service to launch stage, along with the broad-based understanding of how to start up a green business on one's own.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

ENTP 450 Launch It! 3.0 Credits

This course is designed for those serious about being entrepreneurs. Students will be expected to work on the actual launching of a start-up. The course involves talking to customers, partners, competitors, experimenting with different business models, validating a market need through customer development, and building all facets of a start-up company. *Admission to this course requires a student to be an Entrepreneurship and Innovation major with a concentration in New Venture Creation or approval by the professor.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENTP 205 [Min Grade: D] and ENTP 325 [Min Grade: D]

ENTP I199 Independent Study in Entrepreneurship 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

ENTP I299 Independent Study in Entrepreneurship 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

ENTP I399 Independent Study in Entrepreneurship 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

ENTP I499 Independent Study in Entrepreneurship 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

ENTP T180 Special Topics in Entrepreneurship 1.0-12.0 Credit

This course covers various topics of particular relevance to the study of entrepreneurship.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

ENTP T280 Special Topics in Entrepreneurship 0.0-12.0 Credits

This course covers various topics of particular relevance to the study of entrepreneurship.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

ENTP T380 Special Topics in Entrepreneurship 1.0-12.0 Credit

This course covers various topics of particular relevance to the study of entrepreneurship.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

ENTP T480 Special Topics in Entrepreneurship 1.0-12.0 Credit

This course covers various topics of particular relevance to the study of entrepreneurship.

College/Department: Close School of Entrepreneurship-3145

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Environmental Engineering

Courses

ENVE 300 Introduction to Environmental Engineering 3.0 Credits

Overview of environmental engineering practice: water resources, water and waste control, solid waste, air pollution, risk management and environmental health. Population and resource demand forecasting, chemistry and microbiology necessary to solve basic problems is included.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CAEE 202 [Min Grade: D] and CAEE 203 [Min Grade: D]

ENVE 302 Environmental Transport and Kinetics 3.0 Credits

Covers applications of mass balances to describing transport environmental systems, diffusive and dispersive processes, and coupling of transport and kinetic models.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHE 211 [Min Grade: D]

ENVE 316 Fundamentals of Environmental Biotechnology 3.0 Credits

This is an introductory course in environmental biotechnology for upper-level undergraduates and graduate students in engineering.

The fundamentals of microbiology and molecular biology important to environmental engineering applications will be emphasized.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: BIO 141 [Min Grade: D] and (ENVE 300 [Min Grade: D] or CHE 211 [Min Grade: D])

ENVE 335 Industrial Safety 3.0 Credits

Examines safety in the workplace, loss prevention principles, Occupational Safety and Health Act implementation, accident investigation techniques, and basics of loss control and risk management.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENVE 410 Solid and Hazardous Waste 3.0 Credits

Provides an overview of municipal and industrial waste management, including design and economic analysis. Discusses options such as landfilling and incineration from engineering, social, and regulatory perspectives. Reviews physical, chemical, and biological treatment of hazardous waste.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENVE 415 Recycling of Materials 3.0 Credits

This course will examine the selection criteria for recycling component materials. Recycling involves both reusing materials for energy applications and reprocessing materials into new products.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENVE 302 [Min Grade: D]

ENVE 416 Urban Water Resources & Infrastructure Systems 3.0 Credits

This course covers planning, design, and operation of water and wastewater systems in urban areas. Topics include domestic and firefighting water supply, treatment, storage and distribution; wastewater collection and treatment; stormwater collection, peak flow attenuation and treatment, and protection of source/receiving water aquatic habitat.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENVE 300 [Min Grade: D] and CIVE 330 [Min Grade: D] and CIVE 430 [Min Grade: D]

ENVE 421 Water and Waste Treatment II 3.0 Credits

Covers processes used for water purification and waste treatment, containment and immobilization of hazardous wastes, and ultimate disposal of residues and hazardous materials.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

ENVE 422 Water and Waste Treatment Design 3.0 Credits

Covers integration of processes into a complete treatment system. Includes detailed design procedures to control wastes, prevent environmental contamination, and protect drinking water quality.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENVE 421 [Min Grade: D]

ENVE 435 Groundwater Remediation 3.0 Credits

Reviews physical, chemical, and biological remediation technologies for contaminated sites and groundwater by in-site and ex-site applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENVE 450 Data-based Engineering Modeling 3.0 Credits

This course covers empirical methods to understand and model engineering systems. Students will learn to develop evaluate statistical models and use three common statistical software packages, Excel, SPSS, and R.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: ENGR 361 [Min Grade: D] or CHE 335 [Min Grade: D] or MEM 361 [Min Grade: D] or MATH 311 [Min Grade: D]

ENVE 455 Geographic Information Systems 3.0 Credits

The course provides grounding in fundamental principles of GIS, and achieves understanding through hands on practical laboratories. Course topics include: spatial reference systems, geographic data theory and structures, structures, spatial analysis tools, functions and algorithms, GIS data sources, compilation and quality, and GIS project design and planning.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

ENVE 460 Fundamentals of Air Pollution Control 3.0 Credits

Fundamental topics with regard to the formation and control of air pollutants are studied. This course provides strong foundation for engineers who will be involved in the development of engineering solutions for industrial air pollution prevention and design, development or selection of air pollution control devices and systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

ENVE 465 Indoor Air Quality 3.0 Credits

Introduces basic concepts about indoor air quality, indoor air pollutants, including their sources and health effects, transport of pollutants, modeling of pollutant concentration in buildings, and ventilation as well as air cleaning systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENVE 302 [Min Grade: D] or AE 220 [Min Grade: D]

ENVE 470 Industrial Ecology 3.0 Credits

Industrial Ecology (IE) is an evolving view of industrial operations which seeks to design processes and manufacture products in such a way to minimize and optimize their environmental interactions. IE borrows the analogy from nature that "waste" from one organism is "food" for another. Within the "technosphere", the organization in which economic processes and activities are conducted by humans, IE uses the evolving tools life cycle assessment (LCA), material flow analysis (MFA), and economic valuation, to explore novel approaches to minimizing waste stocks and flows at both micro and macro levels.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CIVE 240 [Min Grade: B-] and ENVE 300 [Min Grade: B-]

ENVE 471 Environmental Life Cycle Assessment 3.0 Credits

This course provides undergraduate engineering students with an enhanced skill set to permit them to cooperate more fully in the sustainable design and planning of engineering systems. Students will be introduced to the systems analysis modeling approaches, life cycle assessment (LCA) and material flow analysis (MFA), and will explore research-oriented aspects of the methods and their application in engineering design, decisions, and public policy.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENVE 300 [Min Grade: B-] and CIVE 240 [Min Grade: B-]

ENVE 485 Professional Environmental Engineering Practice 1.0 Credit

Professional and ethical considerations in environmental engineering practice. Career management and lifelong learning.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVE and classification is Senior.

Corequisite: ENVE 491

ENVE 486 Environmental Engineering Processes Laboratory I 2.0 Credits

Laboratory experiments on common environmental engineering unit processes are performed. Students use data to draw conclusions relevant to design of full-scale systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVE and classification is Senior.

Prerequisites: ENVE 302 [Min Grade: D] and ENVS 401 [Min Grade: D]

ENVE 487 Environmental Engineering Processes Laboratory II 2.0 Credits

Laboratory experiments on common environmental engineering unit processes are performed. Students use data to draw conclusions relevant to design of full-scale systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVE and classification is Senior.

Prerequisites: ENVE 302 [Min Grade: D] and ENVS 401 [Min Grade: D]

ENVE 491 [WI] Senior Project Design I 3.0 Credits

Introduces the design process. Covers information retrieval, problem definition, proposal writing, patents, and design notebooks. Explores problem areas through presentations by experts from industry, government, and education.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ENVE 302 [Min Grade: D]

ENVE 492 [WI] Senior Design Project II 3.0 Credits

Continues the work started in ENVE 491. Requires written and oral progress reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ENVE 491 [Min Grade: D]

ENVE 493 [WI] Senior Design Project III 3.0 Credits

This course is the final sequence in the design project. It requires written and oral final reports, including oral presentations by each design team at a formal Design Conference open to the public and conducted in the style of a professional conference.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: ENVE 492 [Min Grade: D]

ENVE I199 Independent Study in Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE I299 Independent Study in Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE I399 Independent Study in Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE I499 Independent Study in Environmental Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE T180 Special Topics in ENVE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE T280 Special Topics in ENVE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE T380 Special Topics in ENVE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

ENVE T480 Special Topics in ENVE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Environmental Graphic Design

Courses

EVGD 200 Introduction to Environmental Graphic Design 4.0 Credits

This course is an introduction to the Environmental Graphic Design specialty including wayfinding systems, architectural graphics, signage, exhibit design, and mapped and themed environments.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

Prerequisites: VSCM 230 [Min Grade: D] and VSCM 240 [Min Grade: D]

EVGD 220 Wayfinding 4.0 Credits

This course explores the discipline of wayfinding in an urban environment through the use of visual clues and directional hierarchy, including typography, symbols, and color.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

EVGD 320 Exhibit Design 4.0 Credits

This exploration of exhibit design focuses on communicating a narrative visually through the design of space, graphics, objects, and interactivity.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

Prerequisites: VSCM 230 [Min Grade: D] and VSCM 240 [Min Grade: D] and EVGD 200 [Min Grade: D]

EVGD 421 Environmental Branding 4.0 Credits

This course explores the marketing power of a branded identity when it is visually and spatially applied to a retail environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

Prerequisites: EVGD 320 [Min Grade: D]

EVGD I199 Independent Study in EVGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD I299 Independent Study in EVGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD I399 Independent Study in EVGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD I499 Independent Study in EVGD 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD T180 Special Topics in Environmental Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD T280 Special Topics in Environmental Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD T380 Special Topics in Environmental Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

EVGD T480 Special Topics in Environmental Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Environmental Science

Courses

ENVS 101 Introduction to Environmental Science 5.0 Credits

Students will be introduced to a variety of disciplines and techniques necessary to effectively study local stream, marsh, lake, and terrestrial ecosystems. Students will examine the physical, chemical, and biological elements with these ecosystems with an emphasis on biological elements. Some of the field experiences will include learning how to sample algae, higher plants, invertebrates, fish and salamanders, and methods for surveying and monitoring marshes and selected physical and chemical measurements.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENSS or major is ENVS or major is GEO.

ENVS 102 Natural History, Research and Collections 2.0 Credits

Students will learn about the scope, nature and uses of the specimen collection, methods of collection care, maintenance and growth for different taxonomic groups. Students will learn how biodiversity research questions and projects are conceived and implemented. Students will observe and collect specimens and data, and begin to learn analyses and publication of results. Students will gain an appreciation for the role of natural history collections in modern research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVS or major is GEO.

ENVS 108 Excel for Ecological Data Analysis 1.0 Credit

This is a basic course in the use of Excel for data management and analysis. Assuming little prior knowledge of Excel, the course focuses on analyses typically performed by environmental scientists and biologists. Lectures, exercises, and all graded materials will focus on using Excel on laptops.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 160 Environment in the News 2.0 Credits

This course is an examination of how environmental topics are covered by popular news media. Students will learn the science that is being discussed by current news outlets. Topics will vary by term but may include: natural disasters, environmental policy and regulation, global warming and climate change, habitat loss, species extinction. Students will review and discuss current news articles and relevant scientific publications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 169 Environmental Science 3.0 Credits

This course provides an introduction to environmental problems and their causes, cultural changes, worldviews, ethics and environment. It covers such topics as science, matter and energy, ecosystems and how they work, air and air pollution, climate, global warming, and ozone loss, waste minerals and soil, solid, toxic and hazardous wastes, protecting food sources and energy resources.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BIO or major is ENVS

ENVS 201 Practical Identification of Plants and Animals 2.0 Credits

This course provides instruction and hands on experience in using print and online taxonomic keys, field guides and reference collections of real specimens for identification of plants, animals and fungi. The emphasis is on the flora and fauna of the Philadelphia region and learning how to use identification tools in the field and lab. The main objective is to have students understand the importance of accurate identification of organisms and to develop basic knowledge and skills that can be extended and applied to organisms widely.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVS.

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D]

ENVS 202 Tree of Life 2.0 Credits

This course reviews the diversity of life in the context of phylogenetic history as the organizing principle. The course emphasizes recent discoveries of living and fossil taxa, breakthroughs and controversies in resolving relationships, and the key evolutionary innovations in eukaryotes, such as multicellularity, major shifts in habitat, parasitism, symbiosis, and complex morphological novelties.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVS or major is GEO.

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D]

ENVS 203 The Watershed Approach 2.0 Credits

Students will integrate several disciplines of study to compare an urbanized to a non-urbanized stream ecosystem. All elements of the stream ecosystem and its watershed will be examined. Field experience will include learning how to assess the physical properties of a stream, measure and monitor water quality, sample invertebrates and vertebrates.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVS.

Prerequisites: ENVS 101 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D]

ENVS 212 Evolution 4.0 Credits

Aspects of the fact of evolution are discussed in class, including early evolutionary thought, pivotal moments in the history of life, and evidences for evolution from fossils, genetics, and living organisms. Key concepts include natural selection, speciation, adaptation, vicariance, inclusive fitness, and evodevo. Non-scientific arguments pertaining to evolution are refuted.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 100 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 223 Foraging for Edible Plants 3.0 Credits

This course explores the historical and contemporary reasons why humans forage for edible plants. There will be discussion about modern diets in a global agricultural world, and common pervasive myths about the dangers of foraging for wild plants. During this course, students will learn about how to identify species of edible plants, and recognize poisonous plants of the region.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 226 Discoveries in Animal Behavior 3.0 Credits

The course explores the incredible diversity of animal behavior using specially selected examples of recent research findings. It focuses on the adaptiveness of behavior: how animals solve problems posed by their physical and social environments. We will consider implications of research on other species for understanding our own (human) behavior. Non-majors only.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 230 General Ecology 3.0 Credits

This course examines how organisms interact with the biological and physical world and bridges the natural sciences with the social sciences. Using evolutionary theory as its basis, this course will cover topics spanning multiple levels of organization within the science of ecology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 133 [Min Grade: D]

ENVS 247 Native Plants and Sustainability 3.0 Credits

Plants are an integral part of our daily lives in nearly every way, directly or indirectly. Increasingly, our landscapes are becoming dominated with species that are introduced from other parts of the world (intentionally or by accident), displacing many of the species that were once key components of our ecosystems. The impacts of the loss of native plants are profound. This course will give students an overview of the many reasons why native plants are critically important to us, and the problems that arise when non-native plants replace them. There will be discussions about topics ranging from evolutionary theory, conservation, agriculture, public health, nutrition, and more.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 254 Invertebrate Morphology and Physiology 3.0 Credits

Provides comparative study of the major invertebrate groups, relationships between physiology and organismal structure, phylogenetic relationships and classification, development, and life histories.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 100 [Min Grade: D] or BIO 101 [Min Grade: D] or BIO 107 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 124 [Min Grade: D] or BIO 133 [Min Grade: D]

Corequisite: ENVS 255

ENVS 255 Invertebrate Morphology and Physiology Lab 2.0 Credits

This laboratory course provides a comparative study of the morphology of representative species from the major invertebrate groups. How their structural features relate to their physiology and behavior is emphasized. Identification of species, examining phylogenetic relationships, and understanding life histories will relate organisms to their ecological roles.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Corequisite: ENVS 254

ENVS 260 Environmental Science and Society 3.0 Credits

This course is a multidisciplinary introduction to the range of disciplines that make up the environmental sciences. The aim of this course is to provide an understanding of basic physical, ecological and social sciences that focus on the study on the natural environment and its interaction with human society.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 275 Global Climate Change 3.0 Credits

This course provides a multidisciplinary introduction to the science of global climate change. It focuses on the scientific evidence for climate change, its impact on natural systems, and actions that can be taken to mitigate climate change.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 284 Physiological and Population Ecology 3.0 Credits

Examines the role of physiological adaptation in the ecology of plants and animals and the principles of population biology as applied to biological systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 286 Community and Ecosystem Ecology 3.0 Credits

Introduces the principles of community and ecosystem ecology. Emphasizes the role of community structure and ecosystem organization in the ecology of plants and animals.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 289 Global Warming, Biodiversity and Your Future 3.0 Credits

Human induced global warming is changing the physical environment, ecological systems, and human systems around the world. We will explore causes, effects, and consequences of global warming using NASA satellite information and current scientific and semi-popular writings. Students will understand the implications of global climate change for their futures.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 302 Environmental Chemistry Laboratory 2.0 Credits

In this course students will learn basic techniques for chemical analysis of environmental samples, including biological material, water and soil. Students will also learn to utilize more manual methods but will also use electronic data acquisition systems and further develop their scientific writing skills.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENVS.

Prerequisites: CHEM 103 [Min Grade: D]

ENVS 304 Energy and the Environment: Iceland 3.0 Credits

This course studies how an economy and culture changes when it switches from fossil to alternative energy. In the last 30 years Iceland has switched from a poor country fueled by fossil fuels to one of the wealthiest nations in Europe, with only 20 percent of its energy coming from fossil fuels. In this class students will synthesize data/knowledge into flow diagrams of the economy of Iceland and then use the synthesis to understand the impacts of energy development and extraction on the environment and society.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 305 Iceland Intensive: Green Energy 1.0 Credit

Students will attend an intensive course in Iceland on energy plants and their impact on the environment. The course in Iceland will bring students to various energy facilities to examine their operation and better understand how these facilities impact the environment and serve society. Before each tour of a power plant students will attend a lecture at Reykjavik University on power production and its role in fueling economies and its potential impacts on the environment.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 308 GIS and Environmental Modeling 3.0 Credits

Students will learn how to write computer programs to read data directly from digital maps and then perform various spatial analyses and modeling tasks. The class will include an introduction to spatial- and geo-statistics; techniques for determining ecological riches of organisms; methods for modeling basic forcing factors such as solar radiation, water temperature; approaches for modeling the flow of water in a landscape; and ultimately, combining these techniques to model or simulate ecosystems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 310 Introduction to Environmental Chemistry 3.0 Credits

This course uses a topic-based approach to the chemistry of the environment. Students in this course are expected to have a minimal/some knowledge of chemistry, with a desire of applying this knowledge to the environment. Topics of interest include environmental chemistry of water, water pollution, water treatment, geochemistry, atmospheric chemistry, air pollution, hazardous materials and resources.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 103 [Min Grade: D]

ENVS 312 Systematic Biology 3.0 Credits

This is an introduction to systematic biology. The primary tasks of systematics are 1) the discovery, description, and classification of biodiversity to construct a general reference system for life on Earth; 2) the reconstruction of the "tree of life": the descent relationships among units of biodiversity at multiple hierarchic levels from genes to phyla; and 3) the application of reconstructions of decent relationships to the study of evolution. Phylogenetic systematics, concerned with units of biodiversity at the species level and above, will be emphasized.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENVS 202 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 315 Plant Animal Interactions 3.0 Credits

Plant-animal interactions provide us with some of the most remarkable examples of adaptation and co-evolution. They are also key determinants of ecosystem functions. This course will provide a survey of the diversity of plant-animal interactions, the multidisciplinary approaches used to understand their ecology and evolution, and their importance to ecosystem services that sustain human societies.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENVS 230 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D]

ENVS 322 Tropical Ecology 3.0 Credits

This is a course in the ecology of tropical rain forests and dry forests. Tropical ecology will explore the physical and biological factors that result in the formation of the forest, the effect of human impact, the effectiveness of management, and the future of these forests.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENVS 230 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 323 Tropical Field Studies 3.0 Credits

This is a study abroad course focusing on the ecology of tropical forest ecosystems. We will visit and compare forest ecosystems in several ecological life zones. The course will combine lectures, natural history surveys, faculty-led field research problems, and learning experiences with local residents to explore the biological diversity and function of tropical forests, including the effects of human impacts. Some background in Biology or Ecology is useful.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENVS 326 Molecular Ecology 3.0 Credits

Through a combination of lecture, discussion, and computational exercises, students will learn how molecular tools have been used to study genetic variation. They will then learn how these studies have provided answers to previously unanswered questions in fields including ecology, evolution, behavior, conservation, and forensics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENVS 230 [Min Grade: D] or ENVS 284 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 218 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 327 Molecular Ecology Laboratory 2.0 Credits

Through a combination of laboratory and computational exercises, students will develop a toolkit for applied molecular studies of ecology and evolution. The course will focus on initiating or continuing a novel research project relating to one of several topics within the field of molecular ecology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENVS 230 [Min Grade: D] or ENVS 284 [Min Grade: D] or BIO 211 [Min Grade: D] or BIO 218 [Min Grade: D]

ENVS 328 Conservation Biology 3.0 Credits

This course we will detail the loss of biodiversity and explore related issues, including the theories and practices of conservation biology and the solutions currently and the solutions currently being formulated to enhance the preservation of species on our planet. The course will explore potential limitations to these strategies and provide an appreciation of the relevance of ethics, economics and politics to biodiversity conservation while promoting the potential for individual action to influence conservation efforts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENVS 230 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D]

ENVS 330 Aquatic Ecology 3.0 Credits

Studies the relationships between aquatic plants and animals and their environment. Introduces the study of the ecology of lakes, rivers, ponds, and streams.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: ENVS 230 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 333 Wetland Ecology 3.0 Credits

Examination of the structure, function, and dynamics of wetland ecosystems. Topics include geomorphology, hydrology, biogeochemistry, plant and animal adaptations to wetland environments, and wetland policy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENVS 230 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D]

ENVS 335 Aquatic Insects and Water Quality 3.0 Credits

Healthy water quality has always been an essential part of human survival and culture. This course outlines the importance of using aquatic macroinvertebrates (principally insects) for assessing water quality and its wide use by government, consulting businesses and citizen groups. Nearly 90 groups of aquatic macroinvertebrates used in stream assessment and in sampling will be identified.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 341 Equatorial Guinea: Society & Environment 4.5 Credits

A lecture and community outreach course based at the National University of Equatorial Guinea that combines instruction in mankind's relationship with the natural environment (human population, natural resources, environmental degradation, pollution, biodiversity loss and climate change) with environmental outreach activities specific to Equatorial Guinea.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 342 Equatorial Guinea: Natural Resource Economics 4.5 Credits

A lecture course based at the National University of Equatorial Guinea that combines instruction in the economic implications of natural resources (renewable and non-renewable resources, efficient utilization, market performance, government controls, sustainability and discounting) with a university-wide guest lecture series addressing local issues.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 343 Equatorial Guinea: Field Methods 3.0 Credits

A lecture and field excursion course based at the University of Equatorial Guinea combining instruction in standard methods for studying rainforest communities (expedition planning; GPS and mapping, forest diversity and productivity; wildlife population monitoring) with multi-day field experiences in Bioko Island's remote protected areas.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 344 Equatorial Guinea: Field Research 6.0 Credits

An intensive research course that takes advantage of the unspoiled rainforest adjacent to the Moka Wildlife Center, a university-affiliated research station located in the highlands of Bioko Island, Equatorial Guinea (Central/West Africa). Opportunities exist for student research on topics including primates, antelope, birds, chameleons, butterflies and plants.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

ENVS 345 Equatorial Guinea: Conservation Biology 4.5 Credits

The goal of this course is to introduce the field of conservation biology, with a special emphasis on biodiversity conservation on Bioko Island, Equatorial Guinea. The course is an experiential learning course that focuses on the ways that the Bioko Biodiversity Protection Program (BBPP) uses keystone concepts in conservation science to implement research, education, outreach and sustainable livelihood programs to support the conservation of wildlife and wilderness in Equatorial Guinea.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 352 Ornithology 3.0 Credits

Birds are among the most ubiquitous, diverse, and charismatic animals and we know a great deal about their biology. This course aims to teach students who are enthusiastic about natural history about the biology of birds and covers a variety of topics including evolution, ecology, behavior, conservation, and diversity of birds and uses the world renowned specimen collections housed in the Academy of Natural Sciences of Drexel University.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or BIO 109 [Min Grade: D] or BIO 141 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 353 Field Ornithology Lab 2.0 Credits

The Delaware Valley is the cradle of North American Ornithology. This course aims to give students a hands on lab and field experience in identifying birds found in the Delaware Valley. Half of the classes are held outside at local parks and refuges and the remainder are in the lab where specimens from the world renowned collections housed at the Academy of Natural Sciences of Drexel University will be studied.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 354 Ichthyology 3.0 Credits

This course will explore fish and the link between their diversity in form and ecological function. This combined lecture-lab course will cover the basic systematics, evolutionary relationships, biogeography, structure, physiology, life history, and ecology of fishes and lampreys.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 355 Biogeography 3.0 Credits

This course is a survey of the field of Biogeography, the study of biological diversity across space and time. Factors and evolutionary history that influence both the ecology and evolution of organismal diversity will be covered. Topics will range from how species distributions arise to how we define species and how we reconstruct the influence and importance of both ecology and evolutionary history on their distributions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or ENVS 212 [Min Grade: D]

ENVS 360 Evolutionary Developmental Biology 3.0 Credits

Evolutionary Developmental Biology (Evo-Devo) compares developmental processes between organisms to determine how these mechanisms evolved in light of ancestral relationships. Topics include “your inner fish,” how to “build” a dinosaur, and the reducibly simple evolution of the eye. Also explored are developmental controls such as environmental factors and molecular mechanisms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENVS 212 [Min Grade: D] or BIO 217 [Min Grade: D]

ENVS 362 Urban Ecology 3.0 Credits

This course seeks to understand urban areas as meaningful ecological and socio-ecological systems. This acknowledges that humans are biological organisms that are not only members of ecological communities, but also organisms that are unique in their ability to alter and influence the nature of their interactions with the environment. This course examines the study of ecology in urban landscapes, as well as how organisms respond to and influence the abiotic and biotic nature of urban areas.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 109 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or BIO 141 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 364 Animal Behavior 3.0 Credits

The mechanisms, ecology and evolution of the activities of animals in relation to their natural environment. Topics include development and control (neural and hormonal) of behavior, adaptations for survival, feeding, and predator avoidance, strategies of habitat selection, communication, reproduction, and social behavior.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENVS 212 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D]

ENVS 372 Environmental Assessment 3.0 Credits

This course will introduce students to the types of ecological and environmental assessments commonly used to predict and determine environmental impacts. The importance of environmental regulation as it relates to the design, implementation, analysis and interpretation of environmental studies will be discussed. Content topics include environmental assessment of water, soil, and vegetation, as well as considerations that must be accounted for in preparing environmental assessments and analyses including land use, scale, economic factors, public health, and historic & archeological resources.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] and (GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D] or ENVS 203 [Min Grade: D])

ENVS 376 Environmental and Ecological Remediation 3.0 Credits

Many sites have been contaminated by past activities, including both intentional and accidental releases of chemicals and toxic wastes. As such, these sites are generally assessed and characterized for risk and health hazards of contaminants to both humans and the environment. This course examines legislative/regulatory mechanisms and strategies for the ‘clean-up’ and remediation of sites for future safe utilization.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 382 Field Botany of the New Jersey Pine Barrens 4.0 Credits

This course focuses on plant identification skills that are necessary to conduct scientific botanical surveys. The vascular flora of the New Jersey Pine Barrens, including rare plant species, is emphasized with special reference to habitat and community analysis. Non-vascular species are examined but not emphasized.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

ENVS 383 Ecology of the New Jersey Pine Barrens 4.0 Credits

Course focuses on the ecology of the New Jersey Pine Barrens. Students learn field methods, identify index species (flora and fauna), perform community analyses, and use equipment for measuring abiotic variables (soil and water). Field exercises focus on key aspects of the regional ecology: fire, soil and water.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: BIO 133 [Min Grade: D] or BIO 126 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 385 Systems Ecology 3.0 Credits

Systems Ecology will provide the tools to integrate and synthesize disciplines of sciences to understand the development, disruption, and dynamics of ecosystems. Students will learn general systems theory about how elements of an ecosystem interact with other parts of the system and how exogenous or external variables drive ecosystem processes. The course will show how to combine field data with simple mathematics in step by step calculations to describe, study, and emulate complex systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 126 [Min Grade: D] or BIO 133 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 387 Restoration Ecology 3.0 Credits

Ecological restoration is an intentional activity that initiates or accelerates the recovery of an ecosystem with respect to its health, integrity or sustainability. Using a combination of lectures, readings, field trips, and project work, this course covers conceptual and theoretical foundations that underlie restoration efforts, and link these to the real-world application of principles used in past and ongoing restoration projects.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 388 Marine Field Methods 4.0 Credits

Course focus is on the ecology of local marine environments. Students learn marine field survey methods, identification of marine organisms, habitat analyses, and use of equipment for measuring abiotic variables. Students sample fish, plankton and invertebrate species aboard the Drexel 25 foot Research Vessel Peter Kilham.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: BIO 133 [Min Grade: D] or BIO 126 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 390 Marine Ecology 3.0 Credits

This course studies major processes in the marine environment, especially relationships between organisms and the factors that influence their abundance.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: BIO 133 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 391 Freshwater and Marine Algae 3.0 Credits

Origin and evolution of various algal groups, principles and methods of algal systematics, algal ecology, and use of algae as environmental indicators. Field trips to local streams, ponds and wetlands where students will collect algal samples and record environmental data. Lab work will include sample processing and algal identification.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 393 Entomology 3.0 Credits

This course introduces students to some of the major topics in the field of entomology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 394 Entomology Laboratory 2.0 Credits

This course introduces students to some of the major practical topics in the field of entomology. The course consists of lab work, collecting trips, and creation of an insect collection.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D] or BIO 141 [Min Grade: D]

ENVS 401 Chemistry of the Environment 3.0 Credits

Covers principles of physical and organic chemistry applicable to the study and evaluation of environmental conditions, especially the pollution of air, water, and soil (including chemical changes and reactions in the environment).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D]

ENVS 405 Atmospheric Chemistry 3.0 Credits

Introduces the principles of atmospheric physics and photochemical kinetics as a prelude to understanding the atmospheric chemical system. Examines the chemistry of the natural atmosphere to prepare for the understanding of how pollutants interact with natural species. Considers pollution of the stratosphere and the troposphere.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 102 [Min Grade: D] or CHEM 122 [Min Grade: D]

ENVS 409 Environmental Surveying and GIS 3.0 Credits

This course is a field intensive course that gives students hands on training on state-of-the-art surveying gear. Students will learn the principals of surveying used by field ecologists or geoscientists, including types of surveying gear, how to use it in the field, and how to analyze collected data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENVS 410 Physiological Ecology 3.0 Credits

Examines mechanisms by which physiological factors affect and limit the distribution and abundance of animals, including physiological and behavioral thermoregulation, heat and cold tolerance, acclimation, metabolism, osmoregulation and dehydration tolerance, feeding strategies, digestion and feeding patterns, energy and water budgets, toxins and optimality theory.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: BIO 133 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 412 Biophysical Ecology 3.0 Credits

Covers energy balances and methods of heat transfer in organisms, including convection, conduction, radiation, evaporation, and metabolism and steady-state and transient energy balances, including mass balances, water uptake and evaporation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATH 239 [Min Grade: D] or MATH 123 [Min Grade: D]) and (PHYS 153 [Min Grade: D] or PHYS 102 [Min Grade: D])

ENVS 415 Advanced Environmental GIS 3.0 Credits

This course is structured to build upon techniques and skills learned in an introductory level GIS class. This advanced course is technically oriented and will introduce high-level geospatial analyses in an environmental science context. Provides instruction and theory of geospatial modeling, mapping, and future trends.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENVS 308 [Min Grade: D] or ENVE 455 [Min Grade: D]

ENVS 417 Stream Assessment 3.0 Credits

Most stream and river ecosystems are stressed by human activities, and aquatic ecologists are frequently called upon to assess problems, make scientific evaluations and provide management recommendations. A main goal of this course is to provide problem-solving experiences in stream assessment based on example real-world environmental questions. The assessments will provide students opportunities to address issues they may face as ecologists, engineers, managers and policy makers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 133 [Min Grade: D] or BIO 126 [Min Grade: D] or BIO 141 [Min Grade: D] or ENVS 230 [Min Grade: D]

ENVS 418 Coastal Biogeochemistry 3.0 Credits

This course covers fundamental biogeochemical and ecological concepts necessary to critically examine influential and current relevant literature. Topics include eutrophication, hypoxia, ocean acidification, climate change, and greenhouse gas exchange in nearshore coastal waters such as estuaries, coastal rivers and watersheds, mangroves, seagrasses, salt marshes, wetlands, mud and sand flats, and coral reefs. Analytical tools such as stable isotopes, ecosystem models, and process measurements will be used.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 101 [Min Grade: D]

ENVS 438 Biodiversity 3.0 Credits

This course explores major patterns of biodiversity that biologists have documented across the planet. The course begins with an overview of major types of biodiversity, focusing on species diversity, and methods for measuring and analyzing biodiversity. Next it explores major patterns of biodiversity that are fundamental to ecology and conservation, and theories for the causes of biodiversity patterns.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 124 [Min Grade: D] or ENVS 230 [Min Grade: D] or BIO 132 [Min Grade: D]

ENVS 441 [WI] Issues in Global Change I: Seminar 2.0 Credits

Discusses and evaluates topics such as records of climate change, atmospheric chemistry and global warming, the greenhouse effect, ozone depletion, acid rain, decreased biodiversity, desertification, deforestation, and sea-level rise.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENSS or major is ENVS or major is GEO and classification is Senior.

ENVS 442 Issues in Global Change II: Research 2.0 Credits

Requires students to focus on a particular change topic or issue in order to analyze it, prepare a research report, and present a final seminar.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENSS or major is ENVS or major is GEO and classification is Senior.

Prerequisites: ENVS 441 [Min Grade: D]

ENVS 443 Issues in Global Change III: Synthesis 2.0 Credits

The purpose of this course is to provide seniors in Environmental Science and Ecology with an opportunity to make an in-depth examination of the factors causing global change in the 21st century, to analyze their own data as well as that in the literature, to synthesize new ideas and to report orally and in writing on their findings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ENSS or major is ENVS or major is GEO and classification is Senior.

Prerequisites: ENVS 442 [Min Grade: D]

ENVS 470 Advanced Topics in Evolution 3.0 Credits

Discusses and evaluates selected topics such as population and quantitative genetics, genomics in evolutionary analysis, fitness concepts and modes of selection, species concepts and modes of speciation, evolution of development and complex adaptations, biological diversification over space and time, adaptive radiation and extinction, historical biogeography. Topics for each term will be selected based on current research and interest.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

Prerequisites: ENVS 212 [Min Grade: D] or BIO 217 [Min Grade: D]

ENVS 497 Research 0.5-12.0 Credits

Provides guided research in ecology, earth science and environmental science.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

ENVS I199 Independent Study in ENVS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS I299 Independent Study in ENVS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS I399 Independent Study in ENVS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS I499 Independent Study in ENVS 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS T180 Special Topics in Environmental Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS T280 Special Topics in Environmental Science 0.0-12.0 Credits

Special topics offered in biodiversity, earth and environmental science.

Topics include recent multidisciplinary areas of environmental concern.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS T380 Special Topics in Environmental Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENVS T480 Special Topics in Environmental Science 0.0-12.0 Credits

Special topics offered in environmental science. Topics include recent multidisciplinary areas of environmental concern.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Environmental Studies & Sustainability

Courses

ENSS 120 Introduction to Environmental Studies 3.0 Credits

This course looks at the many topics that fall under the interdisciplinary focus of environmental studies, such as biodiversity, preservation, conservation, sustainability, deforestation, environmental justice, risk society, treadmill of production, and climate change. Students will be introduced to the ideas, issues and practices linked to these concepts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENSS 244 Sociology of the Environment 4.0 Credits

This course examines environmental problems through a sociological lens, and focuses on the ways that social practices, social structures and economic and political systems drive environmental change, degradation and preservation. We will explore the following questions: Why do humans keep re-creating environmental problems that threaten human and ecosystem survival even with the development of advanced technologies? What are the social barriers that stand in the way of solving the environmental problems of the twenty-first century? What has kept environmental movements from enjoying more success?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENSS 275 Global Climate Change 3.0 Credits

This course provides a multidisciplinary introduction to the issue of global climate change. It focuses on the scientific evidence for climate change, its impact on natural and human systems, actions that can be taken to mitigate or adapt to climate change and the political and cultural dynamics of this issue.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENSS 283 Introduction to Environmental Policy 3.0 Credits

Introduction to researching environmental laws and regulations, local ordinances, and how to participate in the process. The course will explore the major environmental statutes and the system for policy creation and implementation in the US Government, and the importance of citizen involvement in environmental protections.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENSS 285 Introduction to Urban Planning 3.0 Credits

The urban planning profession seeks to improve the arrangement and character of the built environment: the places we live, work, and play. Planners develop strategies and designs to improve communities for the future, balancing citizen, political, financial, and environmental interests. This practice-focused course will introduce the many types of work planners do, and many local professionals who do it.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ENSS 326 Cities and Sustainability 3.0 Credits

This course will provide an overview of the issue of sustainability planning and policy for cities. Topics include how we define sustainability for cities, and how we measure its progress and impacts. The course will also cover how land reuse planning impacts the development of green space, including parks, gardens and urban agriculture, as well as green building, the green economy and the impact of sustainability planning on public health outcomes.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENSS 341 Environmental Movements in America 4.0 Credits

Focuses on key collective actors and institutions that are involved in the creation of U.S. environmental policies, including historical and cultural processes of change involving social movements, environmental advocacy organizations, foundations, and the media.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENSS 346 Environmental Justice 4.0 Credits

Focuses on the political economy of environmental injustice and the impact of social movements addressing it; impact of chemical pollutants on human health; and the scientific and legal issues surrounding the study and regulation of pollutants.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ENSS 348 Delaware River Issues and Policy 3.0 Credits

This course will examine the various elements of watershed management including the governance structure of the Delaware Basin, what science can and cannot tell us, how policies may differ by state, how toxic pollutants are managed and impacts of climate change. Also addressed are how various species are protected and the challenges of maintaining the natural world in a densely populated watershed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

ENSS I199 Independent Study in ENSS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS I299 Independent Study in ENSS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS I399 Independent Study in ENSS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS I499 Independent Study in ENSS 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS T180 Special Topics in Environmental Studies & Sustainability 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS T280 Special Topics in Environmental Studies & Sustainability 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS T380 Special Topics in Environmental Studies & Sustainability 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ENSS T480 Special Topics in Environmental Studies & Sustainability 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Exercise Science

Courses

ESCI 101 Foundations of Exercise Science 4.0 Credits

This course is designed to provide students with basic knowledge, understandings and approaches to living a physically active lifestyle. Health-related fitness and general health issues that affect people and their communities are addressed, with particular emphasis on making healthy lifestyle choices for long-term health and well-being.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

ESCI 201 Introduction to Exercise Science 4.0 Credits

This course introduces students to the field of exercise science. Students enrolled in the course learn about the scientific and historical origins of exercise science and sports medicine, and are informed about the professions' scope of practice, career opportunities and certifications, critical issues, and biases. Students also gain exposure in the major's sub-disciplines, which include but are not limited to exercise physiology, nutrition, epidemiology, kinesiology/biomechanics, and behavioral, psychological, and social dimensions of exercise science.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

ESCI 210 Health and Wellness Throughout the Lifespan 3.0 Credits

This course is designed to provide students with a survey of health and wellness topics using a life course approach. The course will blend concepts from sociology, psychology, and physiology to explore developmental topics and the impact on wellness throughout the lifespan. Topics will incorporate an ecological perspective, including health factors at the individual, social, environmental, and policy level. Students will learn to identify threats to wellness imposed by prior events and experiences. This approach will include examining health inequities and the influence on developmental changes in behavior or function across the entire course of life.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

ESCI 315 Concepts & Practices in Inclusive Physical Activity 3.0 Credits

This course is designed to develop student's knowledge and skills related to the fitness and wellness needs of diverse populations of individuals, including consideration for developmental and other disabilities linked to physical, emotional, or cognitive impairments. Students will develop fitness and wellness programming that considers the practical, ethical, legal, and human aspects of inclusion.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ESCI 201 [Min Grade: D]

ESCI 320 Technological Advancements and Integrations in Exercise Science 3.0 Credits

This course provides students with opportunities to examine current and developing technologies, and their integrations, in exercise science. Students learn about top health and fitness trends that leverage and integrate virtual, online and wearable technologies. Students also gain experience in the study of strategic engagement with digital modalities, addressing challenges people may face alone and/or in group settings, and explore innovations and emerging trends in digital wearable technologies and applications that measure variables such as vital signs, oxygen saturation and electrocardiograms, and other health information with accelerometer-generated and GPS services.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ESCI 201 [Min Grade: D]

ESCI 330 Physical Growth and Motor Behavior 3.0 Credits

This course is designed to provide students with an opportunity to examine the growth and development of motor skills throughout the life span. Students will study motor performance physical growth patterns and biological maturity changes from childhood through older adulthood. Students will explore an overview of lifespan human motor development and movement related to exercise science and health-related fields.

Analysis of the sequential progression of fundamental motor skills.

Course topics include the relationship between motor development, skill acquisition, and performance with self-concept, physical fitness, and developmental delay.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 152 [Min Grade: D] and HSCI 208 [Min Grade: D]

ESCI 340 Exercise Physiology II 4.0 Credits

This course covers advanced theory and application exercise physiology. Knowledge of physiological responses and adaptations associated with exercise in various conditions, across lifespan, and between sexes will be addressed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 325 [Min Grade: D]

ESCI 370 Electrocardiogram Interpretation & Graded Exercise Testing 4.0 Credits

This course is designed to instruct students in the acquisition and interpretation of resting and exercise electrocardiograms. Students learn how to identify various cardiac dysrhythmias and administer a graded exercise test according to the ACSM and AACVPR Guidelines.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 425 [Min Grade: D]

ESCI 410 Aging and Exercise 4.0 Credits

This course is designed to provide students with an applied understanding of exercise physiology in aging populations. Students learn about core theories and processes of human aging, including structural and functional changes, that can influence longevity, the onset of chronic diseases, and quality of life. Students also apply the principles of exercise physiology (acute responses, long-term adaptations) and identify the positive effects of physical activity and exercise for human health and wellness.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 325 [Min Grade: D]

ESCI 415 Pharmacology & Ergogenic Aids in Exercise Science 3.0 Credits

This course is designed to provide students with an opportunity to explore the science of pharmaceutical products, nutritional supplements, and ergogenic aids used to enhance human health and fitness, manage weight, enhance well-being, and boost athletic performance. Students will study the physical/physiologic, financial, social, sport, and ethical issues surrounding use of these products.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 100 [Min Grade: D] and NFS 101 [Min Grade: D] and ESCI 325 [Min Grade: D]

ESCI 420 Wellness and Fitness Program Management 3.0 Credits

This course is designed to provide theoretical knowledge and practical skills in leading and managing safe and effective wellness and fitness programs. Students will study concepts related to facilitating exercise in athletic programs, physical education programs, intramural sports programs, and fitness businesses. Students will examine various health promotion programs while learning how to plan, implement, and evaluate them. Program management topics will include marketing/promotion, recruiting/enrollment, policy development, legal and ethical considerations, budgeting, personnel, programming, facilities.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 110 [Min Grade: D] or (ACCT 120 [Min Grade: D] or FIN 150 [Min Grade: D] or BUSN 105 [Min Grade: D] or SMT 110 [Min Grade: D]) and ESCI 201 [Min Grade: D]

ESCI 435 Exercise is Medicine: A Campus Experience 4.0 Credits

This course is designed to provide students with opportunities to engage in interprofessional, practice, education and research with an emphasis on the American College of Sports Medicine's Exercise is Medicine initiative. Students learn about Exercise is Medicine as a global health initiative in making physical activity assessment and promotion a vital sign in standard clinical care, for people everywhere and of all abilities.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

ESCI I299 Independent Study in Exercise Science 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

ESCI I399 Independent Study in Exercise Science 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

ESCI I499 Independent Study in Exercise Science 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

ESCI T280 Special Topics in Exercise Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

ESCI T380 Special Topics in Exercise Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

ESCI T480 Special Topics in Exercise Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Fashion Design

Courses

FASH 200 Sustainable Practice in Fashion 3.0 Credits

Introduction to responsible/ sustainable practices for ethical design, development and marketing of fashion product. Course includes the exploration of global and regional markets engaged in these practices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 205 Fashion and Culture 3.0 Credits

This course delves into the exploration of the social and psychological dimensions of appearance and the human body, shedding light on their role in shaping hierarchies of privilege and power within the realm of fashion design. By examining the significance of appearance, rooted in the body, through the lens of social and critical theory, we unravel how it interconnects with the principles, conduct, and standards of fashion design. Through the application of these theoretical frameworks, we probe into various subject positions to gain insights into the current landscape of fashion design. This course equips students with the knowledge to inspire transformative change throughout the fashion industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 211 Fashion Drawing I 3.0 Credits

This course examines the fashion figure, silhouette, proportion, movement and exaggerated expression using a range of live models. Emphasis of artistic style is encouraged.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 111 [Min Grade: D]

FASH 212 Fashion Drawing II 3.0 Credits

Examines fashion forms, fabrication, and conceptual design through the use of color and mixed media. Works toward the development of a personal "fashion look" and an understanding of drawing as it relates to the fashion industry. Includes live model.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FASH 211 [Min Grade: D]

FASH 231 Textile Science for Fashion Design 3.0 Credits

Examines textile manufacturing and sustainable practices within the industry. Basic textile terminology and production processes are introduced including aesthetics, performance and care characteristics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 241 Construction Skills 0.0-4.0 Credits

Develops a proficiency in basic garment construction. Emphasizes facility with industrial equipment. Introduces production techniques and an overall awareness of standards of quality.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 304 Materials Exploration 4.0 Credits

This course examines the relationship of fibers, processes and textile creation and form as it relates to the body.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 103 [Min Grade: D] or VSST 106 [Min Grade: D]

FASH 309 Visual Communication in Fashion 3.0 Credits

Introduces digital skills and presentation techniques used for communication in the fashion industry. Students will be introduced to research-based design practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D]) and (FASH 200 [Min Grade: D] or DSMR 103 [Min Grade: D])

FASH 312 Surface Design for Textiles 3.0 Credits

Investigates traditional and digital techniques of surface design. This course explores aesthetics, color theory, motif development and layout for use in multiple fashion categories.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D]

FASH 314 Fashion Portfolio I 3.0 Credits

Requires the creation of a portfolio of original designs executed in a medium of choice. Explores various market segments of the industry and includes project reviews by critics who are specialists in these areas.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: FASH 313 [Min Grade: D] or FASH 318 [Min Grade: D]

FASH 315 Computer Aided Design for Patternmaking 3.0 Credits

Develops skills in digital patternmaking, grading and marker-making. Process is tested with a muslin prototype and a final garment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FASH 342 [Min Grade: D]

FASH 318 Technical Design for Industry 4.0 Credits

Fashion data visualization for use in the design and manufacturing of fashion product. Students create accurate flat sketches, line sheets and detailed technical packs for product life cycle management.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 309 [Min Grade: D] or FASH 310 [Min Grade: D]

FASH 319 Fashion Design in 3-D Space 3.0 Credits

Students explore clo 3-D virtual garment simulation. Draping directly on the avatar, individual designs are realized through a zero-waste process. Material properties are tested on the avatar in motion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 318 [Min Grade: D] or FASH 316 [Min Grade: D]

FASH 324 Advanced Fashion Design in 3-D Space 3.0 Credits

This is an advanced level of Fashion Design in 3D Space. Students will work on special 3D Fashion projects and/or a self-directed project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: FASH 319 [Min Grade: D]

FASH 334 Virtual Costume Design 3.0 Credits

Using 3D virtual design software, students create historic and futuristic 3D costume design to enhance a virtual story. Through historical costume research students will learn how to use costume design to develop narrative. This course is open to students across the University.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

FASH 335 [WI] History of Costume I: Preclassical to 1800 3.0 Credits

Traces the rise of Western costume from the ancient world through 1800, including political, economic, and social influence on aesthetic development in dress. This is a writing intensive course.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 336 [WI] History of Costume II: 1800-1920 3.0 Credits

Traces the history of costume from 1800 through 1920, including the political, economic, and social influence on aesthetic development in dress. This is a writing intensive course.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 337 History of Costume III: 1920 to Present 3.0 Credits

Examines fashion and dress trends from 1920 through the 21st century within their sociocultural, political, and economic contexts. The course also explores how globalization, technology, and mass media impact the aesthetics of dress.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FASH 341 Patternmaking I 4.0 Credits

Explores basic patternmaking techniques and manipulations and establishes comparisons between drafting and draping techniques in the development of standard slopers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 241 [Min Grade: D]

FASH 342 Patternmaking II 0.0-4.0 Credits

Advances the skills of FASH 341. Includes an introduction to basic draping and how to translate on to paper.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FASH 341 [Min Grade: D]

FASH 343 Tailoring 4.0 Credits

Provides intensive investigation of materials and construction techniques used in tailoring. Uses a combination of garment production methods, including a strong emphasis on couture practices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FASH 342 [Min Grade: D]

FASH 348 Fashion Design I: Fabric to Form 4.0 Credits

Exploring unconventional sources for design research, students use problem solving in design to take concepts from 2-D to 3-D with an emphasis on materials.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (VSST 304 [Min Grade: D] or FASH 304 [Min Grade: D]) and FASH 342 [Min Grade: D]

FASH 353 Fashion Design II: Knitwear 4.0 Credits

Survey of knitwear design development includes yarn identification and knitted structures. Students apply hands-on digital knitting technology with SES APEX software and Shima Seiki electronic knitting machines in the design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 348 [Min Grade: D] or FASH 349 [Min Grade: D]

FASH 354 Fashion Design III: Sustainable Design 4.0 Credits

Using responsible eco-friendly concepts, students design original collections for men's and women's wear. Zero waste design, up-cycling and de-reconstruction methods are considered in the circular design process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 353 [Min Grade: D] or FASH 350 [Min Grade: D]

FASH 355 Fashion Design IV: Collection Research & Development 4.0 Credits

Expands and broadens technical skills and lays the groundwork for development of the senior thesis collection. This includes design research and prototype development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 354 [Min Grade: D] or FASH 351 [Min Grade: D]

FASH 433 Couture Techniques 3.0 Credits

Expands and broadens technical skills and lays the groundwork for development of the senior collection. Includes couture evening wear techniques and research processes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 351 [Min Grade: D] or FASH 354 [Min Grade: D]

FASH 450 Machine Knitting 3.0 Credits

Machine Knitting is an introduction to knitwear design specialization. Students learn to style and draw knit garments to develop a professional portfolio. Technical information regarding yarn analysis, stitch construction, pattern and garment construction are the focus of this class.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 12 credits

Restrictions: Can enroll if major is FASH.

Prerequisites: FASH 241 [Min Grade: D] and (VSST 112 [Min Grade: D] or VSST 113 [Min Grade: D])

FASH 451 Accessory Design 3.0 Credits

This course provides students with concepts and skills to design traditional and contemporary fashion accessories with emphasis in embroidery; applique; hand painting; and clay, plastic and ceramic work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 241 [Min Grade: D]

FASH 453 Intimate Apparel Design 3.0 Credits

This course will offer an introduction to the foundations and sleepwear marketplace. Primary focus will be on the design and execution of two pieces for this market. Students will learn how to construct a bra (molded cups) and how to incorporate these details into their final looks for this market. In addition, students will learn the safe operation of the specialty sewing machines for knit construction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FASH 251 [Min Grade: D] or FASH 349 [Min Grade: D] or FASH 348 [Min Grade: D]

FASH 455 Advanced Machine Knitting 3.0 Credits

Advanced Machine Knitting is a further exploration into the software and machinery used in knit product production. Students will participate in all stages of product development from yarn and stitch selection, swatch sampling, gauge analysis, pattern writing, knitting output, and assembly methods.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: FASH 450 [Min Grade: D]

FASH 464 Fashion Portfolio II 3.0 Credits

This course will involve research, development and execution of a finished fashion design portfolio. Students will create a physical and electronic portfolio for the global marketplace.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is FASH and classification is Senior.

Prerequisites: FASH 314 [Min Grade: D]

FASH 466 Business of Fashion 3.0 Credits

Presents the following topics in seminar fashion merchandising, retail distribution, interpreting consumer demand, merchandise assortment planning, unit and inventory control and pricing, fashion marketing and manufacturing, including the marketing process, components of the fashion industry, market evaluation, demographic and psychological factors, manufacturing components and processes, and case studies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is FASH and classification is Senior.

FASH 491 Collection I 4.0 Credits

The second of a three-part series in which the student develops the senior collection. Requires the student to demonstrate the synthesis of a personal aesthetic and technical acumen.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: FASH 352 [Min Grade: D] or FASH 355 [Min Grade: D]

FASH 492 Collection II 3.0 Credits

Requires completion of senior collection and presentation in student fashion show.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FASH 491 [Min Grade: D]

FASH I199 Independent Study in Fashion Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH I299 Independent Study in Fashion Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH I399 Independent Study in Fashion Design 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH I499 Independent Study in Fashion Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH T180 Special Topics in Fashion Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH T280 Special Topics in Fashion Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH T380 Special Topics in Fashion Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FASH T480 Special Topics in Fashion Design 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Film & TV Production

Courses

FMTV 100 Visual Storytelling 3.0 Credits

This course explores a variety of techniques and principles used to tell stories visually. We will begin by asking, "What is a story and how might we differentiate a story told in images and sounds from one told in writing?" We will then investigate how techniques of cinematography, editing, and mise-en-scène contribute to the exposition of a story and to the articulations of its meaning.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 101 Production Safety 1.0 Credit

This course introduces first-year students to safety policy and protocols to be followed for all Cinema & Television production courses.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 110 Basic Cinematography 3.0 Credits

An introduction to the basics of photography and lighting for film and video production through demonstrations, lectures, screenings and hands-on use of digital video and still cameras and lighting equipment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 115 Basic Editing 3.0 Credits

Theoretical and practical principles of editing using a computer-controlled and post-production system utilizing sync sound film and video material. This class is a hands-on workshop. Screenings of excerpts from feature and short films are used to demonstrate editorial concepts.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 120 Basic Sound 3.0 Credits

A thorough analysis of sound theory and practical applications to give students the tools to understand how sound can be successfully recorded, edited, sweetened and re-recorded (mixed) for film and video.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 140 Acting for the Screen 3.0 Credits

This course provides students with an understanding of the role of a film actor. Students will focus on developing comprehensive skills for acting on the screen, communicating with directors and making acting choices that enhance the film. It will also develop students' understanding of what it is like to be an actor on screen. Students will be exposed to different acting techniques that will also help develop language between the actors and the director.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 185 TV Industry 3.0 Credits

The course is designed to provide an overview of the organizational structures and business models utilized by current television content and distribution companies. In addition to looking at the basic structure of an organization, the course will also examine the often delicate, unusual and sometimes combative inter-relationship of company divisions, competitors, advertisers and audiences. We will profile the top media companies and the industry leaders/entrepreneurs that have shaped the medium thus far and into the future. Each class will begin with a discussion of current industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 201 Portfolio Prep 1.0 Credit

Students will organize and reflect on materials in preparation for their Year II portfolio crits.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Sophomore.

FMTV 202 Scene Analysis 3.0 Credits

This course is intended to build upon core concepts introduced during FMTV 100: Visual Storytelling. Our focus will be on advanced analysis of scenes, inspecting how the drama is constructed through blocking, lensing, movement, and mise en scène. Our focus will include cinematic storytelling in both theatrical film and prestige television.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 100 [Min Grade: D]

FMTV 206 Audio Production and Post 3.0 Credits

This course is an introduction to the creation and manipulation of digital audio files. It is geared towards the Digital Media student with respect to applying soundtrack elements to their images. Topics will include recording dialog, location sound recording, sound effects design, music editing, and multi-track mixing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 210 Intermediate Cinematography 3.0 Credits

This course provides advanced focus in cinematic concepts and techniques and their use in filmmaking. We will study and understand the qualities of light and how it affects images, and strengthen our knowledge of lens physics. We will learn to choose the appropriate lens for any given shot. We will learn how to use a light meter and other tools to correctly expose shots. Assigned projects will provide opportunities to harness all this technical knowledge in the service of creativity.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (FMTV 110 [Min Grade: D] or FMVD 110 [Min Grade: D]) and (FMTV 115 [Min Grade: D] or FMVD 115 [Min Grade: D]) and (FMTV 120 [Min Grade: D] or FMVD 120 [Min Grade: D])

FMTV 211 Intermediate Lighting 3.0 Credits

This course emphasizes learning to model figures and shape scenery with light for film and video production. We will cover methods of creating mood and atmosphere through light appropriate to the story of a particular film or program.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 110 [Min Grade: D] or FMVD 110 [Min Grade: D]

FMTV 215 Intermediate Editing 3.0 Credits

This course will build upon Adobe Premiere and Avid editing principles taught in FMTV 115, with increased emphasis on editing aesthetics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (FMTV 110 [Min Grade: D] or FMVD 110 [Min Grade: D]) and (FMTV 115 [Min Grade: D] or FMVD 115 [Min Grade: D]) and (FMTV 120 [Min Grade: D] or FMVD 120 [Min Grade: D])

FMTV 216 DIT & Workflows 3.0 Credits

In this class students will learn the technical process of DIT (Digital Information Technology), from the pre-production phase thru delivery of the project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 115 [Min Grade: D] or FMVD 115 [Min Grade: D]

FMTV 220 Intermediate Sound 3.0 Credits

This course is designed to build upon the audio production recording skills achieved in FMTV 120: Basic Sound. Students will learn how to operate advanced industry standard field recorders and mix sound for multiple set microphones, including wireless microphones, and will become adept at troubleshooting potential film production audio issues.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 120 [Min Grade: D] or FMVD 120 [Min Grade: D]

FMTV 230 Intermediate TV Studio 3.0 Credits

This course is an Introduction to directing live and taped multi-camera television productions in a studio setting. The emphasis will be on developing solid, basic directing technique that will be built upon in subsequent additional courses. Additionally, the basics of producing live TV programming will be discussed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 130 [Min Grade: D] or TVPR 100 [Min Grade: D]

FMTV 240 Narrative Production 3.0 Credits

This course is designed to build upon the skills learned in Basic Cinematography (FMTV 110), Basic Sound (FMTV 120), and Basic Editing (FMTV 115) introducing additional production and post methodologies. Increased emphasis is placed upon the ability of the student to use the resources of the medium in a professional manner.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCRP 280 [Min Grade: D] or SCRP 281 [Min Grade: D]

FMTV 245 Microbudget Film 3.0 Credits

This course examines alternative production models that free filmmakers to take creative risk and work outside of traditional structures. Course includes screenings, workshops, and the making of a short film.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 250 Documentary Production 3.0 Credits

Builds on the knowledge of cinematic language and basic production technique learned in FMTV 110. Students become familiar with documentary shooting and editing strategies and produce final documentary projects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (FMTV 110 [Min Grade: D] and (FMTV 115 [Min Grade: D] and (FMTV 120 [Min Grade: D])

FMTV 251 Non-Fiction Series Production 3.0 Credits

This course gives students instruction and experience in doing non-fiction series in the field. Students will learn the fundamentals of non-fiction series storytelling, while creating a pitch package for a new show concept in groups.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: FMTV 250 [Min Grade: D]

FMTV 265 Commercials and Promos 3.0 Credits

Students analyze and produce a wide variety of commercials and promos. Fundamental concepts of brand marketing are presented and utilized in the production of student's own script-to-screen commercials and promos. This history of commercials, both in the United States and worldwide, is also studied.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (FMTV 110 [Min Grade: D] or FMVD 110 [Min Grade: D]) and (FMTV 115 [Min Grade: D] or FMVD 115 [Min Grade: D]) and (FMTV 120 [Min Grade: D] or FMVD 120 [Min Grade: D])

FMTV 270 Basic Directing 3.0 Credits

This course provides students with an understanding of the role of a film director. Students focus on the development of comprehensive skills for directing technical personnel, exposure to directing styles, communicating with actors and cinematic choices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (FMTV 110 [Min Grade: D] or FMVD 110 [Min Grade: D]) and (FMTV 115 [Min Grade: D] or FMVD 115 [Min Grade: D]) and (FMTV 120 [Min Grade: D] or FMVD 120 [Min Grade: D])

FMTV 275 Intermediate Directing 3.0 Credits

This course gives students instruction and experience in producing, interpreting, staging, directing, shooting, and live-cutting scenes in a studio. Students will experience the challenges of managing a cast and crew while simultaneously dealing with the kind of time, resource, and creative challenges that exist in the professional world.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 270 [Min Grade: D] or TVPR 200 [Min Grade: D]

FMTV 280 Basic Producing 3.0 Credits

This course covers essential aspects of producing including script breakdowns, budgeting, scheduling, running a production, and guiding a film through post.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

FMTV 281 Producing for Television 3.0 Credits

This course introduces students to the art and craft of producing for television and examines every aspect of the producer's role in the developing, selling, pre-production, production, post-production, delivery, and marketing of a show. Students will also learn the functions of all other jobs involved in a production.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 280 [Min Grade: D]

FMTV 282 Research, Sales and Programming 3.0 Credits

Research, sales and programming are the core of the TV industry. Students examine the selling environment; the research process; the meaning of "audience"; metrics; the sales process; market analysis; program promotion; and broadcast, cable, radio, and interactive media sales. Formats, day parts, scheduling, linkages and promotions are also explored.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 280 [Min Grade: D]

FMTV 283 Legal Basics for Filmmakers 3.0 Credits

This course is designed to provide students with knowledge of basic business and legal issues in the film industry, and to develop a working understanding of intellectual property, contracts and other issues which apply to filmmaking, to assist the student in understanding the legal issues related to creative works.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 285 Media Law and Ethics 3.0 Credits

This course is an introduction to the areas of the law, current legal issues and practical legal understandings relevant to the media industry as viewed through the day-to-day professional experience of the senior media executive and/or any individual working the industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 185 [Min Grade: D] or EAM 130 [Min Grade: D]

FMTV 290 Production Design 3.0 Credits

This course is designed to instruct in the techniques and methods of designing a set for film and television.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 291 Film & TV Internship 0.5-3.0 Credits

Students work part-time for local companies to gain professional experience.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV 292 Screen Action Choreography 3.0 Credits

In this course, a variety of different types of action scenes ranging from fistfights to car chases will be studied. Through screenings of successful action scenes and shot by shot analysis the student will learn the importance of camera placement and ample coverage. Through the combination of screenings and hands-on action arrangement the student will gain an understanding of what is involved in a successful action sequence and have to skills to execute them.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 293 Introduction to Money and the Media 3.0 Credits

This course focuses on the economics of various segments of the media business, with an emphasis on television through its past, present and future incarnations. Instruction will focus on the business models for various media, and case studies of financial decisions faced by media companies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 310 Camera Operators Workshop 3.0 Credits

A hands-on introduction to the role of the camera operator in filmmaking.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 210 [Min Grade: D]

FMTV 311 Steadicam Workshop 3.0 Credits

A hands-on introduction to the use of the Steadicam as a creative production tool. The course will cover basic theory, set-up, and operation of the Steadicam with various cameras.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 310 [Min Grade: D] or FMVD 310 [Min Grade: D]

FMTV 313 Advanced Camera 3.0 Credits

This is a hands-on course that instructs in the use of emerging technologies in the film industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 310 [Min Grade: D] or FMVD 310 [Min Grade: D]

FMTV 315 Advanced Editing 3.0 Credits

This course builds upon the intermediate skills taught in FMVD 237-Intermediate Editing. Students advance towards editing larger scale productions, address challenges to specific types of projects, and explore advanced techniques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 215 [Min Grade: D] or FMVD 237 [Min Grade: D]

FMTV 316 Cutting Trailers 3.0 Credits

View, analyze and produce theatrical trailers and promos, as well as study the marketing methods that drive these productions. The history of trailers will also be studied.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 215 [Min Grade: D] or FMVD 237 [Min Grade: D]

FMTV 319 Post Color Correction 3.0 Credits

This course is designed to introduce students to the aesthetic and technical techniques of color grading using Blackmagic Design's DaVinci Resolve. Color Grading requires students to grasp the concepts of video scopes, color theory, and the glossary of colorist terms.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 210 [Min Grade: D]

FMTV 321 Audio Post Production 3.0 Credits

Sound Post-Production is a workshop that allows students to thoroughly focus on the audio portion of editing. In this course, the individual components of sound design are presented to students in order to understand how all the components work together to form a solid soundtrack.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 220 [Min Grade: D] or MIP 233 [Min Grade: D]

FMTV 322 Directing the Score 3.0 Credits

This course will provide the filmmaker student with the communication tools to direct a film score composer.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 220 [Min Grade: D]

FMTV 340 Production Workshop 3.0 Credits

The Workshop is designed to provide advanced students with the skills, time and manpower necessary to successfully complete a larger fictional project. It offers students the experience of working with a group of people to create a collaborative vision.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 240 [Min Grade: D] or FMVD 215 [Min Grade: D]

FMTV 345 TV Series Production I 3.0 Credits

Students start with scripts for multiple episodes written in SCRP 353.

They do all pre-production including casting, location scouting, budgeting, scheduling, and production design. They then shoot every page of script, getting all the coverage needed to produce finished episodes for DUTV.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: FMTV 110 [Min Grade: D] and FMTV 115 [Min Grade: D] and FMTV 120 [Min Grade: D]

FMTV 346 TV Series Production II 3.0 Credits

Continued exploration of production techniques hones FMTV 345 TV

Production I. Students start with scripts for multiple episodes written

in SCRP 353. They do all pre-production including casting, location scouting, budgeting, scheduling, and production design. They then shoot every page of script, getting all the coverage needed to produce finished episodes for DUTV.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: FMTV 110 [Min Grade: D] and FMTV 115 [Min Grade: D] and FMTV 120 [Min Grade: D]

FMTV 350 Documentary Workshop I 3.0 Credits

This course builds on your experience in the introductory-level FMTV 250 Documentary Production course and offers an intermediate-level experience in creating a documentary. You will have 2 terms to do so – a total of six months. The first term focuses on selecting your subject and early stages of production.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 250 [Min Grade: D]

FMTV 351 Documentary Workshop II 3.0 Credits

This course is a continuation of FMTV 350, Documentary Workshop. The second term focuses on adjusting course and strategy to evolve in reaction to the subject. Multiple edits will be completed as the story is discovered and shaped.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 250 [Min Grade: D]

FMTV 355 DNews 3.0 Credits

This course teaches the basics of producing and writing news segments for magazine shows on broadcast and cable, and provides opportunities to hone those skills by realizing, developing, writing and producing multiple stories for DNEWS.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

FMTV 360 Experimental Production 3.0 Credits

This course explores experimental theses and techniques in film. Self-discovery, working through a process, and developing varied strategies are part of each student's journey that culminates in a finished experimental film.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 385 Show Business 3.0 Credits

Students in Los Angeles as part of the Drexel in LA program will learn about the business aspects of the entertainment industry through lectures and guest speakers drawn from the entertainment industry.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 391 Special Effects Makeup 3.0 Credits

Introduction to the materials and techniques used in the creation of a character or special effects make-up for film and video. Through demonstrations and hands-on projects, students learn the basics of cosmetic application and more specialized techniques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMTV 395 Junior Project I 3.0 Credits

This is a two-term course for directors to create a short junior level narrative project. Options include 5-8 page narrative films or short-form series. Students must present a one-page treatment to the instructor before admittance into the course as space is limited. The first term is focused on development, writing, and casting.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 240 [Min Grade: D] or FMVD 215 [Min Grade: D]

FMTV 396 Junior Project II 3.0 Credits

This is a two-term course for directors to create a short junior level narrative project. Options include 5-8 page narrative films or short-form series. Students must present a one-page treatment to the instructor before admittance into the course as space is limited. The second term is focused on production, post-production, and festivals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 395 [Min Grade: D]

FMTV 401 Career Prep 3.0 Credits

The course is a mix of lecture, guest visits, and presentation of work. All students work on a common foundation of assets that can be shared with potential employers or collaborators. Emphasis is on taking concrete steps toward post-grad careers as active filmmakers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

FMTV 415 TV Series Editing 3.0 Credits

This course is intended to emulate as closely as possible the experience of editing a prime-time network television series.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: FMTV 215 [Min Grade: D] or FMVD 237 [Min Grade: D]

FMTV 495 Senior Project I 3.0 Credits

The student plans and produces a long-term project during the senior year with faculty supervision. The project is expected to integrate the academic and practical knowledge the student has acquired in the area of film and TV. Term one is focused on pitching, development, and organization.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

FMTV 496 Senior Project II 3.0 Credits

The student plans and produces a long-term project during the senior year with faculty supervision. The project is expected to integrate the academic and practical knowledge the student has acquired in the area of film and TV. The second term is primarily focused on production, as students schedule and shoot their films.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 495 [Min Grade: D]

FMTV 497 Senior Project III 3.0 Credits

The student plans and produces a long-term project during the senior year with faculty supervision. The project is expected to integrate the academic and practical knowledge the student has acquired in the area of film and TV. The third section will focus on post-production, as students edit, color, and mix their films.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 496 [Min Grade: D]

FMTV I199 Independent Study in Film & TV 0.5-6.0 Credits

This course permits students to independently produce a project outside of coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV I299 Independent Study in Film & TV 0.5-6.0 Credits

This course permits students to independently produce a project outside of coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV I399 Independent Study in Film & TV 0.5-6.0 Credits

This course permits students to independently produce a project outside of coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV I499 Independent Study in Film & TV 0.5-6.0 Credits

This course permits students to independently produce a project outside of coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV T180 Special Topics in Film & TV 0.5-3.0 Credits

An in-depth exploration of subjects not currently covered in the required curriculum.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV T280 Special Topics in Film & TV 0.5-3.0 Credits

An in-depth exploration of subjects not currently covered in the required curriculum.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV T380 Special Topics in Film & TV 0.5-3.0 Credits

An in-depth exploration of subjects not currently covered in the required curriculum.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMTV T480 Special Topics in Film & TV 0.5-3.0 Credits

An in-depth exploration of subjects not currently covered in the required curriculum.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Film Studies

Courses

FMST 101 Film History I: Emergence 3.0 Credits

This course covers the emergence and evolution of film narrative in the first half of the 20th Century, as well as the core concepts of film analysis that help us understand this process. We will focus on the artistic and institutional factors contributing to the rise and decline of Classical Hollywood Cinema.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 102 Film History II: New Waves 3.0 Credits

This course investigates the liberation of film aesthetics in the latter half of the 20th Century, and how filmmakers of this era redefined their medium. Particular emphasis is placed on the "new waves" of filmmaking in Western Europe and the "New Hollywood" revolution that soon followed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMST 101 [Min Grade: D] or FMST 105 [Min Grade: D]

FMST 105 Film History & Theory I 3.0 Credits

This course covers the emergence and evolution of film narrative in the first half of the 20th Century, as well as the core concepts of film analysis that help us understand this process. The focus will be on the artistic and institutional factors contributing to the rise and decline of Classical Hollywood Cinema as well as the major theories regarding film form.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 203 Film History III: Trends 3.0 Credits

This course explores recent trends in domestic and international cinema, including the independent and multi-national filmmaking movements and ideologies that flourished around the turn of the 21st Century, as well as current developments in mainstream Hollywood cinema.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMST 102 [Min Grade: D] or FMST 205 [Min Grade: D]

FMST 204 Film Voice and Style 3.0 Credits

Imitation is the sincerest form of flattery; however, filmmakers also must develop their own unique voice and style. In this course students will undertake an in-depth study of a particular filmmaker, style, genre, or movement and submit a paper, film or project that will be the summation of their research.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 205 Film History & Theory II 3.0 Credits

In this course, we will discuss the rise of Italian Neo-Realism, the French New Wave, and the so-called "Art House" film movements that contributed to the dramatic liberation of film aesthetics in the latter half of the 20th-century and to the rise of the "New Hollywood" revolution of the late sixties and seventies. We will continue looking at key works through the lens of film theory.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMST 105 [Min Grade: D] or FMST 101 [Min Grade: D]

FMST 250 Documentary Studies 3.0 Credits

Involves intensive study of major documentary film and video works.

Covers topics including propaganda, documentary's relationship to social reality, documentary aesthetics, and the problem of "truth" in documentary.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

FMST 256 Films of Gus Van Sant 3.0 Credits

In this course the work of Gus Van Sant, starting with his feature debut in 1986 through MILK in 2008, will be examined. Class will include some lecture, but largely be discussion-driven; students are required to do additional reading and reflection papers each week.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 260 The Western 3.0 Credits

Explores the genre of the classic American Western. Students analyze a selection of Westerns to acquire an understanding of the human and cinematic values they embody.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 262 Film Comedy 3.0 Credits

Examines a broad selection of film comedies in search of principles that underlie successful film comedy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 266 The Cinematographer's Art 3.0 Credits

This course examines the craft and style of some of the greatest feature film cinematographers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 273 Social Advocacy in Cinema 3.0 Credits

This course will examine the use of film as a vehicle for social advocacy. The films screened will span decades, genres, and subject matter, and the methods of persuasion will range from the symbolic to the literal, but each film will offer significant social commentary relevant to the era in which they were made.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 290 Hollywoodland I 3.0 Credits

This course examines the history, culture and mythology of Hollywood through ten films, ranging from the silent era to the present, which the entertainment industry has made about itself. Topics to be covered include the growth of Los Angeles as a city, perceptions of stars and producers, the coming of sound in 1927 and the intersection of entertainment and politics. Films to be shown include "A Star is Born," "Sunset Boulevard," "The Front," "A Face in the Crowd," and other lesser-known works. Readings: "What Makes Sammy Run?," "The Last Tycoon," "The Day of the Locust," and "Once in a Lifetime."

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 291 Hollywoodland II 3.0 Credits

This course continues to examine the history, culture and mythology of Hollywood through films the entertainment industry has made about itself. In this course, the films looked at are primarily from the 1980s on, including "The Stunt Man," "My Favorite Year," "The Comedian" and "The Artist." Also discussed: the effect of television on the film industry, the breakup of the studio system in the late 40's-early 50's, the rise of programming created for HBO and other pay cable outlets, and changing perceptions of the business itself.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMST 290 [Min Grade: D]

FMST 293 Japanese Cinema: Kurosawa 3.0 Credits

This course will be a survey of some of the major films of Akira Kurosawa, who is widely heralded as one of the greatest filmmakers of the 20th century. His films will be looked at in the context of both Japanese cinema, especially the cinema that preceded him, and world cinema in general.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 304 Film Voice and Style 3.0 Credits

Imitation is the sincerest form of flattery; however, filmmakers also must develop their own unique voice and style. In this course students will undertake an in-depth study of a particular filmmaker, style, genre, or movement and submit a paper, film or project that will be the summation of their research.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 352 The Horror Film 3.0 Credits

This course reviews the history of the horror film and its various sub-genres and analyzes the methods employed in the most successful films. Students dissect the representation of evil and the impact these films have on culture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST 355 Contemporary Cinema 3.0 Credits

Students interpret and assess contemporary film in light of film history and aesthetics. Includes viewing and analysis of a different current film each week.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

FMST I199 Independent Study in Film Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST I299 Independent Study in Film Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST I399 Independent Study in Film Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST I499 Independent Study in Film Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST T180 Special Topics in Film Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST T280 Special Topics in Film Studies 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST T380 Special Topics in Film Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

FMST T480 Special Topics in Film Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Finance

Courses

FIN 150 Financial Literacy 4.0 Credits

Financial literacy is designed to help students understand their personal financial lives. Students will be exposed to how to make everyday decisions (e.g., rent/buy a house or lease/own a car) as well as understand credit cards, student loans, consumer purchasing decisions, insurance, and other financial decisions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

FIN 301 Introduction to Finance 4.0 Credits

Covers financial structure of a corporation, short-and long-term financial policies, sources and uses of capital funds, asset valuation, capital budgeting, and corporate growth.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 115 [Min Grade: D] or ACCT 110 [Min Grade: D]

FIN 302 Intermediate Corporate Finance 4.0 Credits

Provides an in-depth treatment of long-term financing decisions, including estimation of the cost of capital, financial leverage, dividend policy, and working capital analysis.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: C] and (STAT 201 [Min Grade: C] or STAT 205 [Min Grade: C])

FIN 321 Investment Securities & Markets 4.0 Credits

Covers stocks, bonds, other investment vehicles, and operation and regulation of the stock market.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: FIN 301 [Min Grade: C] and (STAT 202 [Min Grade: C] or STAT 206 [Min Grade: C])

FIN 323 Risk Management 4.0 Credits

Provides a fundamental understanding of risk and return, modern portfolio theory, asset pricing models, performance evaluation, and the use of derivatives to hedge and manage risk.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: FIN 321 [Min Grade: C] and (STAT 202 [Min Grade: C] or STAT 206 [Min Grade: C])

FIN 325 Financial Institutions and Markets 4.0 Credits

Covers understanding of the financial system from the money-creation process to the functioning of the Federal Reserve System to the role and management of financial institutions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: FIN 301 [Min Grade: C] and (STAT 201 [Min Grade: C] or STAT 205 [Min Grade: C])

FIN 330 Derivative Securities 4.0 Credits

The analysis and pricing of derivative securities including futures and options: applications to risk management and portfolio management.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 323 [Min Grade: C]

FIN 332 Investment Analysis 4.0 Credits

Introduces investment analysis, with particular emphasis on financial statement analysis.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: FIN 321 [Min Grade: C]

FIN 335 Entrepreneurial Finance 4.0 Credits

The purpose of the course is to bring financial management decision, tools and techniques typically applied in corporate contexts into the realm of entrepreneurship. This course presents the importance of understanding and applying entrepreneurial finance methods and tools to help ensure a successful venture.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: C]

FIN 339 Fintech 4.0 Credits

This course examines the growing FinTech industry, which is shorthand for Financial Technology. FinTech is defined as the set of new technologies and innovations in the delivery of financial services.

The course will compare these innovations to their more traditional counterparts considering both the benefits of these FinTech innovations, as well as their limitations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: C]

FIN 340 Seminar in Finance 4.0 Credits

Covers current topics and selected cases in finance.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FIN 302 [Min Grade: C] and FIN 321 [Min Grade: C] and FIN 325 [Min Grade: C]

FIN 341 Applied Portfolio Management 4.0 Credits

This course covers topics related to portfolio management. Students will learn how to analyze industries, select securities for inclusion in investment portfolios, and analyze portfolio performance. Students will participate in the management of a real investment portfolio for the duration of the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 321 [Min Grade: C]

FIN 342 Advanced Portfolio Management 4.0 Credits

This course covers advanced topics related to portfolio management. Students will learn how to analyze industries and the investment potential of individual securities in depth. They will also learn advanced methods for analyzing portfolio performance and investment strategy. Students will participate in the management of a real investment portfolio for the duration of the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 341 [Min Grade: C]

FIN 345 Mergers & Acquisitions 4.0 Credits

The purpose of this course is to guide students to a better understanding of mergers (forming a new company by combining with another firm) and acquisitions (purchasing another firm) from the perspective of a corporation. Students will analyze the process in which one firm identifies potential other firms to take over and how to calculate the value of these firms. Further, student will be exposed to additional issues that arise when corporations undertake mergers and acquisitions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: FIN 301 [Min Grade: C] and FIN 302 [Min Grade: C] and FIN 321 [Min Grade: C]

FIN 346 Global Financial Management 4.0 Credits

Examines the investment and financing strategies of multinational corporations. Covers topics including capital acquisition in the international environment, international investment borrowing, international corporate restructuring, currency swaps and recapitalizations, hedging techniques, and international risk-management instruments.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: FIN 301 [Min Grade: C]

FIN 360 Private Equity 4.0 Credits

This course covers the foundation, mechanics and strategies for Private Equity (PE) and Venture Capital transactions. Private equity is a form of intermediation that takes investors' capital and deploys it directly in a portfolio of private companies. Once the investment is made, the PE firm takes an active role in managing and monitoring the company prior to "exiting" that is, selling the firm at a premium to maximize returns of the initial shareholders (investors). The course covers the operations and organization of a PE firm from the fund formation to exit. It describes in considerable details the steps required for a successful implementation of sourcing, funding, evaluating/investing and exiting a deal. The course outlines how private equity fits into the architecture of the financial/investment world.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 321 [Min Grade: C] and FIN 325 [Min Grade: C]

FIN 420 Emerging Industry Analysis: Finance Perspective 4.0 Credits

This course will be a seminar in analyzing a selected emerging industry from a finance perspective. It will require students to apply cross-disciplinary knowledge and skills to study the industry from historical, economic, social, and legal viewpoints. The course will use an experiential approach and apply financial analysis to analyze this industry through case studies, robust class discussions, and in-depth research.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: D]

FIN 440 Credit Risk Analysis 4.0 Credits

The course focuses on the firm's credit worthiness. It is designed to allow students to experience the responsibilities of a credit analyst. Students will learn to interpret financial statements, identify a firm's financial vulnerabilities and complete a full credit risk analysis. Upon course completion, students should be able to evaluate financial statements, determine the credit strength of the firm and answer the question "do you feel comfortable lending the company money."

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: FIN 301 [Min Grade: C] and FIN 302 [Min Grade: C] and FIN 321 [Min Grade: C] and FIN 325 [Min Grade: C]

FIN 450 Personal Wealth Management 4.0 Credits

The focus of this course will be on the logic and principles underlying personal financial management as well as implementing tools and techniques for achieving sound financial goals. Topics include: investment decision analysis, consumer credit, tax planning, actuarial opportunities, financial investment strategies, and retirement planning.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 302 [Min Grade: C] and FIN 321 [Min Grade: C]

FIN I199 Independent Study in FIN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

FIN I299 Independent Study in FIN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

FIN I399 Independent Study in FIN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

FIN I499 Independent Study in FIN 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

FIN T180 Special Topics in Finance 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

FIN T280 Special Topics in Finance 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

FIN T380 Special Topics in Finance 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Prerequisites: FIN 301 [Min Grade: C]

FIN T480 Special Topics in Finance 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: FIN 301 [Min Grade: C]

First-Year Exploratory Studies

Courses

FYE 102 Academic Exploration and Planning 2.0 Credits

This course is designed to introduce students to career planning and work environments outside the classroom. Through active involvement in this class, students will begin assessing career paths as well as preparing for appropriate and constructive participation in workplace and community cultures. Students will examine published literature and learn from accomplished professionals to better understand the conventions, challenges, and expectations of the working world.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

FYE 103 Career Exploration and Planning 2.0 Credits

This course is designed to introduce students to career planning and work environments outside the classroom. Through active involvement in this class, students will begin assessing career paths as well as preparing for appropriate and constructive participation in workplace and community cultures. Students will examine published literature and learn from accomplished professionals to better understand the conventions, challenges, and expectations of the working world.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

FYE 113 Academic and Career Exploration 3.0 Credits

This course is designed to help students explore, discover, and refine academic and career interests and goals. Through active involvement in this class, students will explore campus culture, Drexel's academic offerings, the role of academics and interests outside of the classroom and the philosophies of a college education, its roles, and its purposes. Students will also make progress towards establishing and refining academic and career goals.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

FYE 211 FYES Peer Leadership Practicum 1.0 Credit

The goal of this course is to prepare students for being leaders by serving as mentors to first-year students to help them succeed as part of the First-Year Exploratory Studies (FYES) Program and support the program outcomes of FYES. This course covers the fundamental skills students will need to be supportive resources to first year students. This seminar will focus on developing the necessary leadership and communication skills that will be useful in their mentoring role as well as in other settings.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

FYE T280 Special Topics in First-Year Exploratory Studies 0.0-12.0 Credits

Specific topics and foci for this course will be decided upon by faculty and will vary from term to term.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

Food Science

Courses

FDSC 100 ServSafe 1.0 Credit

This course is designed for students who will be involved in food service, either at the institutional or commercial levels. It is also of interest to students who desire practical applications of food and kitchen sanitation and related environmental studies. This course concentrates on measures that must be taken to protect consumers from foodborne diseases and other hazards that can be caused from eating those foods. ServSafe Certification exam through the National Restaurant Association is administered.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

FDSC 120 Food and the Senses 3.0 Credits

This course is designed to help students develop their palates through understanding the different approaches to the sensory properties of food. By starting with simple ingredients and building in complexity of flavor profile, students will be introduced to the field of sensory evaluation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

FDSC 154 Science of Food and Cooking 4.0 Credits

Covers the physical and chemical characteristics of food components including sugars, starches, proteins, and fats and their changes during preparation and cooking. Also considers the interaction of components in foods such as eggs, dairy products, meats, and cereals and the formulation of baked goods. Methods of sensory evaluation are included.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

FDSC 270 Microbial Food Safety and Sanitation 4.0 Credits

Covers topics including types, sources and growth of microorganisms in food; food spoilage; foodborne infections and intoxications and their prevention; chemical contamination; pest control and sanitation standards in foodservice operations; and FDA and local regulations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

FDSC 306 Food Composition & Behavior 3.0 Credits

This course examines the composition of foods, and chemical and physical changes in food components that occur during food preparation and processing.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: FDSC 154 [Min Grade: D]

FDSC 350 Experimental Foods: Product Development 3.0 Credits

Covers the ingredients used in the development of new food products and the process of developing new food products. Objective and subjective testing procedures are demonstrated in laboratory. Students propose and carry out a food development project.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: FDSC 154 [Min Grade: D]

FDSC 401 Modernist Cuisine 3.0 Credits

The nexus of cuisine, gastronomy, and food science. This course explores the history, techniques, science, creative inspiration, and the new equipment that encompasses the contemporary aspect of modern cuisine (molecular gastronomy). A broad range of foods will be prepared to facilitate a familiarization with the range of modernist cuisine.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CAS or major is CLSC or major is CULA or major is HOSP.

Cannot enroll if classification is Freshman

Prerequisites: CULA 115 [Min Grade: D] or CULA 120 [Min Grade: D]

FDSC 410 The Science of Wine 3.0 Credits

Wine production is a very interdisciplinary field, at the crossing of agronomy (grape growing), chemistry, microbiology (wine making), sensory science (wine tasting) and cultural studies. The class will discuss the application of each discipline to wine production, with an emphasis on how scientific knowledge and technologies have impacted wine making and wine consumption around the world, and what empirical knowledge and practices developed over centuries has brought to science. Some of the key concepts developed during the course will be experienced through tasting of synthetic solutions and wines. A field trip to local wineries will also be organized. Students must be 21 years or older prior to the first day of class.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

FDSC 450 Food Microbiology 3.0 Credits

Covers application of microbiological principles to food safety, production, nutrient quality, and spoilage.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: FDSC 270 [Min Grade: D]

FDSC 451 Food Microbiology Laboratory 2.0 Credits

Teaches laboratory techniques of food microbiology with emphasis on food production and quality assurance procedures. Should be taken with FDSC 450 concurrently. Please see the department for more information.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: FDSC 270 [Min Grade: D] (Can be taken Concurrently)

Corequisite: FDSC 450

FDSC 454 Microbiology & Chemistry of Food Safety 3.0 Credits

Provides advanced study of chemicals of food safety significance, with emphasis on the effects of compounds normal to food. Includes regulations and controls.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

FDSC 456 Food Preservation Processes 3.0 Credits

Covers fundamentals of food processing and preservation, including techniques and methods employed to extend the useful life of food products, and the significance of changes in the composition of foods due to the processing, enzymatic activity, microbial action and chemical change.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 215 [Min Grade: D] or CHEM 242 [Min Grade: D]

FDSC 458 Nutritional Impact of Food Processing Methods 3.0 Credits

Covers the effect of processing on foods, emphasizing nutritional and chemical aspects. Includes topics such as synthetic foods, food additives, current food processing methods, nutritional policy, consumer dietary patterns, and food product trends.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: (FDSC 154 [Min Grade: D] and NFS 215 [Min Grade: D])

FDSC 460 Food Chemistry 3.0 Credits

Covers physicochemical properties of food constituents, including the application of underlying scientific principles to the processing of foods and biological materials.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 242 [Min Grade: D] and CHEM 103 [Min Grade: D]

FDSC 461 Food Analysis 3.0 Credits

Provides analysis of foods and biological samples, with emphasis on their chemical composition and physicochemical properties.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 103 [Min Grade: D] and CHEM 242 [Min Grade: D]

FDSC 468 Functional Foods 3.0 Credits

This course covers a range of functional foods and food components, their health conferring benefits, mechanisms of actions, and possible applications in the food industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: FDSC 154 [Min Grade: D] and NFS 215 [Min Grade: D]

FDSC 487 Food Engineering 3.0 Credits

This course deals with understanding and implementing basic engineering concepts to solve quantitative problems in food engineering and processing. Concepts such as units and dimension, mass and energy balance, heat transfer, mass transfer, psychometrics and fluid flow will be covered.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 175 [Min Grade: D] and MATH 102 [Min Grade: D]

FDSC 490 Seminar in Food Science 1.0 Credit

Current topics in food science will be studies with presentations by invited speakers and students. This course may be repeated for credit.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 4 credits

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

FDSC I199 Independent Study in Food Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC I299 Independent Study in Food Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC I399 Independent Study in Food Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC I499 Independent Study in Food Science 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC T180 Special Topics in Food Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC T280 Special Topics in Food Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC T380 Special Topics in Food Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

FDSC T480 Special Topics in Food Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

French

Courses

FREN 101 French I 4.0 Credits

Introductory French. Includes listening, speaking, reading, and writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APFX N or APWFR 0

FREN 102 French II 4.0 Credits

Continues FREN 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: FREN 101 [Min Grade: D] or APWFR 180

FREN 103 French III 4.0 Credits

Continues FREN 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: FREN 102 [Min Grade: D] or APWFR 251

FREN 201 French IV 4.0 Credits

Intermediate French. Includes grammar review, listening, speaking, and reading, with individual audiolingual practice.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: FREN 103 [Min Grade: D] or APWFR 331

FREN 202 French V 4.0 Credits

Continues FREN 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: FREN 201 [Min Grade: D]

FREN 310 [WI] Advanced Writing and Speaking 4.0 Credits

French 310 provides advanced practice in written and oral communication, including journalistic, professional, and creative writing. Examines contemporary cultural contexts through media and news. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: FREN 202 [Min Grade: D]

FREN 320 Introduction to Language for the Professions 4.0 Credits

This course provides an introduction to communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of this course may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 330 Introduction to Identities and Communities 4.0 Credits

This course provides an introduction to the analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 340 Introduction to Power and Resistance 4.0 Credits

This course provides an introduction to the analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 350 Introduction to Language, Media, and Society 4.0 Credits

This course provides an introduction to the role of language and media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 410 [WI] Advanced Grammar and Translation 4.0 Credits

This course provides advanced grammar instruction and fosters translation and communication skills within a contemporary cultural context. The content of this course may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 420 Advanced Studies in Language for the Professions 4.0 Credits

French 420 provides advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of FREN 420 may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 430 Advanced Studies in Identities and Communities 4.0 Credits

French 430 provides an advanced analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of FREN 430 may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 440 Advanced Studies in Power and Resistance 4.0 Credits

French 440 provides an advanced analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of FREN 440 may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN 450 Advanced Studies in Language, Media, and Society 4.0 Credits

French 450 provides an advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. The content of FREN 450 may change every term it is offered and is repeatable for credit. Taught in French.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: FREN 310 [Min Grade: D]

FREN I199 Independent Study in FREN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN I299 Independent Study in FREN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN I399 Independent Study in FREN 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN I499 Independent Study in FREN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN T180 Special Topics in French 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN T280 Special Topics in French 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN T380 Special Topics in French 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

FREN T480 Special Topics in French 0.5-12.0 Credits

Recommended for French minors and for students with proficiency status.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 96 credits

Game Art & Production

Courses

GMAP 101 Game Design Lab I 3.0 Credits

This course will cover an overview of fundamental image creation and editing tools, like Adobe Photoshop and Illustrator, in the framework of creative experimentation with analog game design exercises using a combination of digital and physical fabrication skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 102 Game Design Lab II 3.0 Credits

This course will cover an overview of the fundamental design skills of digital games using a variety of game engines, including interactive text, 2d and 3d game engines, and grey-boxing with primitive shapes in-engine and modeling tools, exploiting the systems and existing asset libraries available for rapid experimentation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 121 Overview of Game Playtesting 1.0 Credit

This course introduces various topics under the labels of user research (UR), user experience (UX), usability testing, and quality assurance (QA) software testing, and related fields, as they apply to game development. Students will become familiar with general approaches and techniques through in-class lectures and participation in practical testing of active game projects by student teams in other courses.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 123 Basic Portfolio 1.0 Credit

This course focuses on the basics of portfolio creation, editing, and presentation while examining portfolio examples of current professionals in a variety of game development roles that can serve as models for student portfolio development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 211 Game User Interface Design 3.0 Credits

This course covers the design, prototyping, and evaluation of graphical user interfaces for digital games by exploring topics such as human capabilities, input technologies, heuristic evaluation, and design methods, principles and rules. Students will learn how to design aesthetically pleasing and effective game user interfaces, covering important design principles (learnability, visibility, error prevention, efficiency, and visual design) and the human capabilities that motivate them (including perception, motor skills, color vision, attention, and human error).

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 214 Concept Art for Games 3.0 Credits

This course introduces students to the process of designing and creating concept art for games as part of the overall development pipeline. Using a variety of techniques including sketching, photo and kit-bashing, and overpainting, students will learn to ideate and communicate concepts and prepare materials for subsequent stages of asset production.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 231 Scripting for Game Design 3.0 Credits

This course explores modern game engine scripting languages that are event-driven, control the art assets, provide multiplayer communication, and database access.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: CS 140 [Min Grade: D] or CS 150 [Min Grade: D] or CS 171 [Min Grade: D] or DIGM 131 [Min Grade: D]

GMAP 246 Advanced Portfolio 1.0 Credit

This course focuses on building skills for the career-long practice of producing and maintaining a professional creative portfolio while allowing the students the opportunity to create or refine additional student-driven portfolio work that synthesizes their skills and experience from direct class assignments in their other coursework.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 4 times for 5 credits

Prerequisites: GMAP 123 [Min Grade: D]

GMAP 260 Overview of Computer Gaming 3.0 Credits

This course presents an overview of computer gaming, including its history, its foundation in traditional games and its contemporary forms. The relationship among genres, platforms and audiences are examined and critical evaluation skills are developed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

GMAP 301 Game History 3.0 Credits

This course explores the history of video games from their analog roots and examines the video game industry from the earliest arcade entertainments to modern digital distribution networks. It will investigate the people who made technical, design, and business decisions that have had lasting, industry-wide effects that are still with us today.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 321 Advanced Game Playtesting 1.0 Credit

In this course students will play the role of a game user researcher (GUR) and learn how to conduct more advanced and rigorous playtests and how to run professional-quality studies that support a better understanding of player behavior and identify usability issues. Students will develop and run a study using an existing game project.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 121 [Min Grade: D]

GMAP 340 Entrepreneurial Game Studio Incubator Lab Project 1.0 Credit

In this course, students who are active members of a team in Drexel's Entrepreneurial Game Studio, produce a professional-level, team-based, interactive project in a real-world production environment. It requires a project that demonstrates the integration of the student's academic and practical knowledge of the field as well as one or more specializations. Students refine their understanding of execution, delivery, and presentation of quality digital media production through implementation of professional best practices, and perfect their written, oral, and visual presentation skills through the power of collaboration, teamwork, and shared missions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP 341 Serious Games 3.0 Credits

This course explores development of games for education. Goals include understanding and appreciating the psychology of play and the principles of game design in developing educational games.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 377 [Min Grade: D]

GMAP 342 Experimental Games 3.0 Credits

This course explores new ideas and innovative gameplay through constraints of team size and shortened development cycles.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 377 [Min Grade: D]

GMAP 345 Game Development Foundations 3.0 Credits

This course introduces students to the computer game design process.

Students also learn how the individual skills of modeling, animation, scripting, interface design and storytelling are coordinated to produce interactive media experiences.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (ANIM 141 [Min Grade: D] or ANIM 145 [Min Grade: D] or CS 265 [Min Grade: D]) and GMAP 260 [Min Grade: D]

GMAP 360 Game Design from the Player's Perspective 3.0 Credits

This course is an introduction to game design from a player's perspective. Students will experience a variety of games and analyze them with respect to the use of game design principles and their consequences for game play.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

GMAP 363 Architecture & Game Level Design Workshop 3.0 Credits

This course is an interdisciplinary look at the overlap between architecture and game-level design. Students will engage with the construction of interactive spaces in both the physical and game worlds using form, space, and color to design virtual environments to guide players, tell stories, facilitate actions, and evoke emotions. The course will reinforce important architectural design concepts in the realm of game-level design and introduce new analysis techniques for wayfinding and visibility. Game design tools will also be introduced to architecture students or reinforced to game design students. The course assignments will be individual, and the final project will be group-based which expects students to synthesize their understanding of architectural and level design concepts and skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 102 [Min Grade: D] or ARCH 134 [Min Grade: D] or ARCH 224 [Min Grade: D]

GMAP 367 Character Animation for Gaming 3.0 Credits

This course focuses on character animation techniques for real-time graphics, including cyclical animations, procedural animation, motion capture and integration into game engines.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 231 [Min Grade: D] (Can be taken Concurrently) and ANIM 211 [Min Grade: D] and (GMAP 345 [Min Grade: D] or CS 345 [Min Grade: D])

GMAP 368 Artificial Intelligence in Gaming 3.0 Credits

This course teaches the use and integration of state machines into game engines, as well as other methods for creating and controlling Non Player Characters (NPCs).

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (GMAP 345 [Min Grade: D] or CS 345 [Min Grade: D]) and (CS 172 [Min Grade: D] or GMAP 231 [Min Grade: D])

GMAP 369 Mobile Game Development 3.0 Credits

This course explores development of games for mobile platforms.

Specifically addressed will be platform issues such as processor speed, screen resolution, user interface and memory.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 345 [Min Grade: D] or CS 345 [Min Grade: D]

GMAP 377 Game Development: Workshop I 3.0 Credits

This course examines the roles of the executive producer and the development team in taking a computer game from concept to design document through production. Students will work in small teams to research and plan a production effort that results in a pre-production prototype.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 345 [Min Grade: D] or CS 345 [Min Grade: D]

GMAP 378 Game Development: Workshop II 3.0 Credits

This course provides an environment in which the pre-production of GMAP 377 Game Development: Workshop I can be taken through a full production effort. Students work in small teams to bring a selected prototype to completion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 377 [Min Grade: D]

GMAP 395 Advanced Game Design and Production 3.0 Credits

This course will step through the various modules of game engines, enabling students to gain access to real-time shaders and materials, particle systems and animation techniques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 345 [Min Grade: D] or CS 345 [Min Grade: D]

GMAP 464 Audio for Games 3.0 Credits

This course is an advanced introduction into the use of industry standard middleware tools and game engine for designing game audio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: GMAP 231 [Min Grade: D] or GMAP 345 [Min Grade: D] or CS 345 [Min Grade: D]

GMAP I199 Independent Study in Game Art and Production 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP I299 Independent Study in Game Art and Production 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP I399 Independent Study in Game Art and Production 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP I499 Independent Study in Game Art and Production 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP T180 Special Topics in Game Art and Production 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP T280 Special Topics in Game Art and Production 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP T380 Special Topics in Game Art and Production 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

GMAP T480 Special Topics in Game Art and Production 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

General Business

Courses

BUSN 101 Foundations of Business I 4.0 Credits

Introduces the fundamental structures and functions of business organizations and the opportunities for career advancement within such organizations. Develops relevant business skills for professional success, emphasizing teams, communication, and real-world examples.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman or Sophomore .

BUSN 102 Foundations of Business II 4.0 Credits

Exposes students to the external environments (local, national, and international) within which business organizations operate. Continues to build on important managerial and communication issues.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman or Sophomore .

Prerequisites: BUSN 101 [Min Grade: D]

BUSN 103 Advanced First Year Business Seminar 2.0 Credits

Continues to address topics and professional development introduced in the Foundations of Business I and II courses. Further develops student's knowledge and skills in a variety of areas, which may include effective boardroom presentations, individual financial strategy, leadership issues, corporate communication, career management and decision making.

College/Department: LeBow College of Business

Repeat Status: Can be repeated 2 times for 4 credits

BUSN 105 Applied Business Analysis 3.0 Credits

This course is an introductory course in using spreadsheets as a tool to solve business problems. Through a series of hands-on exercises, the student will create, edit, and format worksheets while addressing problems in each of the functional areas including: marketing, accounting, finance, sports management. Topics include: creating, saving, retrieving, formatting, editing, printing, creating formulas, using functions, naming cells and ranges, creating tables, creating charts, defining range names, validating data, sorting and filtering data, maintaining file organization, and using templates. Each week, students will apply their knowledge of spreadsheets to explore business frameworks and approaches which will aid them in their co-op's and higher-level coursework.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BUSN 111 Foundations for Business 4.0 Credits

Provides an integrated foundation for future business courses. Orients transfer and evening students to the main disciplines and functions of business, in both the internal and external environments; enables hands-on analysis of information and decision-making in a competitive arena; and provides an opportunity to develop teamwork and to enhance communication, presentation, and other management skills. This course cannot be used as part of your degree requirements if you were enrolled in the BUSN 101 Foundations of Business I and BUSN 102 Foundations of Business II sequence.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

BUSN 112 [WI] Career Management Business Residency 4.0 Credits

Provides students with a practical framework for career planning through the use of career assessments, interactive exercises, and personal reflections. Students will investigate viable career paths, analyze internal and external motivators, and enhance their communication, leadership, and presentation skills through an online simulation, electronic portfolio, and employer site visit.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BUSN 211 Peer Mentoring & Leadership Practicum 2.0 Credits

This course is designed to highlight and develop mentoring and leadership skills required to guide and assist incoming freshmen in their transition to college. Students will develop critical thinking as it relates to leadership and the integration of those skills. The course is experiential in nature as students will immediately look to apply knowledge gained within the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Sophomore.

Prerequisites: UNIV B101 [Min Grade: B]

BUSN 350 Thinking (A)Broad - An Intensive Course Abroad in Business 4.0 Credits

This course will provide students with a one-week global experience as an intensive course abroad (ICA). It will be combined with a pre-term or post-term program instruction during the term offered. Course themes will vary depending upon the location and topic of focus, as well as with any partnering institutions, universities or companies. Faculty approval is required and students must apply through the Drexel Education Abroad website. There will be a program fee for the travel portion of the course. This course can be taken as an Honors option with departmental approval. Examples include Global Projects and Teams in Germany, Global Sustainable Leadership in the UK, and Global Project Leadership in The Netherlands.

College/Department: LeBow College of Business

Repeat Status: Can be repeated 2 times for 12 credits

Prerequisites: (BUSN 101 [Min Grade: D] and BUSN 102 [Min Grade: D]) or BUSN 111 [Min Grade: D]

BUSN 370 Healthcare Value Creation 4.0 Credits

This course presents the principles and dynamics of the U.S. healthcare industry through the business lens of industry, patients, providers, healthcare facilities and technology. The class will be using key readings, case studies, guest speakers, and didactic lectures. Students will analyze the institutional, social, economic/financial and political forces in the field of healthcare and modern healthcare. This course introduces an overview to the healthcare stakeholders in a variety of settings. Students will also examine current trends in modern healthcare delivery. All students in all disciplines have the ability to add to the dynamic classroom discussions and debates.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BUSN 430 Mentoring & Leadership Development Practicum 2.0 Credits

The role of the Peer Mentor is one of a role-model, tutor and trusted colleague. This course is designed to teach mentoring skills required by Teaching Assistants in BUSN 101 and for early career managers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FIN 301 [Min Grade: B] and ACCT 115 [Min Grade: B] and ACCT 116 [Min Grade: B]

BUSN 431 Mentoring & Leadership Development Practicum 2.0 Credits

The role of the peer mentor is one of a role model, tutor and trusted colleague. This course is designed to teach mentoring skills required by Teaching Assistants in BUSN 102 and for early career managers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FIN 301 [Min Grade: B] and ACCT 115 [Min Grade: B] and ACCT 116 [Min Grade: B]

BUSN 432 Leadership & Mentoring Practicum 4.0 Credits

The role of the TA is one of a role-model, tutor and trusted colleague.

This course is designed to guide and assist upperclassmen as they support BUSN 101/102 students in their initial journey into business as well as provide leadership insights and experiences that highlight these secondary leadership roles.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: FIN 301 [Min Grade: B] and ACCT 115 [Min Grade: B] and ACCT 116 [Min Grade: B]

BUSN I199 Independent Study in General Business 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BUSN I299 Independent Study in General Business 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BUSN I399 Independent Study in General Business 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BUSN I499 Independent Study in General Business 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

BUSN T180 Special Topics in BUSN 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BUSN T280 Special Topics in BUSN 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BUSN T380 Special Topics in BUSN 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BUSN T480 Special Topics in BUSN 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

General Studies

Courses

GSTD 100 Strategies for Academic Success 1.0 Credit

This course explores the learning process to assist students in achieving academic success. Self-assessments, personal reflection, and relevant electronic resources are used to foster students' development as self-directed learners. Topics include: study skills, learning strategies, personal development, academic planning and tracking, visioning, and goal setting. The goal of this course is to help improve students' efficacy in the areas of academic self-management, self-direction, and resource utilization.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

GSTD 111 Boots to Books: Transitioning from Active Duty to Academia 3.0 Credits

This course prepares veteran undergraduate students for the transition, expectations and challenges of transitioning to college life. This course explores the learning process to assist students in achieving academic success. Self-assessments, personal reflection, and relevant electronic resources are used to foster students' development as self-directed learners. Topics include study skills, learning strategies, personal development, academic planning and tracking, wellness, university and veteran resources, visioning and goal setting. The purpose of this course is to help improve students' efficacy in the areas of academic self-management, self-direction, wellness and resource utilization.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman.

GSTD 200 Lifelong Learning Theory & Practice 3.0 Credits

Introduces theories and practical skills necessary for successful learning in a variety of environments. Covers self-efficacy development, autonomous learning, critical thinking, critical reading, learning to learn, effective researching and writing, goal setting theories, and practical strategies necessary to support learning in university, career, and personal contexts.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

GSTD 201 [WI] Professional Applications of Emotional Intelligence 3.0 Credits

This course will examine emotional intelligence as applied through interpersonal communication. Particular emphasis will be placed on emotional intelligence in the workplace and in leadership. The main objective is to make students aware that intelligence and technological expertise are not enough to be successful in the workplace.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

GSTD 302 Customer Service Theory & Practice 3.0 Credits

This course focuses on the theory of customer service and the practices that "best in class" companies apply to differentiate themselves from the competition. The course includes practical information and activities designed to teach students how to respond to customers, resolve problems, and provide quality customer service.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

GSTD 303 Client Relations Management 3.0 Credits

This course introduces the skills that facilitate and enhance client relations management. Topics covered include building a trusting relationship, evaluating and managing expectations and needs, managing conflict, understanding the client's perspective, customer life cycle, consulting, serving public sector versus private sector clients, managing client relations managers, and ethical issues.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

GSTD 360 Applied Organizational Research 3.0 Credits

This course presents a systematic approach to managerial methods of conducting organizational research and analysis. Students will undergo the management research process of specifying the problem; translating the problem into specific research questions; designing the data collection methodology; collecting, analyzing and interpreting data; and reporting the research results and recommendations.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

GSTD 491 Senior Project in General Studies 3.0 Credits

The senior project covers planning and execution of a capstone project that integrates the academic and practical knowledge acquired in the student's course of study. Students will complete a research proposal, a research project or an integrative portfolio.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GSTD and classification is Senior.

GSTD I199 Independent Study in General Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

GSTD I299 Independent Study in General Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

GSTD I399 Independent Study in General Studies 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

GSTD I499 Independent Study in General Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

GSTD T180 Special Topics in General Studies 1.0-4.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated 11 times for 12 credits

GSTD T280 Special Topics in General Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

GSTD T380 Special Topics in General Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

GSTD T480 Special Topics in General Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

Geoscience

Courses

GEO 101 Physical Geology 4.0 Credits

This course is an introduction to geology emphasizing the role of plate tectonics. Topics include formation of minerals, igneous, sedimentary, and metamorphic rocks, volcanoes, earthquakes, depositional environments, and geological hazards. Labs focus on mineral and rock identification, map skills, and 3D visualization.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 102 History of the Earth 4.0 Credits

The history of the earth and the evolution of life on earth are examined. Geological and biological processes that allow us to reconstruct the past are emphasized. Topics include geologic time, plate tectonics, and the nature of the fossil record. Lab exercises include hands-on fossil identification and the use of fossils as tools to explore the history of the earth.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 103 Introduction to Field Methods in Earth Science 2.0 Credits

This is an introductory course in earth science that provides experience with the fundamental skills and methods for the field study of the earth and earth processes.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 111 Natural Disasters 3.0 Credits

This course is an overview of natural disasters and hazards. Students will learn the geology behind major natural disasters and how society best mitigates risk. Topics include volcanoes, earthquakes, tsunamis, hurricanes, and floods. Students will review case studies of past (and any concurrent) natural disasters through journal articles and media coverage.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 201 [WI] Earth Systems Processes 3.0 Credits

Students will examine local and global environmental changes from an earth systems perspective. Important concepts include feed-back loops, tipping points, the "butterfly effect," and geological time. From a geological perspective, students will examine: natural and anthropogenic climate change; soil degradation; sea-level rise; plate tectonics; and natural hazards, such as coastal storms, levee breaks, earthquakes, tsunamis, landslides and more.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 205 Dinosaurs and Their World 3.0 Credits

An introduction to dinosaur paleontology, this course focuses on the scientific method as applied to dinosaur studies. Topics include dinosaur evolution, the history of dinosaur research, an overview of dinosaurs, and birds as living dinosaurs. This is suitable for all majors.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 207 Introduction to Oceanography 3.0 Credits

This course provides a topics-based approach to the field of Oceanography and its disciplines. Provides a solid understanding of the discipline of oceanography and a foundation to pursue further advanced topics in oceanography or to learn about how our planet works.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 215 Mineralogy 4.0 Credits

In this course, students will study mineralogy and optical mineralogy, with a focus on describing minerals within their geologic context. The foundations of mineralogy will be covered, including: crystallography, chemical bonding, controls on mineral structure, mineral stability, and crystal growth. Students will learn physical and chemical analytical methods to examine mineral composition and structure. Hand-sample identification will be emphasized in the laboratory component. In the field, students will learn to identify rock-forming minerals within the context of historical geological events.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 101 [Min Grade: D]

GEO 301 Advanced Field Methods in Earth Science 3.0 Credits

This skills course focuses on fundamental and commonly used geoscience field techniques. Students will learn surface and subsurface mapping, coring techniques and core analysis, remote sensing techniques, and sampling techniques. This course builds on GEO 103 and prepares students for advanced field studies.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]) and GEO 103 [Min Grade: D]

GEO 306 Environmental Geology 4.0 Credits

Students in this course will focus on interactions between humans and the geosphere. Students will develop an understanding of a broad range of natural and human-induced geohazards, from earthquakes and tsunamis to industrial pollution and anthropogenic climate change. Regional examples will be emphasized, such environmental industrial contamination and remediation efforts in the Delaware Valley and hydraulic fracturing for natural gas in Pennsylvania.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]

GEO 309 Geochemistry 4.0 Credits

This course is a topics-based approach to the field of geochemistry with emphasis on aqueous systems, both marine and freshwater. Topics include: composition of the earth and oceans; chemical equilibrium; solubility; thermodynamics; oxidation-reduction reactions; organic geochemistry; isotope geochemistry; contaminant geochemistry; applications of geochemistry; consequences of weathering; composition of surface waters; geochemical modeling; and selected areas of interest.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 103 [Min Grade: D] or CHEM 123 [Min Grade: D] or CHEM 102 [Min Grade: D]

GEO 312 Sedimentology and Stratigraphy 3.5 Credits

This course focuses on clastic and carbonate depositional environments and processes, stratigraphic principles, the construction of the stratigraphic columns, and sedimentary basin analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]

GEO 320 Invertebrate Paleobiology and Paleoecology 3.5 Credits

This course focuses on the evolution, ecology, and environmental interactions of invertebrates with hard parts from the Cambrian period to today. Topics include paleoecology, paleodiversity, mass extinction, taphonomy, biostratigraphy, and taxonomy. Natural selection, functional morphology, extinction and adaption are emphasized.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D] or BIO 141 [Min Grade: D] or BIO 109 [Min Grade: D]

GEO 322 Vertebrate Paleontology 4.0 Credits

This course focuses on the evolution of vertebrates from the Cambrian Period to today. Topics include cartilaginous and bony fishes, amphibians, turtles, crocodiles, pterosaurs, birds, and mammals. Natural selection, cladistics, functional morphology, adaptation and extinction are emphasized.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: BIO 124 [Min Grade: D] or BIO 132 [Min Grade: D] or (BIO 109 [Min Grade: D] or BIO 141 [Min Grade: D])

GEO 325 Structural Geology 5.0 Credits

Students in this course will explore the physical and geometric structures within the earth's crust and the ways in which these structures reflect natural history. Mapping techniques and methods of describing stress and strain in rocks will be covered, while emphasizing visualization of three-dimensional relationships. Students will learn practical analytical techniques and foundational field skill. This course is at the heart of field geology and will prepare students for a successful summer field camp experience.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]

GEO 342 Geomorphology 4.0 Credits

Students in this course will learn how landscapes originate and develop over time, through an integrative approach that covers all of the major constructional and erosional processes. The fundamentals of sediment entrainment, transport, and deposition will be applied to landform evolution. Students will learn about the importance of geomorphology in environmental geology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]

GEO 346 Coastal Geology 4.0 Credits

This course will furnish an understanding of the tectonic framework, hydrographic regime, climatic setting, and geological components that determine the morphology and behavior of coastlines. The response of coasts to changes in sea level, sediment supply, and human development will be examined. Fundamental geomorphic processes, such as wave-driven currents and tidal dynamics, will be covered.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]

GEO 348 Oceanography 4.0 Credits

This course provides a topics-based approach to the field of oceanography with special emphasis on marine geology and geochemistry. Provides a solid understanding of the discipline of oceanography and a foundation to pursue further advanced topics in oceanography.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CHEM 101 [Min Grade: D] or CAEE 212 [Min Grade: D]

GEO 350 Volcanology 3.0 Credits

Volcanology is a study of the origin, properties, and processes involved in the formation and eruption of volcanoes. The student taking this course will be introduced to the various types of volcanism on Earth and in the Solar System, methods of volcano monitoring, and human and environmental impacts of volcanic eruptions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GEO 375 Field Camp 3.0 Credits

This is a one-week field course designed to prepare students for successful careers in the geosciences. Course emphasizes scientific methodology and traditional techniques that provide a strong foundation for the broad range of modern technologies used by today's industry, academic, government and private workforces. Students learn to collect field observations and measurements, compile detailed rock descriptions, measure stratigraphic sections, and construct geologic maps and cross sections. This course is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: GEO 101 [Min Grade: D] and GEO 103 [Min Grade: D]

GEO 401 Igneous and Metamorphic Petrology 5.0 Credits

Students in this course will explore the processes that control the genesis of igneous and metamorphic rocks, with emphasis on igneous processes. In the laboratory portion of the course students will learn identification and classification of petrographic specimens. Students will gain hand-on experience identifying igneous and metamorphic rocks in the field.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D]) and CHEM 102 [Min Grade: D] and GEO 215 [Min Grade: D]

GEO 412 Geology of Groundwater 4.0 Credits

Students in this course will learn the theoretical basis and practical techniques of hydrogeology. The significance of groundwater for ecosystem health, including human well-being, will be emphasized. Students will learn commonly used industrial techniques, such as hydrograph analyses, borehole measurements, and stream gauge techniques and will gain hands-on experience assessing hydrogeology in the field.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is AE or major is CIVE or major is ENVE

Prerequisites: CHEM 102 [Min Grade: D] and (MATH 239 [Min Grade: D] or MATH 123 [Min Grade: D])

GEO 418 Geophysics 4.0 Credits

Students in this course will learn geophysical concepts and practical (and marketable) skills for using geophysical techniques in the field. Students will gain hands-on experience in seismic profiling, borehole logging and other techniques important in environmental consulting and the energy industry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 239 [Min Grade: D] or MATH 123 [Min Grade: D]) and (PHYS 153 [Min Grade: D] or PHYS 102 [Min Grade: D])

GEO 444 Plate Tectonics 3.0 Credits

Plate tectonics is one of the Earth Sciences' foundational theories, underlying much of our understanding on the origin and distribution of volcanoes, earthquakes, ocean basins, and mountain chains. This course discusses vector analysis approaches as they apply to plate tectonics theory, plate rotation poles, analysis of triple-junction stability, mantle flow, plate motion reconstructions, and the driving forces of plate tectonics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GEO 101 [Min Grade: D] or CAEE 212 [Min Grade: D] and MATH 101 [Min Grade: D] or MATH 121 [Min Grade: D]

GEO 497 Research 0.0-12.0 Credits

Students pursue a specific area of research in geoscience under the direction of a geoscience faculty member. Faculty permission required.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO I199 Independent Study in GEO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO I299 Independent Study in GEO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO I399 Independent Study in GEO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO I499 Independent Study in GEO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO T180 Special Topics in Geoscience 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO T280 Special Topics in Geoscience 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO T380 Special Topics in Geoscience 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GEO T480 Special Topics in Geoscience 0.0-12.0 Credits

In this course, students will explore specific areas not covered in the regularly offered Geoscience courses. The course will be taught by teaching faculty members of the Geoscience Program, Drexel professors who are members of the Geoscience Faculty Committee, or by visiting professors.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

German

Courses

GER 101 German I 4.0 Credits

Introductory German. Includes listening, reading, writing, and speaking. Entrance exam required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APGX N or APWGR 0

GER 102 German II 4.0 Credits

Continues GER 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GER 101 [Min Grade: D] or APWGR 231

GER 103 German III 4.0 Credits

Continues GER 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GER 102 [Min Grade: D]

GER 201 German IV 4.0 Credits

Intermediate German. Includes grammar review, listening, speaking, and reading. Recommended for students who wish to attain oral competence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GER 103 [Min Grade: D]

GER 202 German V 4.0 Credits

Continues GER 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GER 201 [Min Grade: D]

GER 310 [WI] Advanced Writing and Speaking 4.0 Credits

This course provides advanced practice in written and oral communication, including journalistic, professional, and creative writing. Examines contemporary cultural contexts through media and news. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: GER 202 [Min Grade: C]

GER 320 Introduction to Language for the Professions 3.0 Credits

This course provides an introduction to communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

GER 330 Introduction to Identities and Communities 3.0 Credits

This course provides an introduction to the analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: C]

GER 340 Introduction to Power and Resistance 3.0 Credits

This course provides an introduction to the analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: C]

GER 350 Introduction to Language, Media, and Society 3.0 Credits

This course provides an introduction to the role of language and media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: C]

GER 410 [WI] Advanced Grammar and Translation 3.0 Credits

German 410 provides advanced grammar instruction and fosters translation and communication skills within a contemporary cultural context. The content of GER 410 may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: C] and (GER 320 [Min Grade: C] or GER 330 [Min Grade: C] or GER 340 [Min Grade: C] or GER 350 [Min Grade: C])

GER 420 Advanced Studies in Language for the Professions 3.0 Credits

This course provides advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: D]

GER 430 Advanced Studies in Identities and Communities 3.0 Credits

This course provides an advanced analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: D]

GER 440 Advanced Studies in Power and Resistance 3.0 Credits

This course provides an advanced analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: D]

GER 450 Advanced Studies in Language, Media, and Society 3.0 Credits

This course provides an advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit. Taught in German.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: GER 310 [Min Grade: D]

GER I199 Independent Study in GER 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER I299 Independent Study in GER 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER I399 Independent Study in GER 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER I499 Independent Study in GER 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER T180 Special Topics in German 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER T280 Special Topics in German 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER T380 Special Topics in German 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

GER T480 Special Topics in German 0.5-12.0 Credits

Recommended for German minors and for students with proficiency status.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 24 credits

Global Studies

Courses

GST 100 Introduction to Cultural Diversity 3.0 Credits

This course is an introduction to cultural diversity and its various manifestations in an increasingly connected world. We will use lectures, films, and discussions to examine and illustrate the relationship between humans and their sociocultural environments. Topics may include: cultural identity; race and racism; health and healing; human migration; and globalization.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GST 101 Becoming Global: Language and Cultural Context 4.0 Credits

This course teaches ways to approach linguistic and cultural immersion as both a way of life and as a way to pursue harmony and public good among local and global citizens. Material includes units on language acculturation as self-transformation, travel and life abroad, and (re)presentation, especially around the idea of language as a signifier of foreignness and belonging.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GST 102 Understanding Global: Markets and Governance 4.0 Credits

Introduces Global Studies students to social scientific concepts and analyses of globalization. The course examines the relation between capitalist markets and the political, economic, social, and environmental dimensions of global integration. Topics include: colonialism, nation states, gender relations, immigration, labor, and ethnic conflicts among other topics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GST.

GST 105 Introduction to Research in Global Studies 4.0 Credits

This course will introduce students to the main tools of research methods utilized in Global Studies and other social science fields. As different methodological approaches are used in Global Studies to address different research questions, the methodological focus of this course will vary from one term another. Students may be introduced to ethnography, qualitative methods, quantitative methods, survey design, or mixed methods approach. The course may be offered more than once a year with different research foci.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GST 200 Current Topics in Global Studies 3.0-4.0 Credits

This course will cover contemporary issues in Global Studies. The topics covered in this course will change from quarter to quarter and will often be offered in collaboration with other departments on campus.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GST 221 Introduction to Global Capital and Development 4.0 Credits

This course provides an introduction to the politics of international economic relations, global capitalism, trade, and finance. The overall theme of the course is the process of globalization: what factors are leading to a single world economy tied together by technology, trade, and investment; and what factors are working to maintain a world of independent economic zones in competition. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 231 Introduction to Identities and Communities 4.0 Credits

This course provides an introduction to the analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 241 Introduction to Power and Resistance 4.0 Credits

This course provides an introduction to the analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 251 Introduction to Global Media, Arts, and Cultures 4.0 Credits

This course provides an introduction to the role of media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 261 Introduction to Global Health and Sustainability 4.0 Credits

This course provides an introduction to issues of health access, technology, and environmental sustainability. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 300 Advanced Topics in Global Studies 3.0-4.0 Credits

This course will cover contemporary issues in Global Studies. The topics covered in this course will change from quarter to quarter and will often be offered in collaboration with other departments on campus.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GST 321 Advanced Studies in Global Capital and Development 4.0 Credits

This course provides an advanced analysis of the politics of international economic relations, global capitalism, trade, and finance. The overall theme of the course is the process of globalization: what factors are leading to a single world economy tied together by technology, trade, and investment; and what factors are working to maintain a world of independent economic zones in competition. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 331 Advanced Studies in Identities and Communities 4.0 Credits

This course provides an advanced analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 341 Advanced Studies in Power and Resistance 4.0 Credits

This course provides an advanced analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 351 Advanced Studies in Global Media, Arts, and Cultures 4.0 Credits

This course provides an advanced analysis of the role of media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

GST 361 Advanced Studies in Global Health and Sustainability 4.0 Credits

This course provides an advanced analysis to issues of health access, technology, and environmental sustainability. The content of this course may change every term it is offered and is repeatable for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Restrictions: Cannot enroll if classification is Freshman

GST 400 Senior Project in Global Studies 4.0 Credits

This course is a project-based capstone that sums up the various experiences of Global Studies majors with their respective concentrations, languages, and preferred methodologies. Putting into practice what they have learned throughout their major, students will spend most of the 10 weeks working on a final project of their choice with approval and guidance from the instructor. The final outcome of this class should be a product (an academic paper, a website, a short film, an art exhibit, or similar) that students can potentially use to gain employment or acceptance into graduate school.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

GST I399 Independent Study in Global Studies 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

GST T180 Special Topics in Global Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

GST T280 Special Topics in Global Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

GST T380 Special Topics in Global Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 108 credits

Graphic Design

Courses

VSCM 100 Computer Imaging I 3.0 Credits

This course explores current potentials, limitations, and issues related to use of computer software for design applications. Projects include graphics creation and manipulation; image acquisition, creation and manipulation; text creation and manipulation; typography; input and output options and control; hardware/software/system fundamentals; and troubleshooting.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSCM 140 Calligraphy 0.0-3.0 Credits

Covers the skills and understanding of letterforms as geometry and type, development of hand/eye skill in letter-forming, investigation of solids and voids, and use of traditional and modern tools and materials. Studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 110 [Min Grade: D]

VSCM 200 Computer Imaging II 3.0 Credits

Provides continued study of electronic imaging with emphasis on Graphic Design process for print and screen design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 100 [Min Grade: D]

VSCM 220 Web Graphics I 4.0 Credits

This course focuses on the concepts, issues and techniques related to the design of Websites. Emphasis is on the design and hierarchy of a website. Students will utilize HTML, XHTML, basic JavaScript, dynamic HTML, and Cascading Style Sheets (CSS) skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSCM 221 Web Graphics II 4.0 Credits

Continues VSCM 220. Increases the complexity and scope of the art direction and design for web graphics. Students will focus on professional quality web pages using dedicated software that adheres to current industry standards.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 220 [Min Grade: D] or WMGD 220 [Min Grade: D]

VSCM 222 Web Graphics III 4.0 Credits

Continues VSCM 221 and increases the complexity and scope of the art direction and design for web graphics. Students will focus on professional quality web pages using dedicated software that adheres to current industry standards.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (VSCM 221 [Min Grade: D] or WMGD 330 [Min Grade: D]) and VSCM 231 [Min Grade: D]

VSCM 230 Visual Communication I 4.0 Credits

Provides an overview of graphic design as an applied art. Covers the given, the formal, and the psychological aspects of graphic design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 100 [Min Grade: D] or VSST 107 [Min Grade: D]

VSCM 231 Visual Communication II 0.0-4.0 Credits

Continues VSCM 230. Covers corporate identity and explores logo development using the pictorial mark, typographic solution, and abstract interpretation as symbols of identity.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSCM 230 [Min Grade: D]

VSCM 232 Visual Communication III 0.0-4.0 Credits

Examines problems in graphic design on the relationship between designer and client, including solving specific situations of image-making with emphasis on the total identity of an organization, firm, or publication. Involves extensive exploration of color and imagery. Studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 231 [Min Grade: D]

VSCM 240 Typography I 3.0 Credits

Uses the history of type as the backdrop for the introduction to the art and craft of conventional through state-of-the-art typesetting as well as the creative and extraordinary use of type. Focuses on the letter, word, and sentence. Studio/lecture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 107 [Min Grade: D]

VSCM 241 Production 0.0-3.0 Credits

Covers traditional and electronic means of print production. Explores alternate means of production and various printing and output methods. Studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 240 [Min Grade: D]

VSCM 242 Typography II 3.0 Credits

Continues VSCM 240. Broadens the scope to deal with the paragraph and the typeset page, with increased attention to the importance of subtleties and refinements. Explores the differing requirements of type in relationship to pictorial images.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 240 [Min Grade: D]

VSCM 247 On Screen Typography 3.0 Credits

This course develops a visual sensitivity to typographical compositions on screen while expanding knowledge of current technologies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is DIGM or major is GRDS.

VSCM 322 Motion Graphics I 4.0 Credits

This course focuses on the concepts, issues and techniques related to the design of Websites. Emphasis is on the design and hierarchy of a website. Students will utilize HTML, XHTML, basic JavaScript, dynamic HTML, and Cascading Style Sheets (CSS) skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 221 [Min Grade: D] or WMGD 330 [Min Grade: D]

VSCM 332 Visual Communication IV 4.0 Credits

This course focuses on techniques and methods of advanced problem solving and exploration of extended identity systems. Students learn to analyze conceptual and contextual relationships pertinent to any visual communication assignment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 232 [Min Grade: D] and VSCM 222 [Min Grade: D]

VSCM 333 Visual Communication V 4.0 Credits

This course focuses on information graphics, including signage, environmental graphic design, and exhibit design. Information graphics are graphic visual representations of information, data or knowledge. These graphics present complex information quickly and clearly. Studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 332 [Min Grade: D] or VSCM 331 [Min Grade: D]

VSCM 340 Typography III 3.0 Credits

Typography III concentrates on the exploration and management of large blocks of text in specific design problems. Special emphasis will be placed on the style and readability of typographic treatments.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 242 [Min Grade: D]

VSCM 345 IKI: Tamagawa-Drexel Exchange 3.0 Credits

The 12-day program is open to all University students and entails a collaboration between Drexel students and Tamagawa students in Japan as well as at Drexel (Philadelphia). In Japan, students will survey and experience the true Japan by visiting exceptional sites that exemplify the old and the new world of Japanese culture and life. The trip will balance visits between the everyday/industries and cultural sites/museums to capture a comprehensive understanding of the Japanese "IKI." In Philadelphia, each group (made of Tamagawa and Drexel students) will conduct on-site research in historical and cultural venues and neighborhoods. Students will learn about immigration history, changing cultures over generations, and the challenges that diverse communities face.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSCM 350 [WI] Graphic Design: 20th Century and Beyond 3.0 Credits

Concentrates on impact and significance of the graphic design profession in society through the history and movements of the profession and the work of 20th-century masters of visual communication. Students will analyze conceptual and contextual relationships and develop greater awareness of stylistic content and its relevance to the culture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

VSCM 360 Design on Site 3.0 Credits

Weekly visits to studios of various design disciplines such as small graphic design offices, environmental graphic design firms, advertising agencies, book and magazine publishers, and website developers. A written report is due at the end of the term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

Prerequisites: VSCM 232 [Min Grade: D]

VSCM 370 Experimental Publication Design 3.0 Credits

This course concentrates on exploring alternative formats and unique delivery systems for the transfer of information. Special emphasis is placed on developing appropriate imagery for the defined readership, formatting, the use of a comprehensive grid system and the development of a wayfinding system for the publication. The course will build a greater awareness of proportion, readability and information transfer, and will reinforce the use of color as a visual communication tool.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 232 [Min Grade: D] and VSCM 242 [Min Grade: D]

VSCM 430 Visual Communication VI 4.0 Credits

Continues VSCM 333. Explores three-dimensional graphic design processes and techniques for communication, including problems of scale, material, form, and function. Emphasizes package design. Includes point-of-purchase design. Studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 322 [Min Grade: D] and VSCM 333 [Min Grade: D]

VSCM 440 Book Design 4.0 Credits

Investigates design of books, from their pre-Gutenberg origins to contemporary technology of design, binding, paper, and finishing. Includes multiple page formats, production grids, and sequential images. Lecture/studio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 322 [Min Grade: D] and VSCM 333 [Min Grade: D]

VSCM 450 Professional Portfolio 3.0 Credits

Focuses on the preparation of a professional Graphic Design portfolio. A critical process that includes the screening of completed projects, reworking or expanding projects, and reconstructing/creating final portfolio components. A formal interview presentation of the portfolio is also explored and refined.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

Prerequisites: VSCM 430 [Min Grade: D] or ADGD 320 [Min Grade: D] or EVGD 320 [Min Grade: D]

VSCM 460 Professional Practice 3.0 Credits

Covers running a design office, including basic contracts, fee structures, and the design process. Explores types of design offices; working with suppliers, printers, photographers, and illustrators; scheduling; resumes and portfolios; taxes; and marketing of graphic design services. Lecture/field work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 430 [Min Grade: D]

VSCM 478 Graphic Design Seminar: Advanced Techniques 3.0 Credits

An exploration for the subtleties that distinguish excellence in graphic design print, web and motion venues. Selections include: Advanced Typography and Electronic Portfolio.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 9 credits

Prerequisites: VSCM 340 [Min Grade: D]

VSCM 479 Graphic Design Seminar: Advanced Media 3.0 Credits

An exploration of advanced media development in Graphic Design as relevancy and currency demands. Selections include: Illustration I and II and Bookmaking.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 12 credits

Restrictions: Can enroll if major is GRDS.

Prerequisites: VSCM 232 [Min Grade: D]

VSCM 485 Annual Report Design 3.0 Credits

Development and analysis of the corporate annual report as a graphic design concept and as a developed marketing tool.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSCM 340 [Min Grade: D]

VSCM 496 Senior Capstone 3.0 Credits

Requires each student to define a problem and set a goal and strategies, develop a concept, and carry out a solution. Divides time among research, design, thematic development, and final presentation. Requires instructor approval of study.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Not repeatable for credit

Prerequisites: VSCM 221 [Min Grade: D] and VSCM 322 [Min Grade: D] and VSCM 430 [Min Grade: D]

VSCM I199 Independent Study in Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM I299 Independent Study in Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM I399 Independent Study in Graphic Design 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM I499 Independent Study in Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM T180 Special Topics in Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM T280 Special Topics in Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM T380 Special Topics in Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

VSCM T480 Special Topics in Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design
Repeat Status: Can be repeated multiple times for credit

Health Sciences

Courses

HSCI 101 Anatomy and Physiology I 5.0 Credits

This course is a general study of the structures and physiology of the human body. Fundamental concepts of microscopic tissue structure, gross structures of organs and body system organization are taught. The course consists of both lecture and lab material. The lecture portion deals with the general principles. In the lab, the student participates with practical examination of microscopic sections, tissues and organs, and the anatomical layout of human cadavers. The cell, tissues and musculoskeletal system will be covered in this course, as well as muscle and nerve physiology.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 102 Anatomy and Physiology II 5.0 Credits

This course is a continuation of HSCI 101. This course is a general study of the structures & physiology of the human body. Fundamental concepts of microscopic tissue structure, gross structures of organs and body system organization are taught. The course consists of both lab and lecture material. The lecture deals with the general principles. In the lab, the student participates with practical examination of microscopic sections, tissues and organs, and the anatomical layout of various animal cadavers. The nervous, endocrine and digestive system will be covered in this course.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 101 [Min Grade: D]

HSCI 103 Anatomy and Physiology III 5.0 Credits

This is the third in a series of three lecture and laboratory courses that present a general study of human anatomy and physiology, including microscopic and gross anatomy. The course is designed as a foundational course for students pursuing health professions. In laboratory/recitation sessions students examine anatomical models and materials from human cadavers and apply knowledge in a small group discussion format. Topics include: the cardiovascular, lymphatic, respiratory, urinary and reproductive systems.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 102 [Min Grade: D]

HSCI 125 Medical Terminology 3.0 Credits

This course is an introduction to the language of medicine intended as foundational for future study and professional practice. Students will study the basic vocabulary of medicine as well as the structure underlying that vocabulary in order to enhance future study and education.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 201 Health Assessment through the Lifespan 4.0 Credits

Course focuses on health assessment across the lifespan. The focus is on the development of interviewing skills, assessment of health status, and physical examination skills for the beginning health professional student.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 208 [Min Grade: D]

HSCI 202 Regional Anatomy 3.0 Credits

This course reviews human anatomy of the head, neck, thorax, abdomen, pelvis and extremities. Relationships of surface and internal structures from different bodily systems are emphasized. The analysis is supported by anatomical illustrations, radiological images, and cadaver photographs.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 205 Strategies for Academic Success 1.0 Credit

This course helps students to explore the learning process, to gain essential skills needed to achieve academic success and to develop the ability to make effective use of university resources. Discussion, personal reflection, and relevant electronic resources are used to foster students' development as self-directed learners. Specific attention will be given to the following topics: study skills, learning strategies, time management, academic planning, test-taking techniques, and goal-setting. The goal of this course is to help improve students' efficacy in the areas of academic self-management, self-direction, and resource utilization.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 206 Human Anatomy and Physiology for Health Sciences I 5.0 Credits

This course is a general study of the structures and physiology of the human body. Fundamental concepts of microscopic tissue structure, gross structures of organs and body system organization are taught. The course consists of both lecture and lab material. The lecture portion deals with the general principles and clinical relevance. In the lab, the student participates with practical examination of microscopic sections, tissues and organs, and the anatomical layout of human cadavers. The cell, tissues and musculoskeletal system will be covered in this course, as well as muscle and nerve physiology.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is NURS

HSCI 207 Human Anatomy and Physiology for Health Sciences II 5.0 Credits

This course is a continuation of HSCI 206. This course is a general study of the structures and physiology of the human body. Fundamental concepts of microscopic tissue structure, gross structures of organs and body system organization are taught. The course consists of online lab and lecture material. The lecture deals with the general principles. In the lab, the student learns the practical application and understanding of microscopic sections, tissues and organs, and the anatomical layout of various organs. The nervous, endocrine and digestive system will be covered in this course.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is NURS

Prerequisites: HSCI 206 [Min Grade: D]

HSCI 208 Human Anatomy and Physiology for Health Sciences III 5.0 Credits

This course is the third of three lecture and laboratory courses that present a general study of human anatomy and physiology, including microscopic and gross anatomy observation. The course is designed as a foundational course for students pursuing a profession in the Health Sciences. In laboratory experiences, students examine anatomical models and specimens from human cadavers, conduct experiments, and apply knowledge learned in group discussions. Topics of the course include the cardiovascular, lymphatic, respiratory, urinary, electrolyte balance, and reproductive systems.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is NURS

Prerequisites: HSCI 206 [Min Grade: D]

HSCI 303 Pharmacology for Health Sciences 5.0 Credits

This course presents a general study of basic pharmacology in which principles underlying the actions of drugs are presented, including pharmacokinetics, drug-receptor interactions, and drug metabolism. Classes of drugs are presented as groups with "prototype" drugs in each group.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D] or HSCI 103 [Min Grade: D]

HSCI 310 Introduction to Research Methods 4.0 Credits

This course provides a comprehensive introduction to the principals and practices underlying health-related research. Topics to be covered include: the protection of human subjects; scientific misconduct; developing research questions; conducting literature searches; research designs; qualitative, quantitative, and mixed methods; critical appraisal of the health literature; and evidence-based practice.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 313 Clinical Trials Protocols 4.0 Credits

Students learn to design and implement a clinical trial protocol. Topics include experimental design, research team member roles and management of clinical trials. Special research techniques for special populations are considered. Means of preventing scientific misconduct through proper monitoring are discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 310 [Min Grade: D] and COM 320 [Min Grade: D] and (STS 350 [Min Grade: D] or HSCI 350 [Min Grade: D])

HSCI 315 Current Issues in Health Sciences 4.0 Credits

This course is designed to discuss current issues and controversies in health science, with a focus on health-related issues attracting media attention. Topics may include: ethical dilemmas; how research informs healthcare policy; how research impacts healthcare practice; how interprofessional practice impacts patient safety and the patient experience in a culture of evidence-based practice; and cultural diversity, equity, and inclusion for underserved populations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: COM 320 [Min Grade: D] (Can be taken Concurrently) and HSCI 310 [Min Grade: D]

HSCI 320 Physiology 5.0 Credits

Presentation of organ function with emphasis on the integration of neural and humoral control mechanisms.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 207 [Min Grade: D] and HSCI 208 [Min Grade: D]

HSCI 325 Exercise Physiology 4.0 Credits

This course examines the acute and chronic effects of exercise on human physiology. Topical areas include neuromuscular physiology, cardiopulmonary, energy metabolism, nutrition, exercise evaluation, body composition, exercise prescription, and influence of environmental factors and clinical conditions on response to exercise.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 207 [Min Grade: D] and (HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D] or HSCI 103 [Min Grade: D])

HSCI 326 Applied Anatomy and Kinesiology 5.0 Credits

This course applies the foundations of anatomy and physiology to the study of human movement, with emphasis on normal motions of the musculoskeletal system. Topical areas include musculoskeletal anatomy, neuroanatomy, biomechanics, lever systems, and the influence of musculoskeletal disease and injury in normal movement.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 206 [Min Grade: D] and (HSCI 207 [Min Grade: D] or BIO 201 [Min Grade: D])

HSCI 337 Genetics and Health 4.5 Credits

This course covers the fundamentals of human genetics from a healthcare perspective. The course presents concepts of classical genetics, outlines molecular mechanisms of heredity, and explores the evolving technological advances in DNA modifications and analysis. The course emphasizes the importance of the health professional in enhancing patient understanding of the impact of genetic technology in healthcare decisions. Additional topics include genetic counseling, assisted reproductive technologies and personal genomics.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: BIO 131 [Min Grade: D] and BIO 134 [Min Grade: D]

HSCI 345 Statistics for Health Sciences 4.5 Credits

This course is designed to provide students with a foundation of basic statistical knowledge to aid in reading and understanding research results in the health science literature. Topics will include: variable types, sampling, scales of measurement, reliability and validity of measurement, study designs, descriptive statistics, classical statistical inference, correlation, chi-square, parametric and nonparametric tests for group comparisons.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 350 Advanced Statistics for the Health Sciences 4.0 Credits

This course is designed to provide students with an understanding of advanced statistical procedures and their applications to research designs in the health science literature. Topics include: one-way, two-way, repeated measure, and mixed factorial analyses of variance (ANOVAs); analysis of covariance (ANCOVA); multivariate analysis of variance (MANOVA); correlation; bivariate, multivariate, and logistic regressions; odds/risk ratios; exploratory factor analysis; and meta-analytic techniques.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: STS 345 [Min Grade: D] or HSCI 345 [Min Grade: D]

HSCI 375 Fundamentals of Toxicology 4.0 Credits

Toxicology is an applied science that studies the adverse effects of toxins on the human body. This course is an upper level elective that introduces students to the basic principles of toxicology. The concepts covered in the course include toxicokinetics (toxin absorption, distribution, metabolism and excretion), toxicodynamics (toxin site and mechanism of action), carcinogenesis, and environmental toxicology.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 207 [Min Grade: D] and (HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D])

HSCI 380 Strength and Conditioning 4.0 Credits

This course addresses the selection and implementation of strength, power, speed, agility, endurance, and hypertrophy training methods with an emphasis on periodization programs. Components of the course include discussion of physiological principles and strength assessment as they relate to resistance exercise training.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 16 credits

Restrictions: Can enroll if major is HSCI.

Prerequisites: HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D] or HSCI 103 [Min Grade: D]

Corequisite: HSCI 325

HSCI 381 Exercise for Clinical Populations 4.0 Credits

This course builds upon the foundational principles of exercise testing and prescription in clinical populations living with various forms of cardiovascular, metabolic, and inflammatory chronic diseases and health conditions. The impacts of exercise on each condition are examined, along with the special considerations required when prescribing exercise for people in the discussed conditions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HSCI.

Prerequisites: HSCI 325 [Min Grade: D]

Corequisite: HSCI 425

HSCI 382 Pathophysiology for Health Professions 5.0 Credits

Building on a foundation of normal physiology, students are exposed to the major disturbances of normal function and the basic mechanisms involved in diseases of the major organ systems. The course includes discussion of the general aspects of the common human pathophysiological conditions and syndromes.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 103 [Min Grade: D] or BIO 201 [Min Grade: D]

HSCI 410 Psychology of Physical Activity 4.0 Credits

The course is designed to introduce students to the psychology of physical activity by providing a broad overview of theoretical foundations, current research applications, and implications for health and exercise practitioners.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: PSY 101 [Min Grade: D]

HSCI 415 Musculoskeletal Pathophysiology 4.0 Credits

Introduction to the study of diseases, disorders and injuries of the musculoskeletal system. The biomechanics of connective tissue and basic science of inflammation, repair, regeneration and fibrosis are discussed. Students learn the pathogenesis, pathophysiology and clinical presentation of selected musculoskeletal disorders. The concepts of epidemiology and risk factors are considered.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D] or HSCI 103 [Min Grade: D]

HSCI 420 Advanced Anatomy 5.0 Credits

This course introduces the fundamentals of Gross Anatomy. Students will expand upon their introductory Anatomy and Physiology education by studying the human body through a regional, rather than systems approach. Topics will include the head and neck, upper and lower extremities, thorax, abdomen and pelvis.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D]

HSCI 425 Exercise Testing and Prescription 4.0 Credits

This course covers the fundamental principles of exercise testing and prescription with an emphasis on the health-related components of physical fitness that include body composition, cardiorespiratory fitness, muscular strength, muscular endurance, and flexibility. Students use these principles to develop appropriate exercise prescriptions for healthy and selected clinical populations. Laboratory experiences provide students with opportunities to engage in exercise testing and apply exercise prescription principles in health, fitness, and sport.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 325 [Min Grade: D]

HSCI 430 Developmental Anatomy 4.0 Credits

This course expands upon the student's knowledge of anatomy by describing the events involved in the formation of organ systems in the developing human. The laboratory portion of the course examines congenital defects of the systems and discusses possible causes and treatments from a clinical perspective.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 207 [Min Grade: D] and (HSCI 208 [Min Grade: D] or BIO 201 [Min Grade: D])

HSCI 435 Neuroscience 5.0 Credits

This course builds on students' basic knowledge of anatomy and physiology and provides a strong foundation in the structure and function of the nervous system. Clinical correlations are used throughout the course to help students understand the neuroanatomical and neurophysiological basis for the presentation of selected neurological pathologies commonly seen in clinical practice.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 207 [Min Grade: D] or BIO 201 [Min Grade: D]

HSCI 440 Emerging Technologies in Healthcare 3.0 Credits

This course explores recent developments in the emerging fields of regenerative medicine, genomics and nanomedicine. Through lectures and assigned readings students will be introduced to fundamental concepts of stem cell biology, tissue engineering, genomic testing, and nanobiotechnology. Emphasis will be placed on clinical applications of these technologies, as well as their impact on the changing role of healthcare providers.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSCI 450 Undergraduate Research Experience 4.0 Credits

This course is designed to provide students matriculated in the undergraduate health and exercise science majors with a cumulative undergraduate research experience. Students leverage knowledge gained in prerequisite coursework, employ skills gained from laboratory-based courses and integrate their abilities to successfully design, implement and disseminate a scholarship research project.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: COM 320 [Min Grade: D] and HSCI 310 [Min Grade: D] and HSCI 345 [Min Grade: D]

HSCI 470 Readings in Health Sciences 1.0-6.0 Credit

This course is designed to allow upper-class student to pursue specialized interests in specific topics in the health sciences. May be repeated twice for credit.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 2 times for 12 credits

Restrictions: Can enroll if classification is Junior or Senior.

HSCI 490 Senior Research Project 3.0 Credits

In this course, the student, with faculty supervision, selects a topic for a term project that integrates the academic and practical knowledge the student has acquired in his/her curriculum. The student develops objectives relevant to the project, critiques the literature, presents a plan for implementation, and completes the term project.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

HSCI I299 Independent Study in Health Sciences 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSCI I399 Independent Study in Health Sciences 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSCI I499 Independent Study in Health Sciences 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSCI T180 Special Topics in Health Sciences 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSCI T280 Special Topics in Health Sciences 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSCI T380 Special Topics in Health Sciences 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSCI T480 Special Topics in Health Sciences 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 4 times for 24 credits

Health Services Administration

Courses

HSAD 110 The Healthcare Environment for Future Healthcare Professionals 3.0 Credits

This course provides students who wish to become future health care practitioners with an understanding of the US health care environment in which they will be working. It is designed to engage thoughtful discussions about the unique challenges and opportunities for the health care workforce of the future. Students will learn about the structure and components of the US health care delivery landscape; how that structure evolved and continues to change over time; what impact change agents have on the careers of health care professionals; and who and what influences how health care will be delivered by the next generation of health care providers.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is HSAD

HSAD 210 Health-Care Ethics I 3.0 Credits

This course addresses introductory concepts and basic issues in health-care ethics. The topics include but are not limited to decision-making, professionalism and advocacy, confidentiality, truth-telling and informed consent.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: C] or ENGL 102 [Min Grade: C] or ENGL 103 [Min Grade: C]

HSAD 212 Careers in the Health Professions 3.0 Credits

This course prepares students for career development by presenting various career options in health management introducing various methods of self-assessment and allowing students to learn about how to find a mentor, interview for a job and learn about the various career options in health management, the various professional organizations dedicated to health management careers, and the networking opportunities linked to those organizations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 215 Physician Practice Management 3.0 Credits

This is an introductory course covering physician practice management. It will focus on the historical development of the physician practice within the United States, relevant key management concepts—organizational structure and governance, strategic planning, marketing, finance/operations, human resources, quality, and information systems, for example—as well as related future trends.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 225 Perspectives on Disability 3.0 Credits

This course surveys the major theories, political strategies, historical events, cultural critiques/interventions and policy goals of the Disability Rights Movement in the United States.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 111 [Min Grade: D]

HSAD 305 Aging & the Law 3.0 Credits

Obtaining adequate health care is a critical issue for many older adults; providing it is a significant societal challenge. Our society, as many others, has developed legislative and other social policies to address the increased frailty, both physical and/or cognitive, and the corresponding needs which accompany age. This course is designed to provide students with an understanding of how legal institutions (legislatures and courts) have responded to these needs for the ostensible protection of older adults. The instruments that these legal institutions have developed will be examined as their purposes, effectiveness, desirability, costs (economic and otherwise), and possible alternatives will be evaluated.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 308 The Affordable Care Act 3.0 Credits

This course provides an overview of current practical issues related to the Patient Protection and Affordable Care Act including issues faced by providers and employers; effects of the law on public health and politics; and funding and legal issues related to the Affordable Care Act.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: C] or ENGL 113 [Min Grade: C]

HSAD 309 Advanced Health-Care Ethics 3.0 Credits

This course builds on the foundation provided in Health Care Ethics and discusses such issues as chronic care, end of life, beginning of life, distributive justice and the right to health care.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 210 [Min Grade: C]

HSAD 310 Introduction to Health-Systems Administration 3.0 Credits

The course is designed to assist the student in understanding and preparing for the unique challenges presented to managers in a health services administration career. History and current milieu of U.S. health care are considered, as well as the ever changing infrastructure of the health-services industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: C] or ENGL 102 [Min Grade: C] or ENGL 103 [Min Grade: C]

HSAD 312 Development of World Health Care 3.0 Credits

This course examines a broad overview of the ongoing development of health-care policies, availability, and philosophy in a cross-section of countries by means of detailed case studies to examine both common and unique challenges and solutions, as well as global responses, to crises, such as plagues, epidemics, and natural disasters.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 313 Evolution of Health Care in the United States 3.0 Credits

This course will cover the evolution of health care in the U.S. from pre-colonial times to the present by discussing improvements in treatment institutions, modalities, philosophies and access to care, as well as the impact of major events in history on health-care discoveries on the delivery and administration of health services in the United States.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D]

HSAD 314 Aging in a Global Context 3.0 Credits

This course explores essential aspects of aging and provides a multidisciplinary perspective on global aging. It provides an important context for understanding the global patterns of aging around the world, including the demographic and epidemiological patterns. The course emphasizes how these changes have affected the support and services for those over 60 around the world. International efforts to address the emerging global opportunities and challenges related to population aging will also be discussed. The course will cover specific programs and patterns in specific countries.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D]

HSAD 315 Interdisciplinary Health Services 3.0 Credits

This course focuses on the role, responsibilities, scope of practice, and special concerns of health-care providers and their disciplines. The concept of interdisciplinary health-care practice is examined, along with basic concepts of teamwork and team formation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 316 Health Care across Cultures 3.0 Credits

Living in a pluralistic society poses many challenges and opportunities. This course examines the impact of cultural upon health-care decision. Concepts such as "health," "illness," "culture," "ethnicity," will be analyzed. Traditional and alternative approaches to the delivery of health care will be addressed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 317 Religious Views on Health Care 3.0 Credits

Addresses the impact of a person's religious beliefs on the need for and delivery of health care. Specific issues will be discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or HUM 101 [Min Grade: D]

HSAD 318 Health and Vulnerable Populations 3.0 Credits

Vulnerable populations, those with special needs for care or barriers to access care, have a significant impact upon health care, both in terms of concepts of justice and in systems of delivery. This course will look at the just distribution of health care through the eyes of various distinct vulnerable populations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 319 Women and the Health Professions 3.0 Credits

This course explores women's early and controversial roles as health-care providers, the influence of government on women, and key contributions by women in the health professions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or HUM 101 [Min Grade: D] or ENGL 111 [Min Grade: D]

HSAD 320 Managed Health Care 3.0 Credits

This course provides the student an opportunity to survey the major concepts and operational considerations of the provision of health-care services in a managed-care environment. The regulatory landscape as well as the physician/patient relationship is considered as a key to understanding the managed health care environment.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 321 Health-Care Human Resources 3.0 Credits

An introduction to the basic principles of human-resource management and their practical application in today's complex health-care organization. This course examines the role of human resources as a strategic partner within the organization.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 310 [Min Grade: C] and HSAD 334 [Min Grade: C]

HSAD 322 Health-Care Law 3.0 Credits

Provides an overview of the major laws affecting health-care professionals and examines the current legal climate in health care.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: C] or ENGL 102 [Min Grade: C] or ENGL 103 [Min Grade: C]

HSAD 323 Introduction to Long-Term Care Administration 3.0 Credits

This course covers organization, administrative of long term care services and post-acute services addressing the needs of the elderly and disabled populations. Long term care and post-acute care involves a description of the continuum of care, the types of providers and the range of services including nursing facilities, assisted living, housing, community-based services, and informal care giving. Also covered are the issues affecting integration across the continuum.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 324 Health Technology and Ethical Responsibility 3.0 Credits

Developments in health care technology challenge many of our common assumptions about basic concepts such as health, disease, and normality. This course encourages students to consider some of the issues raised by changing health technology.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HSAD 210 [Min Grade: C] or PHIL 321 [Min Grade: C]

HSAD 325 Issues in Health Care System 3.0 Credits

This course provides the student with the opportunity to analyze management problems that are of current importance in today's health-care industry on a national and international level.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 326 Holism and Health Care 3.0 Credits

Details the development of medicine from the late nineteenth century to the present in view of the corresponding rise of interest in a holistic approach to health care by means of alternative and complementary medicine in relation to traditional medical practices.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 327 Partnerships in Health Care 3.0 Credits

Addresses health service as a collaborative venture identifying the primary stakeholders and partners in the administration of health care including clinicians, administrators, institutions, industry, private and governmental agencies, and the patient. In addition, practical strategies for developing effective partnerships are explored.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 328 Health Care for Diverse Groups 3.0 Credits

Examines the administration of health services and special needs to different subpopulations classified according to gender, ethnicity, race, weight (the obese), and sexual orientation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or HUM 106 [Min Grade: D]

HSAD 329 Health Care and the Media 3.0 Credits

Much of the public's perception of issues in health care comes from the media (newspapers, magazines, television, film, advertising, the internet). The course explores the interactive relationship between health care and the media in presenting information to the public.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A] or HUM 108 [Min Grade: D]

HSAD 330 Financial Management in Health Care 3.0 Credits

Emphasizes basic financial management theory related to the health-care industry, as well as accounting practices for health-care organizations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ACCT 115 [Min Grade: D] or ACCT 110 [Min Grade: D]

HSAD 331 [WI] Non-profits and Health Care 3.0 Credits

Provides an overview of the not-for-profit and advocacy sector of health care, explores business fundamentals and current models, selects a health topic, assesses the market, and assists students in developing their own not-for-profit and/or advocacy business.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: (HSAD 310 [Min Grade: C] and HSAD 332 [Min Grade: C])

HSAD 332 [WI] Health-Care Marketing 3.0 Credits

Provides a comprehensive review of marketing's role in the health-care field by examining the history of health-care marketing, the contributions of marketing to the strategic objectives of health-care organizations, and the effects of marketing on public relations and the consumer.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 310 [Min Grade: C]

HSAD 333 Health, Illness, and the Arts 3.0 Credits

This course provides the opportunity to examine topics relevant to health and illness as depicted in the arts - primarily literature, film, and painting as well as other arts forms where appropriate.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D] and ENGL 103 [Min Grade: D]

HSAD 334 Management of Health Services 3.0 Credits

In this course, students will learn forms and uses of traditional management functions - plan, direct, monitor, evaluate - as well as contemporary functions that are used in an array of health care services organizations. Students match skills and competencies within the respective domains of health services management.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 310 [Min Grade: C]

HSAD 335 [WI] Health-Care Policy 3.0 Credits

This course provides an introduction to the development and implications of U.S. health-care policy, including key governmental and non-governmental participants and the political process.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 310 [Min Grade: C] and PSCI 110 [Min Grade: D]

HSAD 336 Urban Health Care 3.0 Credits

Using an ecological model to analyze the special needs and issues in urban health care, students will examine the people, place, and politics of an urban area to assess the delivery and quality of health care and will complete an analysis of a real and current urban health-care-delivery problem, including solutions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D]

HSAD 337 Health Care/Quality Improvement 3.0 Credits

Quality Improvement (QI) is a critical component of the health-care-delivery system in the United States. Because errors and reliability issues have major implications, standards and measures are imperative to ensure consistency and safety. As such, this course examines existing programs in place and best-industry practices.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D]

HSAD 340 Leadership in Health Services Administration 3.0 Credits

This course discusses issues in management and leadership in a health-care-administration setting by focusing on alternative organizational structures and the managerial role in these structures, as well as exploring managerial and leadership roles in specific health organizations and project management.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 310 [Min Grade: C] and HSAD 334 [Min Grade: C]

HSAD 341 Risk Management in Healthcare Organizations 3.0 Credits

This course is an introduction to risk management in health care. It describes the roles of a risk manager and the risks associated with various health care settings. Regulatory, contractual and medical malpractice exposures are discussed and techniques for controlling and preventing loss are evaluated. Students prepare a risk management plan for a healthcare organization.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 342 Children and Health Care 3.0 Credits

This course will focus on a range of issue facing the health-services industry in providing care to children with the goal of better understanding and meeting the special needs and challenges from both a direct care and systematic point of view.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D]

HSAD 343 Health and Illness in Film 3.0 Credits

This course analyzes various films with themes and stories related to health and illness in view of conceptual theories on health and illness and conceptual elements of film as a representational medium.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D]

HSAD 345 Ethics in Health Care Management 3.0 Credits

This course focuses on one aspect of the role of health care management professionals: the ethical dimension. The course combines an understanding of ethical theory with the practical application of ethical principles to management issues that arise in the health care arena. Discussions will be guided by cases drawn from real work experiences.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HSAD 210 [Min Grade: C] or PHIL 321 [Min Grade: C]

HSAD 346 Mental Illness in the Media and Arts 3.0 Credits

The mentally ill and those who treat them are continually concerned about the portrayals of mental illness in the media and arts. Its often sensationalized and stigmatized image places an extra societal burden on the mentally ill and can lead to attempts to hide their illness rather than seek treatment. This course examines mental illness's social constructs, their sources, and effects.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 351 Ethical Issues in Reproduction 3.0 Credits

This course discusses ethical issues concerning human reproduction. The issues span contraception, abortion, assisted reproductive technologies, parenthood, and balancing fetal and maternal interests. Focus is placed on the variety of perspectives on these issues and underlying values.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HSAD 210 [Min Grade: C] or PHIL 321 [Min Grade: C]

HSAD 352 Ethics in Health Care Research 3.0 Credits

This course is designed to familiarize students with some of the ethical issues involved in health-care research. These issues include, but are not limited to, responsible authorship, use of human subjects, use of animals, defining and handling scientific misconduct, confidentiality, and conflicts of interest.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HSAD 210 [Min Grade: C] or PHIL 321 [Min Grade: C]

HSAD 353 Public Health Ethics 3.0 Credits

This course will address ethical issues in public health. Students will be exposed to a variety of views on topics including, but not limited to, human rights, the balancing of individual rights with public interests, managing disasters, epidemics, risky behaviors, and the meaning of health from a population standpoint.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HSAD 210 [Min Grade: C] or PHIL 321 [Min Grade: C]

HSAD 357 Health Information Systems 3.0 Credits

This is an introductory course into Health Information Systems. The course will cover a wide range of healthcare information technology topics including management, governance, regulatory compliance and how to align with information technology. There is a growing trend and need for healthcare providers to align their practices with information technology in order to achieve the common goal of quality patient care while ensuring government and regulatory mandates are met. At the end of the course, students will be able to understand and apply the concepts discussed in class within their respective work places. We will relate the course materials to active cases to bring real life experience into the classroom. This course will focus on the partnership between technology and healthcare.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: C] or ENGL 113 [Min Grade: C]

HSAD 359 Project Management in Healthcare 3.0 Credits

This course explores the operations and management of project activities in public health and healthcare settings care by employing proven techniques, tools, and methods that a team leader or administrator could use. Management skills are essential to the success of any health project or activity, or in any industry. The specific challenges inherent in the health environment require an understanding of the dynamics of project progression from conception and development, through implementation and attainment, to final closure, particularly within the context of the continually changing and evolving climate in the health field.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 360 Applied Healthcare Leadership 3.0 Credits

Through a series of live actor simulations, students are placed in a realistic healthcare leadership environment where they will function in teams to analyze and offer solutions for complex organizational issues.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 362 Madness, Mental Health and Psychiatry in the Modern West 4.0 Credits

This course will examine changing assumptions, attitudes and ideas about behavior variously labeled madness, insanity, or mental illness; the development of professions, treatments, institutions and policies dealing with it; and the changing experiences of those afflicted.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 363 Health Care Privacy & Security 3.0 Credits

This is an introductory course in the privacy and security of health information in health care organizations. The course covers a wide range of healthcare Privacy & Security topics including Privacy and Security policies and procedures, regulatory requirements, Security Audit controls, selection of Security Framework and others. At the end of the course, students will be able to understand and apply the concepts such as security and privacy discussed in class within healthcare organizations. We will relate the course materials to active cases to bring real life experience into the classroom.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: C] or ENGL 113 [Min Grade: C]

HSAD 364 Interprofessional Group Dynamics in Healthcare 3.0 Credits

This course focuses on the basic concepts of team formation and development, successful teamwork, and the importance of inter-professional teamwork and collaboration in today's healthcare environment. Selected professions on the healthcare team will be examined. Consideration will be given to the responsibilities, scope of practice, and special concerns of each discipline.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD 365 Advanced Healthcare Finance 3.0 Credits

This course follows HSAD 330, Financial Management in Health Care and emphasizes the use of basic financial and accounting practices learned previously for the completion of 10 detailed Case Studies.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSAD 330 [Min Grade: C]

HSAD 366 Global Aging Intensive Course Abroad 3.0 Credits

This Intensive Course Abroad provides students the opportunity to explore global aging in the context of a specific country chosen for this term.

Students will recognize significant patterns in demography throughout the world. They will apply methods of epidemiology and place the country in the context of global trends. After learning key historical events and figures affecting the current society, students will describe the placement of this country in the context of global demographic trends. Students will visit the host country, visit various sites significant for the aging population and will report on particular programs or interventions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HSAD I199 Independent Study in Health Services Administration 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD I299 Independent Study in Health Services Administration 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD I399 Independent Study in Health Services Administration 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD I499 Independent Study in Health Services Administration 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD T180 Special Topics in Health Services Administration 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD T280 Special Topics in Health Services Administration 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD T380 Special Topics in Health Services Administration 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HSAD T480 Special Topics in Health Services Administration 3.0 Credits

This course covers topics of particular interest to students majoring in health-services administration. In different terms, a variety of topics are presented to the students. May be repeated for credit.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A] or ENGL 108 [Min Grade: D]

Hebrew

Courses

HBRW 101 Introduction to Hebrew I 4.0 Credits

The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APHX N

HBRW 102 Introduction to Hebrew II 4.0 Credits

The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: HBRW 101 [Min Grade: D]

HBRW 103 Introduction to Hebrew III 4.0 Credits

The goal of this course is to provide a thorough foundation in the Hebrew language. Small class size provides intensive practice in speaking, writing and listening comprehension. Continues HBRW 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: HBRW 102 [Min Grade: D]

HBRW 201 Hebrew IV 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on HBRW 103.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: HBRW 103 [Min Grade: C]

HBRW 202 Hebrew V 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on HBRW 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: HBRW 201 [Min Grade: C]

HBRW I199 Independent Study in HBRW 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW I299 Independent Study in HBRW 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW I399 Independent Study in HBRW 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW I499 Independent Study in HBRW 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW T180 Special Topics in Hebrew 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW T280 Special Topics in Hebrew 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW T380 Special Topics in Hebrew 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HBRW T480 Special Topics in Hebrew 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

History

Courses

HIST 101 Introductory Seminar in History 4.0 Credits

This course introduces freshmen history majors to the study and practice of historical inquiry. The course offers an overview of major themes related to historical practice: methodology, ethics, and professional development. It also introduces students to the history program, inviting them to meet and interact with the faculty of the department and their work.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HIST.

HIST 110 History Now 1.0-4.0 Credit

This course provides an intensive look at the historical roots of a contemporary issue. The topic is chosen by the instructor. Students may only repeat the course for different topics.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST 118 History of Modern Biology 4.0 Credits

In this course we will survey the history of biology in the modern period, from 1700-the present. We will explore how different sciences formed around the concept of life and methods for studying it. Examples will include systematics and classification, the impact of geology and paleontology, natural history and biogeography, embryology, evolution, physiology, microbiology, ecology, eugenics and genetics, molecular biology, astrobiology, and genomics. We will study these disciplines and related individuals, institutions, and theories in their social and cultural contexts to understand why they occurred in the places they did with the impact they had.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 125 The History of Drexel University 1.0 Credit

This course provides an overview and analysis of the history of Drexel University, founded in 1891 as the Drexel Institute of Art, Science, and Industry by banker and philanthropist Anthony J. Drexel. By the 1920s Drexel had evolved into a professional engineering school with a co-operative education program. By the 1950s, Drexel was a powerhouse as a local provider of technical talent—and it became Drexel University in 1970. As the local economy went through a brutal deindustrial transformation Drexel had to change or face bankruptcy. The 1990s saw Drexel recovering and by the beginning of the new century Drexel evolved again in a period of change marked by the acquisition and founding of medical, nursing, public health schools, and law schools.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 153 Culture, Ethnicity, Religion: An Introduction to Jewish Studies 3.0 Credits

What is a Jew? Who is a Jew? What defines Judaism? These questions relate to religion, ethnicity, culture, nation, race, and more. A shared heritage unites Jews, yet understandings and interpretations of what it means to be Jewish are hotly contested, especially in the 21st century. In this course., we dig into Jewish thought and history and explore the ways they have shaped ethnic identity, cultural heritage, and religious tradition.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 155 The Historical Jesus 4.0 Credits

In this course, students analyze translations of the New Testament, other early Christian writings, and Roman histories in the light of Jesus's broader historical context of Jewish life under Roman occupation before the destruction of the Jerusalem Temple. In the process, students learn to think like an historian by examining evidence to make their own interpretations of who Jesus was, the nature of the movement he led, and what that movement meant to him.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 161 Themes in World Civilization I 4.0 Credits

We examine development of civilizations from antiquity to the 12th century and view patterns of historical change through key themes and interpretive debates, including political structures, land tenure and social systems, commercial and trade relations, the development of cities, science, and technology, and religions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 162 Themes in World Civilization II 4.0 Credits

Provides an analysis of civilizations from the 12th century to 1815 viewed through key themes and interpretive debates, including the development of the nation-state, interaction between civilizations, the concept of cultural unity, religious upheaval, disease and science, the relationship between culture and politics, and the nature of revolutions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 163 Themes in World Civilization III 4.0 Credits

Explores the emergence of modern civilization through key themes and interpretive debates, including industrialization, imperialism, science and technology, ideological debate, the nature of modern warfare, the relationship between nationalism and the state, and the emergence of state-sponsored racism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 181 Religion, Science, and Medicine in History 4.0 Credits

In this course, key episodes in the historical interactions among religion, science, and medicine from the ancient world to the near-present will be examined. The primary focus is on Western science and medicine in the context of the three main monotheistic faiths of the Mediterranean (Christianity, Judaism, and Islam), but students in the course have the opportunity to examine other contexts as well.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 201 United States History to 1815 4.0 Credits

Examines the political, economic, and social forces that shaped America in the era of its founding.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 202 United States History, 1815-1900 4.0 Credits

Examines the emergence of modern America to the close of the Spanish-American War.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 203 United States History since 1900 4.0 Credits

Examines America as economic giant, world political power, and scene of social change.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 206 Race and Islam in Africa and the Middle East 4.0 Credits

This course explores the historical connections between Africa and the Middle East both as concepts, geographic expressions, homelands and sites of diaspora. This course will examine the changing definitions and connections between Africa and the Middle East from the ancient world until the present.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 208 Women in American History 4.0 Credits

Covers the history of American women from the 1890s to the present, with emphasis on women's rights, women and technology, women's role in war, and women in the labor force in the 20th century.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 210 Freedom, Medicine, and Slavery 4.0 Credits

Covering the fifteenth to the nineteenth centuries, this course examines the history of medicine alongside the history of slavery from Africa to the Americas and traces the continuing presence of African diasporic knowledge and practices against the transformation of white "men of science" into modern physicians and specialists.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 211 Freedom, Medicine, and Slavery's Afterlives 4.0 Credits

Covering from the end of the American Civil War to present, this course examines the history of medicine in the United States, focusing on the contributions of African and African-descended peoples to western medicine alongside the continuing presence of African diasporic knowledge and practices into the era of the modern hospital and medical industrial complex.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 212 Themes in African-American History 4.0 Credits

Explores the major issues in the development of African-American history through the 19th century, beginning with an overview of West and Central African societies in the 15th and 16th centuries and including the family, religion, forms of resistance, aesthetics, and patterns of white-black relationships.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 214 United States Civil Rights Movement 4.0 Credits

Examines the origins, objectives, successes and failures of the Civil Rights movement in the United States between 1954 and 1972.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 215 American Slavery 4.0 Credits

This course is a rigorous examination of slavery and its representation in the United States. Using primary and secondary resources, art, literature and film clips, the course explores the relationship between history and memory and the impact of the social, political, and gendered imagination.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 216 Freedom in America 4.0 Credits

This course examines African-American history, 1865 to the present, including the impact of gender and sexuality in history. The course compares primary and secondary sources to critique how history itself is manufactured and to investigate the role that sexuality and gender play in that process.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 217 American Insurrection 4.0 Credits

The insurrection of January 6, 2021, shocked most Americans. It was, however, just one part of a broader insurrectionist movement in a year that had seen armed paramilitary groups storm state capitals and attack Black Lives Matter protests. This course places the insurrection in a longer twentieth-century history of anti-government and conspiratorial far-right movements, including the Ku Klux Klan, the John Birch Society, the militia movement, neo-Nazi groups, anti-abortion terrorism, and the Oklahoma City bombing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 219 History of Policing Homosexuality 4.0 Credits

This course surveys the medical and penal criminalization of homosexuality from the late 19th to early 21st Century in the United States. It also traces the varied historical responses to the policing of homosexuality by LGBTQ+ people and other individuals who engage in same-sex sex. The course will approach policing (both medical and penal) with particular emphasis on how race, Blackness, gender performance, and class impact policing and the formation of homosexual identities through time.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 222 History of Work & Workers in America 4.0 Credits

Examines the changing nature of work and the lives of American workers, from the origins of wage labor in the 19th century to the transformations of the workplace in the 20th and 21st centuries.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 226 American Jewish Experience 4.0 Credits

This course surveys the Jewish experience in America from the colonial period to the present. We will discuss the various waves of Jewish immigration and examine the religious, cultural, political, and economic activities of American Jews. We will consider the trajectories that shaped the experiences of Jews in America and the heterogeneity of Jewish experience and views. A diverse array of sources and topics will provide the framework for this course. The case study of the Jews in the United States elucidates major nations historical issues including immigration, acculturation, minority rights, prejudice and discrimination, intergroup relations, ethnic and racial pride and intermarriage. We will consider how Jews resolved the tensions between being Jewish and American.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 227 History of Antisemitism 4.0 Credits

For centuries, Jews have suffered prejudice, discrimination, and persecution. Jewish people have been vilified for denying the divinity of Jesus Christ; they were unjustly marked as murderers, usurers, and villains of all sorts; they were condemned for their supposed role in defiling and undermining the "white-race"; they were accused of committing the greatest abuses of capitalism, and at the same time, were charged with inventing socialism and Communism. What is antisemitism? How did it start? Why is it so enduring? This course will explore the long history of a perplexing and irrational phenomenon. This course will examine the racial, political, and economic forms of antisemitism in the ancient, medieval, and modern world.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 228 Antisemitism in America 4.0 Credits

The past few years have shown that antisemitism is alive and well in the United States, in spite of a decades-long lull. While the Pittsburgh, San Diego, and Newark shootings, and the Hanukkah attack in Monsey show are the most violent expressions of antisemitism that this country has ever seen, these are not the only times during which Jews were identified as outsiders and a threatening presence. This course will examine Jewish exclusion through the mid-20th century including General Grant's expulsion of Jews, the Leo Frank lynching and Henry Ford's Dearborn Independent, Father Coughlin's antisemitic radio addresses, the Nazi rally and Madison Square Garden. Finally, it will explore the recent rise in antisemitism and relationship between white supremacy and antisemitism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 229 Pirates, Planters, Traders: The Jewish Atlantic World 4.0 Credits

When European empires expanded to the New World, their ships carried Jews to North America, Latin America, and the Caribbean. Jews were relegated to a marginalized group in Europe, but the New World opened up opportunities. They owned plantations and participated in extensive trading enterprises in the New World, including sugar cultivation, the triangulated slave trade, trade in precious gems, and the fur-trade. This course will investigate the ways in which Jews participated in colonial environments in the 16th-18th centuries: their business pursuits and their interactions with Europeans, Africans, and Native Americans. It will also explore Jews' improved status in diverse New World environments, and the ways Jews created hybrid communities in environments formerly devoid of Jewish life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 230 United States Military History I (before 1900) 4.0 Credits

Covers the origins and development of military institutions, traditions, and practices in the United States from the Revolution to the Spanish-American War, and the operational, intellectual, diplomatic, and social aspects of military history.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 231 US Military History II (since 1900) 4.0 Credits

Examines the emergence of the United States as a major military power, including military/civil relationships and the impact of technological change; the course covers World War I, World War II, Korean War, and Vietnam War.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 234 The United States Civil War 4.0 Credits

Examines the causes, course, and results of the American Civil War.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 235 The Great War, 1914-1918 4.0 Credits

Examines the global causes, conduct, and consequences of World War I, which fundamentally altered the next century's political, social, economic, and cultural institutions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 236 World War II 4.0 Credits

Provides an in-depth study of World War II, with emphasis on Europe but also including the war in North Africa, Asia, and the Pacific. Discusses major military events in a broad political framework, with lectures on economic, social, and scientific developments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 239 The Pacific War 4.0 Credits

This course focuses on the conflict between China, Japan, the United States, the United Kingdom, and other countries from 1937 to 1945. We will also examine 1) the roots of the war in nineteenth-century changes in the distribution of power in the Pacific and 2) how the war redistributed power and alliances once again, contributing to the rise of the Cold War.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 248 History of the Holocaust 4.0 Credits

This course surveys Nazi Germany's systematic attempt to exterminate the Jews of Europe between 1941 and 1945. The course stresses the historical study of the Holocaust: the course of events, their origin and context, and their repercussions. We study the general context of the 1930's and 1940's, the perpetrators and their relevant ideology and administrative systems, the victims and intended victims, and also the "bystanders", those among whom the round-ups and extermination took place in Europe as well as in the US. The materials include historical documents, memoirs, and historical accounts, and a variety of films.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 249 Modern Jewish History 4.0 Credits

Explores the social, cultural, political and religious forces that have shaped world Jewry from the 18th to the 20th centuries.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 251 Fascism 4.0 Credits

Provides a chronological/topical study of fascist movements and regimes in Europe between 1919 and 1945, with emphasis on Italian Fascism and German Nazism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 253 Jewish Life and Culture in the Middle Ages 4.0 Credits

This course is an introductory survey of the history of the Jewish people, their civilization, religion, and contacts with other cultures in medieval times. Topics will include the rise of Christianity and Islam, the Talmud, Jewish mysticism, and the growth of Ashkenazic and Sephardic Jewry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 254 Russian History Before 1900 4.0 Credits

Survey of Russian history from its origins to the end of the Tsarist period. This course covers both Russia's role in Western European history, and its interactions with Eastern Eurasian civilizations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 255 Twentieth Century Russia & the USSR 4.0 Credits

Examines the last years of imperial Russia, showing the background to the revolutions of 1917, followed by a study of the institutions and personalities of the USSR.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 257 The Reformation Age 4.0 Credits

The course covers the general background to the Reformation, both religious and secular, the growth of reform movements, including the big names (Luther and Calvin) but also other sects, the Catholic reform and counter-Reformation efforts, and the legacies of reform and the Reformation in Europe and beyond.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 260 Coexistence and Conflict: Jews, Christians, and Muslims in the Early Mediterranean 4.0 Credits

This course investigates the history of interactions among the early Mediterranean's three major monotheistic religious communities: Jews, Christians, and Muslims. The course explores how religious communities understood themselves and each other as well as how and why multi-faith communities sometimes coexisted peacefully, sometimes coexisted tensely, and sometimes exploded into violence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 264 East Asia in Modern Times 4.0 Credits

Deals primarily with China and Japan, including a description of their traditional societies and the changes they have undergone during the 20th century.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 275 History of Pennsylvania 3.0 Credits

This course introduces students to the history and culture of the Commonwealth of Pennsylvania. Major topics include: the geography of Pennsylvania, Native-American culture before the Colonial Era, the Colonial Era and the governance of the Penn family, the development of the state's economy throughout the 18th, 19th, and 20th centuries, the role of urban centers such as Philadelphia and Pittsburgh, and the role of immigration and diversity in the history of the state.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 276 The History of Philadelphia 4.0 Credits

This course surveys the history of Philadelphia through pre-colonial, colonial, and industrial eras to the present day. Philadelphia is investigated as an economic, social, cultural, and political center. Students read primary and secondary sources and conduct original research into Philadelphia's history. Lectures and discussions are complemented by on-site historical investigations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 278 Medicine Before Germs 4.0 Credits

This course focuses on the history of Western medicine before the acceptance of the germ theory of disease dramatically transformed medicine around the turn of the twentieth century. This course explores medical theories and practices, medicine's connections to the broader social and cultural context, and the lived experiences of patients and practitioners through sources written by those individuals as well as modern historians.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 279 History of Modern Medicine 4.0 Credits

This course will survey the intellectual, and social-cultural history of Western laboratory-based medicine from the late-19th century to the present. It will focus on the political, economic, institutional, and cultural aspects of the development of scientific medicine. Interpretive materials will include biographies, medical publications, films, and fictional accounts related to topics including the role of physicians, nurses, hospitals, biomedical research, therapies etc.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 283 Technology and Identity 4.0 Credits

In this course, we'll use the lens of identities--historical and contemporary experiences of race, class, gender, LGBTQ identities, physical and mental "ability/disability" divisions, age, and many other taxonomies of personhood--to understand science, technology, medicine, public health, and other bodies of knowledge.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 285 Technology in Historical Perspective 4.0 Credits

Examines the causal interrelations between technological developments and economic, social, intellectual, and political aspects of Western civilization from the 18th century to the present.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 287 History of Science: Ancient to Medieval 4.0 Credits

Explores the history of Western science from the Ancient to Medieval period. Surveys the intellectual content of natural philosophy (science) especially Babylonian, Greek, Roman sciences and medicine, in broader political, economic, social, and cultural context.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 288 History of Science: Medieval to Enlightenment 4.0 Credits

Explores the history of Western science (broadly understood) from the end of the Middle Ages to the Enlightenment. Connects the changes in the content, methodology, and meaning of natural knowledge to the broader political, economic, social, cultural, and intellectual trends of the time.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 289 History of Science: Enlightenment to Modernity 4.0 Credits

Explores the history of science in the modern period from Newton to late 20th century. Surveys the major developments in the history of science, including Newtonianism, chemical revolution, Darwinian evolution, laboratory revolution, modern genetics, ecology, and environmentalism in broader historical context.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 290 Technology and the World Community 4.0 Credits

Examines the effect on international relations of rapid technological change in the modern era and technology as a tool of modernization, political integration, and national security among advanced and developing states.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 293 Global Legal History 4.0 Credits

This course will explore the global history of law that shaped the empires from Medieval times to the contemporary world order. It will offer students a background to the central concepts of modern legal theory and introduce them to the wide array of dispute resolution that human beings have practiced within and beyond the normative legal spaces.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 296 Research Methods in History 4.0 Credits

Designed for history majors in their sophomore year, this course introduces students to the fundamentals of historical research. The course focuses on methods, particularly in teaching students to locate and analyze evidence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HIST.

Prerequisites: HIST 101 [Min Grade: D]

HIST 301 The Study of History 4.0 Credits

This course is for history majors in their pre-junior or junior year; it explores conventions and historiographical conversations in the discipline of history. Students will examine philosophies of history, great historical debates, and the nature of historical evidence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HIST.

Cannot enroll if classification is Freshman

Prerequisites: HIST 296 [Min Grade: D]

HIST 302 The Study of Science, Technology, and Environment in History 4.0 Credits

This course offers an introduction to historiographies of science, technology and the environment (STE), investigating which questions and methodologies about STE have dominated historical scholarship. We'll explore issues of identity, geopolitics, and cultures by following historians' changing understandings of the patterns of knowledge production, dissemination, uptake, and resistance across STE. This course provides an introduction to the critical historiographies in the "science, technology, and environment" concentration within the history B.A.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 303 The Study of Global History 4.0 Credits

This course explores modern global history from the 17th to 21st century, familiarizing students with theories of global history (Annales School, world systems theory) while insisting on bottom up approaches. Taking a transnational perspective, students will follow things, ideas, and people on the move and delve into the spaces enabling such moves (ports, slave markets, caravans, cafes, technological infrastructures, scientific institutions). This course provides an introduction to the critical historiographies in the "global history" concentration within the history B.A.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 307 History of Education and Anti-Colonial Resistance 4.0 Credits

This course will explore historically complex moments in the history of education and the resistance forces that emerged during liberation struggles across the globe. Students in this class will engage with a critically historical study on the history and process of education that will allow us to think and reflect on educational experiences and also to think, imagine and develop possible strategies and praxis of the revolutionary pedagogy for liberation and decolonization. Some topics that will be approached in this course are 1) the theory of the hidden curriculum, 2) education under colonial and oppressive regimes, 3) social and political movements' educational practices, 4) their transnational approaches, and 5) historical ideas of learning, talent, opportunity and human difference.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 315 History of Capitalism 4.0 Credits

This course covers capitalism since 1500, taking a broad view of the development of this economic system in historical context. A complex set of cultural, political, and economic factors shaped capitalism over time and place, and students will consider variations and the explanations for its development. Among other things, the course will include a discussion of trade, firms, politics, and finance.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 316 History of American Business 4.0 Credits

This course explores the history of American business, broadly defined, including the evolving structure of business enterprise, business/government relations, business in an international context, and business and American culture since 1800.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 321 Themes in Global Environmental History 4.0 Credits

This course covers global history of the environment, with a special emphasis on environmental factors in urban, political, economic, and social development and change. Faculty may tailor the course to fit specific themes of expertise and interest. Themes may focus more specifically on particular time periods or sub-questions (migration, demography, politics and mass movements) but the approach will also be a transnational/global analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 322 Empire and Environment 4.0 Credits

This course will deal with how colonial rule altered the environment including agrarian societies, rivers, forests, cities, human-animal and human-insect relations in colonial settings through the nineteenth and twentieth centuries. Students will learn about the colonial improvement missions of producing the tropical landscapes, productive agriculture, irrigation canals, dammed rivers and the creation of new environmental subjects in the empire.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 323 The History of Climate Change 4.0 Credits

In this course, we will explore how both natural and anthropogenic climate change eras have shaped human history, from the transformation of species to the current geopolitics of the oil regimes. By taking critical moments in the history of climate-human interaction, this course will explore the history of scientific ideas and practices, from the 18th century to the present, that serve as the foundation for modern conceptions of the weather and climate as a global system. Our aim is to put current scientific debates on climate change into historical and critical perspective as we seek to understand the ways climate has been interpreted and understood over time, both within and outside the scientific community.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 331 [WI] The American Revolution 4.0 Credits

The course examines the secession of the British colonies from the empire, including the causes of secession, conflicts among the colonists, the Revolutionary War, international relationships during the war, and how the war transformed the colonies and their peoples.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 333 U.S.-Mexican War 4.0 Credits

The war between the United States and the Mexico Republic was one of the most important moments in the national history of each country. Using scholarship that explores the war from both sides of the border, this course encourages students to think critically about historical evidence, particularly as it reflects different ethical and cultural perspectives.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 334 American Empire in the Nineteenth Century 4.0 Credits

In this course, students study American territorial acquisition and settlement during the nineteenth century from the Louisiana Purchase to the Philippine-American War. Students will draw on perspectives from a variety of approaches to history, including cultural, political, and social history.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 338 [WI] The Vietnam War 4.0 Credits

The course focuses on the Second Indochina War between the United States and North Vietnam but also includes the origins of the Vietnam War in French imperialism, World War II, the Cold War, and the First Indochina War. Students also look at the consequences of the war for Vietnam, America, and the Cold War.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HIST 341 Disabilities in History 4.0 Credits

This class considers histories of so-called abled and disabled bodies and the cultural persistence of that binary. It includes examples from many eras and global settings, and it touches on what have conventionally been categorized as both physical and intellectual disabilities. We will consider how historical landscapes, economies, technologies, sciences, arts, skills, and ideas of prestige and stigma all reflect shifting beliefs about ability and disability.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 342 Madness, Mental Health and Psychiatry in the Modern West 4.0 Credits

This course will examine changing assumptions, attitudes and ideas about behavior variously labeled madness, insanity, or mental illness; the development of professions, treatments, institutions and policies dealing with it; and the changing experiences of those afflicted.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 344 History of the AIDS Pandemic 4.0 Credits

This course explores responses to the AIDS crisis in Philadelphia and the United States. It investigates the medical, political, and activist responses to the AIDS crisis with a special emphasis on the lesser-known perspectives of AIDS activists and organizations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 355 Venice and the Mediterranean from the Middle Ages to Napoleon 4.0 Credits

Venice was one of the most important states in the Mediterranean for centuries during the Middle Ages and Early Modern periods of European history. It occupied a key place (both physically and metaphorically) between West and East, between Europe and the Byzantine and later Ottoman empires. Venice provides a vantage point from which to observe the history of the broader Mediterranean region.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 358 Witches, Demons, and Witch-hunters in European History 4.0 Credits

This course explores the history of magic, witchcraft, and demonology in Europe and its colonies from antiquity through the late 1700s. Main topics include the origins of European ideas and practices related to the supernatural; how those ideas and practices changed through Middle Ages and Renaissance; why large-scale witch-hunts emerged in early modern European societies; and why such hunts eventually faded out. We also consider questions of historical methods: How should scholars approach the problem of understanding the history of magic, witchcraft, and demonology? What sources can we use? How should we interpret those sources?

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 365 Science and State Power: Colonialism 4.0 Credits

This course will introduce students to the history of how science was practiced in colonial India and its relation to state power. Students will learn how developments in natural and social sciences were related to civilizing mission, how bodies became sites of governance in the colony, and the lasting legacy of scientific research in the postcolonial atomic state of India.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 366 The Black Atlantic: Slave Societies of the Americas 4.0 Credits

Between the sixteenth and nineteenth centuries, over twelve million Africans crossed the Atlantic in chains. Those who survived, and millions more of their descendants, were bought and sold as commodities and forced to labor under conditions of bondage in places as varied as Brazil, the Caribbean, and North America. Their diverse experiences of exploitation, struggle, perseverance, and liberation lie at the core of the foundation, and entrenchment, of the colonial order in the Americas. This course introduces students to scholarship on the history of the slave societies of the colonial Americas. It will trace how African and Afro-descendant people's varied experiences of slavery and freedom between the sixteenth and nineteenth centuries forged an interconnected and diverse Black Atlantic world.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 368 Silences in African History 4.0 Credits

Colonization and capitalism deeply impacted the history of Africa, including in the way we understand the history. This course examines some of the silences in the historical record and considers the ways research can construct and reproduce the silences, as well as unveil them, in the history of the continent. What are these silences? What forces might be moving behind them? What hidden languages can we find when we question the silences? How do these silences affect our perception of the continent today? What are the ramifications in the world today?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HIST 380 Advanced History Seminar 4.0 Credits

An advanced variable topics course that includes a substantial independent research project. Topic varies by instructor. May be repeated for credit (if on a different topic). History majors are required to take at least one HIST 380.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 10 times for 132 credits

HIST 490 [WI] Senior Seminar I 4.0 Credits

In this senior capstone course, students conduct original research and produce an in-depth research project supervised by a historian.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HIST and classification is Senior.

Prerequisites: HIST 301 [Min Grade: D]

HIST 491 [WI] Senior Seminar II 4.0 Credits

Requires completion of the project begun in HIST 490.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HIST and classification is Senior.

Prerequisites: HIST 490 [Min Grade: D]

HIST I199 Independent Study in HIST 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST I299 Independent Study in HIST 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST I399 Independent Study in HIST 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST I499 Independent Study in HIST 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST T180 Special Topics in History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST T280 Special Topics in History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST T380 Special Topics in History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

HIST T480 Special Topics in History 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Honors Program

Courses

HNRS 200 Introduction to Honors Program 0-1 Credits

Offers intensive discussion of a subject of significant intellectual interest. Subjects vary from section to section and are meant to engage entering Honors students with one another under the guidance of Drexel's best faculty. Different sections may be taken for credit.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Freshman.

HNRS 201 Honors Seminar 1.0 Credit

This course provides a forum for students to engage with Drexel faculty and Visiting Scholars across a variety of topics and issues. These courses often combine multiple disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 203 Honors Seminar in Civic Engagement 1.0 Credit

This course will focus on central ideas such as justice, community, systems of power and the role of the citizen.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

HNRS 210 Mentorship I 1.0 Credit

Students will receive an overview of what it means to be a leader and how to support the first year student experience including: preparing for Honors Student Orientation, mentor programming and best practices.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 220 Mentorship II 1.0 Credit

Students will survey leadership models and explore topics including group dynamics, maintaining successful interpersonal relationships and conflict resolution.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 280 Great Works 1.0-12.0 Credit

This course is designed for an in-depth exploration, reading, discussion, or analysis of a great human achievement, which may be literary, technological, or social. In this seminar-style setting, students will review a seminal work from any range of disciplines, including literature, philosophy, history, religion, anthropology, psychology, and science.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS 301 Honors Colloquium 3.0 Credits

This course provides a forum for students to engage with Drexel faculty and Visiting Scholars across a variety of topics and issues. These courses often combine multiple disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 302 The Symposium 3.0 Credits

The Symposium is an interdisciplinary course series sponsored by the Pennoni Honors College and is open to all students throughout Drexel. Its intent is to explore subjects of the broadest possible interest and greatest societal impact. Individual course topics will change from term to term, but each course focuses on developing in students the active skills of interdisciplinary inquiry: critical thinking, methodological creativity, synthesis of information across fields, communication and collaboration among disciplines, and application of knowledge.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 303 Honors Colloquium: Arts and Culture 3.0 Credits

This variable topics Honors colloquium draws upon creative, expressive, and/or cultural fields. This course provides a forum for students to engage with Drexel faculty and visiting scholars about issues pertaining to the fields of literature, art, creative expression, and cultural studies, among others, to promote critical intellectual reflection and exchange of ideas among students across different disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 304 Honors Colloquium: STEM 3.0 Credits

This variable topics Honors colloquium draws upon scientific, technological, and mathematical fields. This course provides a forum for students to engage with Drexel faculty and visiting scholars about issues pertaining to the fields of the natural sciences, engineering, mathematics, and technology, among others, to promote critical intellectual reflection and exchange of ideas among students across different disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 305 Honors Colloquium: Sociological and Behavior Studies 3.0 Credits

This variable topics Honors colloquium draws upon sociological and behavioral fields. This course provides a forum for students to engage with Drexel faculty and visiting scholars about issues pertaining to the fields of social systems, politics, psychological and behavioral sciences, among others, to promote critical intellectual reflection and exchange of ideas among students across different disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 306 Honors Colloquium: History and Philosophy 3.0 Credits

This variable topics Honors colloquium draws upon ethical, historical, and humanistic fields. This course provides a forum for students to engage with Drexel faculty and visiting scholars about issues pertaining to the fields of ethics and philosophy, history, and religion, among others, to promote critical intellectual reflection and exchange of ideas among students across different disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 307 Honors Colloquium: Business 3.0 Credits

This variable topics Honors colloquium draws upon business, management and financial fields. This course provides a forum for students to engage with Drexel faculty and visiting scholars to promote critical intellectual reflection and exchange of ideas among students across different disciplines.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 400 Honors Thesis Proposal Workshop 1.0 Credit

This course is the proposal workshop for students preparing to embark on their Honors thesis. Available to students who are pursuing Honors with Distinction.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 410 Mentorship Practicum I 1.0 Credit

Students will participate in the Honors Mentor Program and complete mentorship programming requirements that will support first year students through academic and social initiatives.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HNRS 210 [Min Grade: B]

HNRS 420 Mentorship Practicum II 1.0 Credit

Students will participate in the Honors Super Mentor Program and complete mentorship programming requirements that will support first year students through academic and social initiatives as well as initiatives to oversee other upperclassmen mentors.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HNRS 220 [Min Grade: B]

HNRS 430 Community Engagement 1.0-3.0 Credit

Students will explore community based initiatives and will unpack what community means to them in the context of Drexel, Philadelphia and the world around them.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

HNRS 435 Philadelphia Civic Experience 3.0 Credits

This course provides students with an opportunity to merge the foundational theories and concepts of civic engagement and democratic participation learned within their Honors Civic Foundations coursework with praxis through collaboration with a Philadelphia-based civic organization.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Prerequisites: CIVC 101 [Min Grade: B]

HNRS 455 Honors Reflection Seminar 3.0 Credits

Reflection is a rigorous way of thinking. It challenges us to make meaning of experiences and our understanding of the learning that took place.

Throughout this course, students will explore their time at Drexel, reflect on their lived experience, and learning. The class will begin with an introduction to, and practice of, reflection. We will examine one's own personal characteristics and qualities while actively engaging in methods of reflection by exploring professional paths, competencies, and skills. This is an opportunity to pause and digest your learning and growth. The course format will allow for group learning and 1:1 dialogue and ultimately result in a portfolio for personal or professional use.

College/Department: Pennoni Honors College

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HNRS 499 Honors Thesis 3.0 Credits

Available to students who are pursuing Honors with Distinction.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HNRS 400 [Min Grade: B-]

HNRS I199 Independent Study in HNRS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS I299 Independent Study in HNRS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS I399 Independent Study in HNRS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS I499 Independent Study in HNRS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS T180 Special Topics in HNRS 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS T280 Special Topics in HNRS 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS T380 Special Topics in HNRS 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

HNRS T480 Special Topics in HNRS 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Pennoni Honors College

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Hotel & Restaurant Management Courses

HRM 110 Introduction to the Hospitality Industry 3.0 Credits

This course focuses on the diverse segments of the hospitality industry: hotel, event planning, travel and tourism, restaurants, and the casino industry. Topics include an overview of the field, the careers in the industry, and current issues and topics.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CULA or major is HOSP or major is HRM.

HRM 120 Principles of Food-Service Management 3.0 Credits

Examines the food and beverage industry from a managerial perspective focusing on labor and cost control, menu planning, and managerial issues. This course is an in-depth real world focus on current food service and its relation to other segments of the hospitality industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 110 [Min Grade: D]

HRM 125 Hotel Operations Management 3.0 Credits

This course studies front-office management and control, including pricing, occupancy rates, audits, reservations, revenue management and other special functions. Interaction between the rooms division and other divisions within the hotel setting will be discussed. Customer service and guest needs will be emphasized.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 130 Introduction to Tourism 3.0 Credits

The course reviews the basic concepts and techniques in the field of tourism and tourism management. It is an introduction to the tourism industry, cost and benefits of tourism, effects on the host communities, impacts on travelers and host communities, and promotion of tourism.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 131 Tourism Geography 3.0 Credits

Students will become conversant in global geography and acquainted with significant world-class tourism destinations around the globe, with an emphasis on the top five world tourism destination countries of France, Italy, Spain, the United States and China.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 130 [Min Grade: D]

HRM 150 Food & Beverage Customer Service 3.0 Credits

This course focuses on customer service within the food and beverage aspects of the hospitality industry, how service relates to the customer's needs, how to create this transference, and how the fundamental aspects are applied in the setting of the professional dining room.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CAS or major is CLSC or major is CULA or major is HOSP.

HRM 155 Hotel Customer Service 3.0 Credits

This course will examine the role that customer service plays in dictating a hotel employee's performance in order to exceed guest expectations. Student will explore certification areas that relate to hospitality and gain hands-on exposure through a series of field studies, reflections, and role playing scenarios.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 110 [Min Grade: D]

HRM 160 Laws of the Hospitality Industry 3.0 Credits

Examines legal subjects relative to the foodservice and lodging industries including government regulations and foodservice operators, foodservice contracts, liability, patron civil rights, franchising, and bankruptcy and reorganization. Includes analysis of case studies and relevant court decisions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 165 Introduction to the Events Industry 3.0 Credits

This course is designed to provide students with an introduction to the all of the facets within the event planning industry. The purpose of the course is to gain experience in planning, orchestrating, budgeting, and managing events. Students will review and utilize the following: core vocabulary, best practices and principles, proposals and event specification sheets, destination and venue choice. Students will apply these principles for the Philly Chef Conference.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 190 Industry Hours I 1.0 Credit

This course provides students an opportunity to gain professional networking experience in the hospitality industry. Students will participate in industry events, pursue professional society memberships, do volunteer hours, and conduct informational interviews with professionals in the industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 215 Commercial Food Production 4.0 Credits

A practical based examination of back of the house food service practices. This course focuses on quantity and quality production of food for restaurant and event services, managerial elements of running a kitchen, and daily food service operations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CULA 115 [Min Grade: D] or CULA 120 [Min Grade: D]

HRM 220 Purchasing and Cost Controls for the Hospitality Industry 3.0 Credits

Covers principles and techniques of quantity-foods purchasing and hospitality furnishings. Emphasizes channels of distribution, determination of specifications, mechanics of buying, managing costs, and maximizing profits within food-service facilities.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HRM 225 Equipment Design and Layout 3.0 Credits

Covers principles of selection, operation, and maintenance of food-service equipment. Emphasizes requirements for various hospitality facilities and the supporting design, construction, and renovation of such.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HRM 120 [Min Grade: D]

HRM 290 Industry Hours II 1.0 Credit

This course provides students an opportunity to gain professional networking experience in the hospitality industry. Students will participate in industry events, pursue professional society memberships, do volunteer hours, and conduct informational interviews with professionals in the industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 305 Food Blogging 3.0 Credits

A practical introduction to writing for the online space using multi-media skills, creative independence, and social media. This class also includes ethical discussions that are particular to the ever-changing digital landscape.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HRM 330 Hospitality Marketing and Branding 3.0 Credits

This course explores marketing and public relations industry concepts and applications unique to the various segments of the hospitality industry. The course focuses on basic marketing and public relations principles and services, advertising and sales in conjunction with the information needs of hospitality managers.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HRM 335 Beverage Management 3.0 Credits

Provides a comprehensive study of wines, spirits, and beers and the role they play in the success of the hospitality industry. Covers topics including history, marketing and sales, channels of distribution, manufacturing processes, mixology, and service and control systems, with concentration in American and European wines and international beers. Gears application to computerized and accounting system. tips certification.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 120 [Min Grade: D]

HRM 340 Catering Management 3.0 Credits

Examines techniques of catering management and their application in the professional food-service environment, with emphasis on menu planning, controls, and budget preparation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: HRM 120 [Min Grade: D]

HRM 345 Convention Management 3.0 Credits

Provides an in-depth study of convention, corporate, and group segments of the hospitality industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HRM 110 [Min Grade: D]

HRM 355 Resort Management 3.0 Credits

This course studies the unique aspects of managing a full service destination resort in contrast to a traditional hotel operation. Students will study varied aspects of resort management including guest profiles, resort operations, report marketing and program development among other topics.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 125 [Min Grade: D]

HRM 360 Hospitality Industry Public Relations 3.0 Credits

This course provides students with an understanding of the process and effective use of public relations as applied to the hospitality industry with a focus on restaurants. A variety of marketing communication media including advertising, sales promotions, and development of a press kit and press releases will be examined. During the course students will develop a public relations campaign for a specific restaurant.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 110 [Min Grade: D]

HRM 365 Heritage Tourism 3.0 Credits

Using the historic city of Philadelphia and its main background, this course reviews the significance and role of culture and heritage related tourist attractions. Students deal with the main issues in current research on heritage tourism while having hands-on exposure to the managements and marketing of some of Philadelphia's landmarks.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 130 [Min Grade: D]

HRM 390 Industry Hours III 1.0 Credit

This course provides students an opportunity to gain professional networking experience in the hospitality industry. Students will participate in industry events, pursue professional society memberships, do volunteer hours, and conduct informational interviews with professionals in the industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 395 Economics of Tourism 3.0 Credits

This course introduces participants to economic and government policy issues that impact the tourism industry. The course provides a strategic framework for understanding the macroeconomic and policy environment that is shaped by multilateral institutions, government and the tourism industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 399 Hospitality Practicum Experience 3.0 Credits

This course provides students an opportunity to gain additional short-term professional experience in the hospitality industry. Students secure their own position relevant to their area of interest and will work with a faculty member to reflect on their experiences. This guided, supported reflection will allow students to identify their strengths and weaknesses and to take steps to address concerns.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 410 Current Topics in Hospitality 3.0 Credits

The course provides an opportunity for students to engage with members of all segments of the hospitality industry to discuss their careers and the current state of each industry segment from a professional perspective.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 110 [Min Grade: D]

HRM 415 Fine Dining and Services 4.0 Credits

This advanced-level course requires students to design, produce, and market a weekly dinner to the public. With the participation of guest chefs from some of the area's finest hotels and restaurants, students produce food comparable to that served in the finest restaurants in the city.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HRM 215 [Min Grade: D]

HRM 425 Hospitality Industry Administration 3.0 Credits

This course provides students the opportunity to conduct an in-depth study of various managerial strategies with a hospitality executive. The course will examine the application of the tools of strategic management in hospitality settings and introduce models, methods, and techniques which can be used to identify strategic issues and generate future-oriented action plans to inform tactics that are designed to implement change.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CULA or major is HOSP or major is HRM and classification is Junior or Senior.

Prerequisites: HRM 355 [Min Grade: D]

HRM 435 Wine Regions of the World 3.0 Credits

Provides a detailed study of the classification, production, identification, and service of alcoholic beverages, with a major emphasis on wines. Uses a systematic approach to tasting and evaluation. Must be 21 years old prior to the first day of the term.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

HRM 436 Spirits and Mixology 3.0 Credits

The course will focus on the fundamentals of preparing and serving classic and craft cocktails. Students will explore the history, processes and uses of major spirits. Emphasis will be on the foundations of creating a bar program, costing out recipes, and proper service guidelines.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 437 Fundamentals of Beer 3.0 Credits

This course is focused on the world's most important beverage from a historical, financial, and cultural perspective. Students will get a hands-on approach to beer tasting and the production of beer.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

HRM 450 Hospitality Leadership Seminar 3.0 Credits

This course integrates material covered in multiple disciplines related to the hospitality industry. Examines the development of innovative management in all segments of the industry. Identification and development of a personal leadership philosophy and style.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is HOSP or major is HRM and classification is Senior.

HRM 455 Hospitality Human Resources Management 3.0 Credits

This course examines the specific function of human resources in the hospitality industry by examining careers in hospitality and through real-world practical application. Topics examined include the importance of recruitment and selection, training, compensation programs, and performance management in all segments of the hospitality industry.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is CULA or major is HNUT or major is HOSP or major is NFDS and classification is Junior or Senior.

HRM I199 Independent Study in Hotel & Restaurant Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HRM I299 Independent Study in Hotel & Restaurant Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HRM I399 Independent Study in Hotel & Restaurant Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is CULA or major is HOSP or major is HRM.

Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

HRM I499 Independent Study in Hotel & Restaurant Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HRM T180 Special Topics in Hotel & Restaurant Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HRM T280 Special Topics in Hotel & Restaurant Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HRM T380 Special Topics in Hotel & Restaurant Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

HRM T480 Special Topics in Hotel & Restaurant Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Human Resource Management

Courses

HRMT 321 Staffing in Organizations 4.0 Credits

This course provides an overview of the process by which managers make decisions about staffing. It is intended to be useful for line managers and for persons who seek professional careers in HR. The focus is on theories, research, policies, and practices concerning selection for effective utilization of human resources.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: HRMT 323 [Min Grade: D]

HRMT 323 Principles of Human Resource Administration 4.0 Credits

Covers the underlying principles of personnel administration used in organizations by personnel departments and often by line managers. Uses case studies and exercises to illustrate the practical implications of various principles.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ORGB 300 [Min Grade: D]

HRMT I199 Independent Study in HRMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

HRMT I299 Independent Study in HRMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

HRMT I399 Independent Study in HRMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

HRMT I499 Independent Study in HRMT 1.0-4.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Junior or Senior.

HRMT T180 Special Topics in Human Resource Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

HRMT T280 Special Topics in Human Resource Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

HRMT T380 Special Topics in Human Resource Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

HRMT T480 Special Topics in Human Resource Management 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Humanities, General

Courses

HUM 006 Oral Communication Skills for Non-Native Speakers 0.0 Credits

Designed to help international members of the Drexel community improve their listening comprehension and oral communication skills in English.

Provides participants with opportunities to make presentations and receive constructive feedback, with particular attention to grammar, pronunciation, and fluency problems. Especially recommended for international teaching assistants.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

HUM 107 Humanities and Communications II 0.0-3.0 Credits

Covers the research process. Continues work with critical analysis begun in hum 106. Requires students to apply research methodology as they write a critical review and a chemistry synthesis paper, and develop group proposals for their design projects. Also requires students to continue the study of literature begun in hum 106 and continue keeping journals.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

HUM 108 Humanities and Communications III 0.0-3.0 Credits

Requires students to write a literary analysis of a play in production locally and discuss visual arts. Includes written and oral presentations of students' final engineering design projects. Coordinates readings in non-fiction with the course science component. Requires students to write a synthesis paper for biology and continue using journals as a means for reflection.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Industrial Engineering

Courses

INDE 240 Technology Economics 3.0 Credits

Techniques for project decisions: benefit cost, present worth and annual worth analysis, rate of return, minimum attractive rate of return, capital budgeting, risk analysis, and depreciation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

INDE 300 Quality Management 3.0 Credits

This is a course about managing quality. It will introduce quality concepts necessary for an organization to remain competitive in today's economy. Discussion will focus on the tools and techniques necessary to manage quality processes within an organization.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: MATH 122 [Min Grade: D]

INDE 301 Health Systems Introduction 3.0 Credits

Emphasis on the application of industrial engineering methodologies to analyze and solve health systems challenges. Critical evaluation of the utility of key industrial engineering concepts and tools for assessing and modeling health care problems and challenges in health care delivery.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

INDE 331 Lean Manufacturing 3.0 Credits

This course introduces the fundamental Lean Manufacturing principles that underlay modern continuous improvement approaches for industry, government and other organizations. The course will provide the student with an introduction to lean manufacturing describing the background behind its development and how evaluations and assessments of production systems are performed. Lean production tools and techniques such as flow, just-in-time, poka-yoke, inventory turns, standardized work, pull system, value streams, quick changeover, workplace organization, and visual controls will be described and in some cases demonstrated in simulation exercises.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

INDE 340 Introduction to Decision Analysis 3.0 Credits

Overview of modeling techniques and methods used in decision analysis, including multiattribute utility models, decision trees, and Bayesian models. Psychological components of decision making are discussed. Elicitation techniques for model building are emphasized. Practical applications through real world model building are described and conducted.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: STAT 262 [Min Grade: D] and MATH 122 [Min Grade: D]

INDE 350 Industrial Engineering Simulation 3.0 Credits

Covers techniques and application of computer simulation of existing or proposed real world systems and processes. Models of such systems or processes are often complex, precluding traditional analytical techniques. Students will build simulation models and do simulations with commercial simulation software, analyze and interpret the results, and to plan simulation studies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: STAT 201 [Min Grade: D] and MHT 226 [Min Grade: D]

INDE 351 Intelligent Manufacturing Systems 3.0 Credits

Design and simulation of intelligent manufacturing systems with special emphasis on sensor-integrated robotic assembly tasks. Fundamentals of artificial intelligence, application of robotics, sensors, vision, network integration, and flexible assembly work cells. Industry based case studies and working examples.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INDE 361 Quality Control 3.0 Credits

Covers theory and methods for design and analysis of quality control systems, including solutions to problems of product specifications, process control, acceptance inspection, and other means of quality assurance. Fall. Alternate years.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: STAT 201 [Min Grade: D]

INDE 362 Operations Research for Engineering I 3.0 Credits

Introduces systems sciences, including linear programming and other linear optimization methods, simplex method, primal-dual solution methods, the transportation method, pert-cpm and other network techniques, and dynamic programming. Requires development and presentation of simulation term-project proposals. Winter.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 261 [Min Grade: D]

Corequisite: MATH 261

INDE 363 Operations Research for Engineering II 3.0 Credits

Covers single and multi-episode probabilistic inventory models, queuing theory, single and multichannel systems, production scheduling and other assignment methods, Markov processes, Poisson processes and other stochastic systems, and replacement theory. Includes selected case studies. Applications: queuing, reliability, inventory, and finance. Requires development and presentation of term-project simulation models.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: INDE 362 [Min Grade: D]

INDE 365 Systems Analysis Methods I 3.0 Credits

Provides an introduction to the concepts and techniques used in analysis of complex systems. Covers the origins and structure of modern systems and the step-wise development of complex systems and the organizations of system development projects. Systems Development Lifecycle (SDLC) from concept development, engineering development, post-development.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: MET 300 [Min Grade: D]

INDE 366 Systems Analysis Methods II 3.0 Credits

OO (Object Oriented) Methodology and UML (Universal Modeling Language) modeling, within the SDLC (System Development Life Cycle) framework, are covered in this class. There are two components to OO systems Analysis and Design; The ORM (Object- Relationship Model) is a way to describe or represent objects, classes of objects, relationships between objects and classes, and memberships of the real world. The OBM (Object-Behavior Model) is a means of describing the behavior of objects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: INDE 365 [Min Grade: D]

INDE 367 Data Processing 3.0 Credits

Covers the information based skills necessary for Industrial Engineers. It is a project based course. Particular attention is paid to real world database problems. This course explains data acquisition and database systems. The course focuses on designing databases for given problems. Students will use different database techniques. Introduction to SQL.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INDE 370 Industrial Project Management 3.0 Credits

Provides an overview of the roles, responsibilities, and management methods of technology in project management. Emphasizes scheduling of various projects, monitoring, control and learning from projects. Three interrelated objectives of budget, schedule, and specifications are also introduced. The course assumes no prior knowledge in management techniques and is intended to teach students how to develop approaches and styles of management for service and manufacturing industry projects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INDE 375 Quality Improvement by Experimental Design 4.0 Credits

Methods for Design and analyzing industrial experiments. Blocking; randomization; multiple regression; factorial and fractional experiments; response surface methodology; Taguchi's robust design; split plot experimentation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: STAT 261 [Min Grade: D] or STAT 201 [Min Grade: D]

INDE 400 Designs of Program Evaluation Systems 3.0 Credits

Focus on evaluation broadly conceived to include evaluation of programs as well as within business organizations. The context of the class is evaluation in the health care sector, particularly long term care. Emphasis placed on the development of valid and practical models, and the identification and measurement of short-term and long-term intervention outcomes. Covers principles of research design, evaluation, and measurement issues.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: STAT 261 [Min Grade: D] or STAT 201 [Min Grade: D] or STAT 211 [Min Grade: D]

INDE 420 Industrial Energy Systems 3.0 Credits

The course enables students to understand the basics of energy supplies and uses, and how energy may be used more efficiently in industry. The course teaches students to use process integration methods and tools necessary for identifying and designing efficient industrial energy systems that contribute to sustainable development. The course addresses use of methods to identify the cost-optimal mix of different energy process technologies to satisfy a given process energy demand. Technical energy systems encountered in the course include electrical, thermal, and mechanical energy systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 202 [Min Grade: D] (Can be taken Concurrently)

INDE 461 Methods of Engineering and Measurement 3.0 Credits

Covers fundamentals for developing methods improvements and measurement of these improvements through time study and standard data. Includes analysis and design of man-and-machine work systems and application to typical problems in work measurements. Fall. Alternate years.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: POM 311 [Min Grade: D]

INDE 462 Industrial Plant Design 3.0 Credits

Covers design of a product-oriented facility, including process design, materials handling, work area design, storage and warehousing, and service-area planning. Includes complete final plant layout and presentation of term project. Winter. Alternate years.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: INDE 461 [Min Grade: D]

INDE 463 Production Management 3.0 Credits

Covers production planning and control systems, including materials, equipment, and manpower requirements; manufacturing planning and control, including production scheduling, inventory, and quality control; analytical methods for inventory control; and production planning and methods. Spring. Alternate years.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: INDE 462 [Min Grade: D]

INDE 467 Decision Processes 3.0 Credits

Covers advanced methods of analyzing decision-making under uncertainty, including expected value concepts and criteria, decision tree analysis, preference theory concepts, probabilistic risk assessment, risk analysis using simulation techniques, and decisions to purchase imperfect information. Uses case studies relating to facility siting, resource exploration and development, and new technology deployment and market penetration. Fall. Alternate years.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 261 [Min Grade: D]

INDE 468 Analysis of Experimental Data 3.0 Credits

Covers use of linear and non-linear models to identify cause and estimate effect. Includes randomization and blocking with paired comparisons, significance testing and confidence intervals, factorial designs, least squares regression analysis, response surface methods, analysis of variance, and Box-Jenkins and other time series forecasting methods. Fall.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 261 [Min Grade: D]

INDE 469 Organization Planning and Control 3.0 Credits

Analyzes human, capital, and physical resource planning, allocation, and control, including human factors and man-machine interface, technological innovation, concepts of behavioral science, and structure and dynamics of industrial organizations. Uses a case study approach to situational analysis. Spring. Alternate years.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: POM E311 [Min Grade: D] and POM 461 [Min Grade: D]

INDE 470 Engineering Quality Methods 3.0 Credits

Methods for controlling and improving industrial processes. Control charts; process capability; multifactor experiments; screening experiments; robust designs. Understanding of the continuous quality improvement tied to a real life project improvement.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INDE 490 Senior Project Design 4.0 Credits

Design methodology and engineering principles applied to open-ended design problems with inherent breadth and innovation. This course integrates the knowledge acquired in the various courses of the undergraduate curriculum to an open-ended design effort and applies the knowledge gained to the solution of contemporary engineering problem. Requires written and oral final reports, including oral presentations by each design team at a formal design conference open to the public and conducted in the style of a professional conference. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: INDE 470 [Min Grade: D] (Can be taken Concurrently)

INDE I199 Independent Study in Industrial Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

INDE I299 Independent Study in Industrial Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

INDE I399 Independent Study in Industrial Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

INDE I499 Independent Study in Industrial Engineering 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

INDE T180 Special Topics in INDE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

INDE T280 Special Topics in INDE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

INDE T380 Special Topics in INDE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

INDE T480 Special Topics in INDE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Information Science & Systems

Courses

INFO 101 Introduction to Computing and Security Technology 3.0 Credits

Explores the infrastructure that makes current information and communication technology possible. Introduces foundational concepts of servers, networks, databases, and the Web. Addresses security and usability considerations that cut across all computing technology. Approaches computing technology from the perspective of system administrators who plan, manage, operate, and monitor large scale computing infrastructure. Covers emerging technologies including pervasive computing, continuous integration, virtualization, and the Internet of things. Explores professional opportunities in this high demand area.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 102 Introduction to Information Systems 3.0 Credits

Introduces students to major types of information systems and their development and their use in organizations. Emphasizes ways in which information systems can be used to help individuals and organizations meet their goals. Assumes basic knowledge of computing concepts.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 103 Introduction to Data Science 3.0 Credits

A first course in data science. Introduces data science as a field, describes the roles and services that various members of the community play and the life cycle of data science projects. Provides an overview of common types of data, where they come from, and the challenges that practitioners face in the modern world of "Big Data." Provides an introduction to the interdisciplinary mixture of skills that the practice requires.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 110 Introduction to Human-Computer Interaction 3.0 Credits

Introduces the field of human-computer interaction, with a broad scope that exposes students to a variety of approaches for conceptualizing, designing, and evaluating user interfaces and user experiences. Focuses on using design thinking to define problems and solutions, and developing skills for critiquing interactive systems. Topics include interaction design principles, user experience research, usability evaluation, and novel interaction paradigms.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 150 Introduction to Ubiquitous Computing 3.0 Credits

Introduces the field of ubiquitous computing, which refers to the modern era of computers embedded into everything we do, everywhere we are. From smartphones to smart homes, students will explore what makes an object or device "smart". Topics include privacy, interfaces, location, and context-awareness. Engages students of any background in reflecting on the role of ubiquitous computing in everyday life, and thinking critically about impacts of present and future technologies.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 151 Web Systems and Services I 3.0 Credits

Introduces technologies used to build leading-edge application systems and services on the World Wide Web. Coverage includes a selection of Web components such as mark-up and scripting languages, and server components of Web applications. Introduces Web programming using pair or small team programming activities.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 152 Web Systems and Services II 3.0 Credits

Explores techniques used to build leading-edge application systems on the World Wide Web. Topics include Web server components of Web applications, and basic database processing. Includes Web programming using pair or small team programming activities.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 151 [Min Grade: D]

INFO 153 Applied Data Management 3.0 Credits

Explores technologies used to gather, organize, store, and retrieve data in various forms. Focuses on using databases and various file formats in software systems. Topics include file and database access, data munging and management, and data structures. Includes data management software development using pair or small team programming activities.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 152 [Min Grade: D]

INFO 200 Systems Analysis I 3.0 Credits

Study of the principles, practices, methods and tools of systems analysis. Emphasis on learning pragmatic aspects of working as a systems analyst to perform the steps of analyzing problem, value, root cause, features, use cases, user stories, and dataflow diagrams.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 101 [Min Grade: D]

INFO 202 Data Curation 3.0 Credits

This class explores the full range of data curation lifecycle activities, from the design of good data through metadata creation, ingest, data management, access, implementation, and reuse. It will help students develop a foundation in the curation of digital information (including data), and will enable students to understand the role and objectives of curation for organizations and projects that use data to analyze, share and provide access and re-use to collections of their digital information.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 103 [Min Grade: D]

INFO 210 Database Management Systems 3.0 Credits

Focuses on how to design databases for given problems, and how to use database systems effectively. Topics include database design techniques using the entity-relationship approach, techniques of translating the entity-relationship diagram into a relational schema, relational algebra, commercial query languages, and normalization techniques.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 101 [Min Grade: D] or SE 210 [Min Grade: D]

INFO 212 Data Science Programming I 3.0 Credits

Introduces the main tools and ideas in the data scientist's toolbox.

Focuses writing interactive and programming code for extracting, cleansing, wrangling, transforming, reshaping, and analyzing data. Covers practical tools and ideas including Linux command line, version control, git, and interactive programming. Studies various Python packages for high performance data analysis.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 153 [Min Grade: D] or CS 172 [Min Grade: D]

INFO 213 Data Science Programming II 3.0 Credits

Discusses the latest analytic and predictive techniques to solve real world business problems. Focuses on practice rather than theory by using existing Python libraries and tools to produce solutions. Covers practical Python implementations of the basic concepts in mathematics and statistics that are at the core of data science. Introduces Python libraries for the most common models and techniques for data analytics such as clustering, classification, regression, and decision trees.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 212 [Min Grade: D] and (STAT 201 [Min Grade: D] or MATH 311 [Min Grade: D])

INFO 215 Social Aspects of Information Systems 3.0 Credits

Introduces social issues involved in information systems design and use, e.g., personal computing, telecommuting, computers in education, the privacy and security of stored and transmitted information, and information ownership. Explores the interaction of high technology, employment, and class structure.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 250 Information Visualization 3.0 Credits

Introduces the foundation and the state of the art of information visualization. Explores and reflects on the design, application, and evaluation of a diverse range of information systems. Demonstrates how a number of common types of information can be visually, intuitively and interactively represented. Provides a first-hand experience of visualizing a variety of realistic data types.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

INFO 300 Information Retrieval Systems 3.0 Credits

The theoretical underpinnings of information retrieval are covered to give the student a solid base for further work with retrieval systems. Emphasis is given to the process of textual information for machine indexing and retrieval. Aspects of information retrieval covered include document description, query formulation, retrieval algorithms, query matching, and system evaluation.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: (INFO 153 [Min Grade: D] or CS 172 [Min Grade: D]) and INFO 102 [Min Grade: D]

INFO 310 Human-Centered Design Process & Methods 3.0 Credits

Introduces the student to the process of human-centered design of interactive user interfaces. Teaches some of the basic approaches to design and evaluation of interactive user interfaces. Delivers practical advice on interaction design challenges. Applies human-centered design principles in the design of the user interface to an interactive computer system.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 110 [Min Grade: D] or INFO 151 [Min Grade: D] or CS 171 [Min Grade: D] or ECE 105 [Min Grade: D] or ECE 203 [Min Grade: D]

INFO 315 Advanced Database Management Systems 3.0 Credits

This course will cover advanced database systems and concepts necessary in understanding modern database technologies beyond INFO 210 (Database Management Systems). Major topics include database programming in PL/SQL, including stored procedures, functions, triggers and packages, business intelligence, data warehouses, OLAP, ETL, data lake, big data architectures, and principles & practices of NoSQL databases.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 210 [Min Grade: D]

INFO 323 Cloud Computing and Big Data 3.0 Credits

Provides overview and insights into technologies, opportunities, and challenges related to cloud computing and big data. Covers concepts of scalable data analysis, predictive modeling, and graph analysis through specific cloud computing platforms. Introduces the components and tools in cloud computing ecosystems associated with big data solutions as well as NoSQL databases. Through hands-on instructions and assignments, students will develop working knowledge of practical tools and strategies of processing massive data sets using the map/reduce framework.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 103 [Min Grade: D] and INFO 210 [Min Grade: D] and INFO 212 [Min Grade: D]

INFO 324 [WI] Team Process and Product 3.0 Credits

Provides hands-on experience with working in small teams to apply processes and produce products typical of current best practices in computing and information technology organizations. Allows students to develop an integrated understanding of project life cycle phases. Examines issues of team organization and operation, problem solving, and communication.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: (INFO 153 [Min Grade: D] or CS 172 [Min Grade: D]) and INFO 200 [Min Grade: D]

INFO 332 Exploratory Data Analytics 3.0 Credits

In this course students learn the essential exploratory techniques for summarizing and analyzing data. The course discusses how to install and configure software necessary for a statistical programming environment. It covers practical issues in statistical computing, which includes programming in R and how to use R for effective data analysis. The course covers the plotting systems in R and some of the basic principles of constructing data graphics.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 103 [Min Grade: D] and (STAT 201 [Min Grade: D] or PBHL 211 [Min Grade: D])

INFO 355 Systems Analysis II 3.0 Credits

A project-oriented course that discusses software engineering and advanced techniques of requirements modeling, prototyping and software design, particularly utilizing object-oriented techniques. The course builds upon Systems Analysis I, requiring students to apply their knowledge of systems analysis tools and techniques.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 210 [Min Grade: D] and INFO 200 [Min Grade: D]

INFO 365 Database Administration I 3.0 Credits

Database Administration is a continuation of Database Management Systems, and includes the following: advanced ERD techniques, database management system internals and advanced elements of the SQL language, as well as stored procedures and triggers, specifically as demonstrated in the Oracle implementation.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 210 [Min Grade: D] and (CS 171 [Min Grade: D] or CS 175 [Min Grade: D] or INFO 152 [Min Grade: D] or SE 102 [Min Grade: D])

INFO 366 Database Administration II 3.0 Credits

Introduces the principles and practices of database administration, particularly as they apply to commercial-grade relational database management systems. The course will include, but not be limited to, installation, systems tuning, application tuning, security, user management, backup and recovery. To this end, internals of RDBMSs will be discussed, using major commercial RDBMSs as examples. Distributed database issues will also be discussed. As time permits, other advanced issues will be addressed, such as issues of object and object-relational databases.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 365 [Min Grade: D]

INFO 371 Data Mining Applications 3.0 Credits

Introduces students to basic data mining approaches using machine learning tools. Focuses on machine learning algorithms for information inference and knowledge discovery from data. Covers major applications in data/text/web processing, analysis and mining.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: STAT 201 [Min Grade: D] or PBHL 211 [Min Grade: D] or MATH 311 [Min Grade: D]

INFO 375 Introduction to Information Systems Assurance 3.0 Credits

Introduction to the problem of security for modern information systems.

Provides an overview of threats, both human and computer, to the security of an organization's data and information resources. Explores how systems may be made less vulnerable and how to respond.

Examines issues of personal security in an electronic world.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 200 [Min Grade: D] and CT 140 [Min Grade: D]

INFO 405 Social and Collaborative Computing 3.0 Credits

This course provides an introduction to the ways that computing systems support social interaction and productive collaboration. Students will learn concepts from social science theory and research and use these concepts to analyze systems and imagine novel systems designs that meet the needs of groups and organizations. Students will spend time examining, using, and participating in social and collaborative computing environments such as collaboration tools, crowdwork platforms, social media, and various online communities.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 310 [Min Grade: D] or INFO 110 [Min Grade: D]

INFO 420 Software Project Management 3.0 Credits

The objective of this course is to study project management in the context of software systems development. The course will cover the processes, contexts, metrics, planning and management concerns of managing projects for modern software systems.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: (INFO 200 [Min Grade: D] or SE 210 [Min Grade: D]) and (CS 172 [Min Grade: D] or CS 265 [Min Grade: D] or INFO 152 [Min Grade: D])

INFO 432 Advanced Data Analytics 3.0 Credits

Focuses on data analytic techniques that aim to understand data, discover knowledge, and learn from data. Presents the fundamentals of statistical inference and data analytic techniques in a practical approach. Provides methods on how to effectively collect data, analyze, understand data, and estimate some important quantities. Covers the key ideas in advanced functionality available in the R packages for conducting data analytics.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 332 [Min Grade: D]

INFO 440 Social Media Data Analysis 3.0 Credits

Explores data analytic methods for analyzing, understanding, and visualizing emerging trends on social media from social, organizational and cultural perspectives. Students will analyze various content materials and activities on social media to discern the relationship between online behavior and underlying social phenomena.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 212 [Min Grade: D] or CS 172 [Min Grade: D]

INFO 442 Data Science Projects 3.0 Credits

This course is a capstone course that provides an opportunity for students to apply a data science approach to solve domain problems. Students form a team and challenge a real-world project of their choices. Each team selects a domain and a data set, and then applies a data science approach to actual situations for real-world decision making. Each team is required to come up with a scientific question with a business value, perform an explorative data analysis, develop a data science model, evaluate the results, and communicate the results with audience.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: INFO 213 [Min Grade: D] and INFO 332 [Min Grade: D]

INFO I199 Independent Study in INFO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

INFO I299 Independent Study in INFO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

INFO I399 Independent Study in Information Science & Systems 2.0-12.0 Credits

Requires approval of advisor, supervising faculty member and college. BSIS majors may take a maximum of 6 credits of independent study.

Any exception to this maximum must be approved in advance by the student's advisor. Independent study on a topic selected by the student. Independent study is supervised by a faculty member and guided by a plan of study developed by the student in a term prior to the term in which the independent study is pursued.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

INFO I499 Independent Study in INFO 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

INFO T480 Special Topics in Information Systems 0.0-4.0 Credits

Selected topics of interest to students in information systems. May be repeated for credit if topic varies.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

Interactive Digital Media

Courses

IDM 100 Introduction to Web Development 3.0 Credits

This is an entry level course for non-interactive digital media majors that introduces students to the process of managing online content as well as how to define the presentation styles and interaction modes for the user through the use of a content management system.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

IDM 101 History of Web Development 3.0 Credits

This course explores all aspects of web development including the foundations of web technologies, formulation of web standards and how the individual web surfer's wants and needs have changed over time. Also discussed will be ground-breaking websites and the evolution of interface design for the web.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

IDM 211 User Interface Design I 3.0 Credits

This course covers the design, prototyping, and evaluation of graphical user interfaces by exploring topics like human capabilities, input technologies, heuristic evaluation, and design methods, principles and rules. We will learn how to design aesthetically pleasing user interfaces, covering important design principles (learnability, visibility, error prevention, efficiency, and visual design) and the human capabilities that motivate them (including perception, motor skills, color vision, attention, and human error).

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

IDM 212 User Interface Design II 3.0 Credits

This course builds upon the topics covered in User Interface Design I by exploring advanced topics of graphical user interface design for desktop, mobile, and touch screen devices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 211 [Min Grade: D]

IDM 213 Interaction Design 3.0 Credits

This course is a study of interaction design. You will explore principles, patterns and process for interaction design, define the structure and behavior of interactive systems and how these can be used to create meaningful relationships between people and the products and services that they use.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 212 [Min Grade: D]

IDM 214 Human Factors Engineering 3.0 Credits

Discusses ways of applying psychological and physiological principles to the design of interactive systems, products, processes, and systems to address human capabilities and limitations in ways that ensure safety, effectiveness, and ease of use.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

IDM 215 User Experience Design I 3.0 Credits

In this course, students learn to identify and implement the elements required to create incredible digital experiences. Through the application of user-centered design practices, students will develop predictive and enjoyable designs based on a holistic consideration of users' experience. Topics covered in this course include brand personality, research strategies, content strategy, information architecture, and usability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 213 [Min Grade: D] (Can be taken Concurrently)

IDM 216 User Experience Design II 3.0 Credits

This course focuses on taking prototypes from User Design I and creating fully functioning web apps. Students will create and execute a full production pipeline and learn to incorporate User Design practices along the way.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 215 [Min Grade: D]

IDM 221 Web Design I 3.0 Credits

This course is a comprehensive overview of the design, creation, delivery and maintenance of functional, standards-based content on the Internet. Students will learn the aesthetics of web design alongside the underlying markup languages. They will critically evaluate web design quality, learn how to create and maintain quality web sites, and learn about accessibility and web design standards, and why they are important.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 211 [Min Grade: D] (Can be taken Concurrently)

IDM 222 Web Design II 3.0 Credits

This course builds upon the topics covered in Web Authoring I by exploring advanced web development topics and current industry best practices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 221 [Min Grade: D]

IDM 231 Scripting for Interactive Digital Media I 3.0 Credits

This course explores modern client-side scripting languages that interact with the user, control the browser, communicate asynchronously, and alter document content and functionality.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 221 [Min Grade: D]

IDM 232 Scripting for Interactive Digital Media II 3.0 Credits

This course explores modern server-side technologies for Internet based delivery of dynamic content that connect to and manipulate database content. Students learn how to build interactive, data-driven products.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 231 [Min Grade: D]

IDM 240 Interactive Graphics 3.0 Credits

In this course, students learn how to use modern development techniques to create responsive and scalable two-dimensional graphics with support for interactivity and dynamic animation. Topics include styling and transforming vector graphics, raster graphics, and text where the implementation takes future growth into consideration.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 222 [Min Grade: D] and (IDM 231 [Min Grade: D] or INFO 151 [Min Grade: D])

IDM 241 Microinteractions 3.0 Credits

In this course, students learn to identify and implement the elements required to create incredible digital experiences. Through the application of user-experience design practices, students will develop predictive and enjoyable interactive designs based on a holistic consideration of users' experience. Topics covered in this course include brand personality, content strategy, information architecture, and usability.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 213 [Min Grade: D] (Can be taken Concurrently) and IDM 231 [Min Grade: D]

IDM 245 Web Game Design 3.0 Credits

Examines multimedia-authoring tools used to create interactive games. Students learn real world production techniques as they master advanced game design concepts.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 231 [Min Grade: D]

IDM 250 Content Management Systems 3.0 Credits

Students set up a content management system and develop a custom theme. Includes project planning, organizing and maintaining a quality code base.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 222 [Min Grade: D] and (IDM 232 [Min Grade: D] or INFO 152 [Min Grade: D])

IDM 311 User Interface Design for Immersive Media 3.0 Credits

This course explores the nature of user interface design when applied to immersive media hardware, including Virtual Reality and Augmented Reality headsets.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 213 [Min Grade: D] and IDM 231 [Min Grade: D]

IDM 331 WebVR 3.0 Credits

This course explores ways to deliver virtual reality experiences via a web browser.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 231 [Min Grade: D] and IDM 311 [Min Grade: D]

IDM 361 Interactive App Design I 3.0 Credits

Focuses on creating user experiences optimized for mobile devices. Students learn to build unique web applications that take advantage modern mobile capabilities. Special consideration is given to limited screen real estate, low bandwidth Internet access, no Internet access, and touch screen devices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (IDM 213 [Min Grade: D] or IDM 215 [Min Grade: D]) and IDM 231 [Min Grade: D]

IDM 362 Interactive App Design II 3.0 Credits

This course builds upon the topics covered in Mobile Interactive Design I by exploring how to convert web-based applications into cross-platform native applications for mobile devices. Special consideration is given to incorporating functionality that is currently unavailable in web-based applications.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 231 [Min Grade: D]

IDM 363 Interactive App Design III 3.0 Credits

This course explores ways to deliver and test native mobile application prototypes using IDE's (integrated Development Environments).

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 231 [Min Grade: D]

IDM 364 Interactive App Design IV 3.0 Credits

Learn how to build and test dynamic web application prototypes using event driven JavaScript languages.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 231 [Min Grade: D]

IDM 371 Interactive Digital Media Workshop I 3.0 Credits

This course explores the developing or redesigning a successful interactive digital experience. Students work in team environments to analyze project requirements, develop a strategy for development, and utilize their design skills to present their findings to the client.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 216 [Min Grade: D] and IDM 232 [Min Grade: D]

IDM 372 Interactive Digital Media Workshop II 3.0 Credits

This course builds upon the topics covered in Interactive Digital Media Workshop I by continuing to work in a team environment to building a high-fidelity interactive digital media prototype with a focus on usability testing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 371 [Min Grade: D]

IDM 381 Experimental Interactive Technologies 3.0 Credits

This course focuses on researching new innovations in experimental digital media technologies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 213 [Min Grade: D] and IDM 232 [Min Grade: D]

IDM 382 Internet of Things 3.0 Credits

This course uses an open approach to enable quick and seamless interactions with physical objects and locations via web protocols.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: WEST 107 [Min Grade: D] and IDM 232 [Min Grade: D]

IDM 401 Professional Practices in Interactive Digital Media 3.0 Credits

This course will provide a broad overview of the practices of all areas included in the fields related to interactive digital media, including: organizational structure and roles, client communication and creative process, needs assessment, brief writing, brainstorming, concept development, pitches, pricing, proposals and presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 372 [Min Grade: D]

IDM 402 Validating Product Ideas 3.0 Credits

This course will teach you how to design, implement, and measure multichannel experiences with greater impact for customers, businesses, and society.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 215 [Min Grade: D]

IDM 417 User Research Methodologies 3.0 Credits

Understanding the user is the fundamental backbone of User Experience Design. This course will teach students how to construct, implement and analyze user interviews in a way that will allow them to gain deep insights into their target audience.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: IDM 215 [Min Grade: D]

IDM 418 Storytelling for User Experience Design 3.0 Credits

Students will learn how to use stories to understand the user, his/her goals and objectives, explain research, and describe design concepts.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

IDM I399 Independent Study in Interactive Digital Media 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

IDM T180 Special Topics in Interactive Digital Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

IDM T380 Special Topics in Interactive Digital Media 0.5-6.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Interior Design

Courses

INTR 160 Visualization I: Computer Imaging 3.0 Credits

An introductory course that explores the use of proprietary computer applications for communications and the preparation of visual materials in Interior Design. The course introduces and reinforces classic design principles for expert visual communication of ideas through digital techniques from an Interior Design perspective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

INTR 200 History of Modern Architecture and Interiors 3.0 Credits

Covers development of modern architecture and interiors in the 19th and 20th centuries. Develops a vocabulary for discussing architecture; an understanding of how various factors affect design; and a familiarity with names, movements, and buildings that are part of historical development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

INTR 211 Textiles for Interiors 3.0 Credits

This course is a comprehensive introduction to textiles and their use in the interior design profession.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INTR 220 Visualization II: Orthographic 3.0 Credits

This course explores design communication skills through hand drawing and model building exercises. Orthographic drawing skills are developed through investigation of plan, section, elevation and three dimensional drawings.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

INTR 225 Environmental Design Theory 3.0 Credits

This course introduces design students to the relationship between people and the build environment. Understanding how people perceive, interact with, and are affected by their surroundings through readings and design exercises make evident the significance of the psychological, pyshicological, social and cultural concepts of environmental behavior as an integral part of the designed environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INTR 231 Structure 4.0 Credits

Investigates structure as an organizing principle in design by man and nature. Explores the basic objective and subjective relationships between form and function. Includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 103 [Min Grade: C-] or VSST 106 [Min Grade: C-]

INTR 241 Visualization III: Digital 3.0 Credits

An intensive introduction to two and three dimensional drawing and visualization through the computer. This course explores orthographic and perspective drawing conventions and techniques from a digital perspective.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 232 [Min Grade: C-] or INTR 322 [Min Grade: C-]

INTR 245 Visualization IV: 3D Modeling 3.0 Credits

An intensive introduction to advanced modeling and rendering software. Students will explore lighting, materiality, advanced form and spatial experience through realistic three-dimensional digital models.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: INTR 241 [Min Grade: D]

INTR 250 Interior Materials 3.0 Credits

Introduces basic construction materials and how they may be used successfully by the interior designer. Includes sample materials, visual aids, and guest speakers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INTR 300 [WI] Visual Culture: Interiors 3.0 Credits

Visual Culture: Interiors addresses the interior environment by studying the role history, economics, culture, materials and technological developments, impact decisions made by designers on interior spaces. While comparing historical context with specific knowledge, this course will enable the student to be a more articulate designer by a comprehensive examination of the interiors.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INTR 305 [WI] Visual Culture: Furniture 3.0 Credits

An overview of furniture in relationship to interiors, and its influences reaching from the roots of antiquity to the impact of technology in today's products. It is the study of artifacts from various time periods and cultures in relation to social and political developments, life and work styles, visual arts, and economic influences.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

INTR 310 Sustainability: History, Theory and Critic 3.0 Credits

Course examines the meaning and implications of sustainable design to develop an informed interpretation and working assessment of this movement. Concepts and methodologies are explored through assigned readings, class discussion, feild trips and team research.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

INTR 322 Interior Studio I 4.0 Credits

Foundation spatial course: Involves conscious recognition of the manipulation of space or spaces within a given volume and with a small-scale environmental orientation. Includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 103 [Min Grade: C-] or VSST 106 [Min Grade: C-]

INTR 323 Interior Studio II 4.0 Credits

Primary spatial course. Involves conscious recognition of the manipulation of space or spaces within a given volume and small-scale environmental orientation. Includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 232 [Min Grade: C-] or INTR 322 [Min Grade: C-]

INTR 331 Residential Design Studio 4.0 Credits

Provides experience with extensive real space. Emphasizes recognizing its aesthetic quality and maximizing its potential to meet the requirements of the inhabitants, by stylistic quality and elaboration in the selection and application of furniture finishes and accessories. Includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: INTR 233 [Min Grade: C-] or INTR 323 [Min Grade: C-]

INTR 340 Community Studio 4.0 Credits

Covers research, diagramming, site considerations, and program requirements for a specific user group; designing for complex spatial requirements with integration of interior components and furniture. Includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 331 [Min Grade: C-]

INTR 341 Visualization V: Methods 3.0 Credits

An advanced course in visualization for Interior Design. Hybrid representation strategies and specialized topics in digital and hand rendering will be covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 241 [Min Grade: D]

INTR 342 Hospitality Design Studio 4.0 Credits

This course covers the design of commercial hospitality interiors. The studio project addresses program research and diagramming, site specificity, and designing for complex requirements with an awareness of vertical circulation, light, view, and enclosure. This course requires students to develop the ceiling plane and to create a visual identity for the design of restaurant interiors. This studio includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 323 [Min Grade: C-]

INTR 350 Interior Detailing 3.0 Credits

Covers basic considerations of interior construction and detailing and their application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 250 [Min Grade: D] and (INTR 233 [Min Grade: C-] or INTR 323 [Min Grade: C-])

INTR 351 Interior Lighting 3.0 Credits

This course analyzes human needs and the perceptual responses of both general and special populations. It introduces the lighting design theory and principles and explores methods of creating mood and atmosphere with light. It develops vocabulary, documentation methods and understanding of energy conservation, lighting standards, and safety.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 350 [Min Grade: D]

INTR 410 Collaborative Research in Sustainability 3.0 Credits

This cumulative course is the advanced students' opportunity to participate in a collaborative, interdisciplinary team in which the students will be applying sustainable technical and conceptual education in the context of 3rd party competitions, internally defined design challenges or applied research.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: ARCH 320 [Min Grade: C-]

INTR 430 Commercial Design Studio 4.0 Credits

Covers design of institutional-commercial interiors, including space planning, selection of materials and furnishings toward a synthesized environment, and development of specifications. Includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: INTR 342 [Min Grade: C-] or INTR 442 [Min Grade: C-]

INTR 440 Health & Wellness ID Studio 4.0 Credits

This studio addresses program and design requirements for a specific demographic community. It will prepare students to tackle the complex design problems that face the growing healthcare industry. The course focuses on an interdisciplinary approach to complex problems in the interior environment for the practice areas of health, healing, and well-being. Precedent studies, programming briefs, literature reviews, and collaborative teamwork are used to create evidence-based design solutions that incorporate creativity, human factors data, user-centered design approach, life-safety codes, and building codes. This studio includes professionally juried presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: INTR 430 [Min Grade: C-]

INTR 441 Furniture Design 4.0 Credits

Covers design of environmental elements, simultaneous concerns with craftsmanship and the application of materials to ideas, and development of prototypes. A lab fee is required for this course.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 13 credits

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: VSST 203 [Min Grade: D]

INTR 445 Contract Documentation for Interior Design 3.0 Credits

Provides an understanding of the basic procedures and techniques for the development of construction drawings and furniture documentation. Requires students to use case studies to produce a set of drawings representative of current interior design industry standards.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: INTR 245 [Min Grade: D] and INTR 430 [Min Grade: C-]

INTR 450 [WI] Professional Practice 3.0 Credits

Surveys contemporary business methods, practices, and procedures in the operation of a design firm, including legal and ethical implications. Examines these practices through case studies and lectures by design professionals.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: INTR 331 [Min Grade: C-]

INTR 451 Interior Systems 3.0 Credits

Introduces building systems, mechanical, electrical, ceiling and furniture systems, and their effect on the interior environment. Includes visual aids and guest speakers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: INTR 350 [Min Grade: D]

Corequisite: INTR 430

INTR 470 Competition Studio 3.0 Credits

Competition opportunities from regional to international from professional to philanthropic allow for investigations of diverse contemporary issues surrounding the built environment. Students work under direction of a faculty member(s) to discuss, explore and develop solutions for entry into noteworthy competitions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Can enroll if classification is Junior or Senior.

INTR 491 Senior Project I 3.0 Credits

Part one of the 3-term senior project where students develop a capstone independent design project from concept, research and programming to complete design development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is INTR.

Prerequisites: INTR 430 [Min Grade: C-]

INTR 492 Senior Project II 3.0 Credits

Part two of the 3-term senior project where students develop a capstone independent design project from concept, research and programming to complete design development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is INTR.

Prerequisites: INTR 491 [Min Grade: C-]

INTR 493 Senior Project III 3.0 Credits

Part three of the 3-term senior project where students develop a capstone independent design project from concept, research and programming to complete design development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is INTR.

Prerequisites: INTR 492 [Min Grade: C-]

INTR I199 Independent Study in Interior Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR I299 Independent Study in Interior Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR I399 Independent Study in Interior Design 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR I499 Independent Study in Interior Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR T180 Special Topics in Interior Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR T280 Special Topics in Interior Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR T380 Special Topics in Interior Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

INTR T480 Special Topics in Interior Design 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

International Business

Courses

INTB 200 International Business 4.0 Credits

This course examines economic, political, legal, and social factors affecting formulation of international business strategy.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

INTB 332 Multinational Corporations 4.0 Credits

Discusses the role and function of multinational corporations in the global economy, reasons for their existence, and the impact of market structures on the operations of multinationals. Considers the interactions between multinationals and national authorities, and the international transfer of technology.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C]

INTB 334 International Trade 4.0 Credits

Examines major issues in international trade and commercial policy. Uses real-world applications to derive and illustrate models of international trade. Covers rationales and benefits of international trade, protectionism, the political economy of commercial policy, international trade and development, and economic integration and world trade.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C]

INTB 336 International Money and Finance 4.0 Credits

Examines major issues in international finance and open-economy macroeconomics. Develops models of international monetary interdependence and applies them to real-world examples. Covers determinants of interest rates, balance of payments, international macro policy, restructuring the international monetary system, and globalization of financial markets.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C]

INTB 338 Regional Studies in Economic Policies and International Business 4.0 Credits

Study of the industry, trade and macroeconomic trends of a major world region, such as East Asia, Latin America, Europe or the Near East.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C] and ECON 202 [Min Grade: C]

INTB 440 Seminar in International Business 4.0 Credits

Writing and discussion on advanced topics relevant to International Business. Content is determined mainly by the interests of the students enrolled at a particular term.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: INTB 200 [Min Grade: C]

INTB I199 Independent Study in INTB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

INTB I299 Independent Study in INTB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

INTB I399 Independent Study in INTB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

INTB I499 Independent Study in INTB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

INTB T180 Special Topics in INTB 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

INTB T280 Special Topics in INTB 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

INTB T380 Special Topics in INTB 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

INTB T480 Special Topics in INTB 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

International Studies

Courses

IST 398 International Research Project and Study Abroad 0.5-20.0 Credits

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Italian

Courses

ITAL 101 Italian I 4.0 Credits

Introductory Italian. Includes listening, speaking, reading, and writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

ITAL 102 Italian II 4.0 Credits

Continues ITAL 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ITAL 101 [Min Grade: D] or APWIT 151

ITAL 103 Italian III 4.0 Credits

Continues ITAL 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ITAL 102 [Min Grade: D] or APWIT 251

ITAL 201 Italian IV 4.0 Credits

Intermediate Italian. Includes grammar review, listening, speaking, and reading. Recommended for students who wish to attain oral competence based on standard usage.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ITAL 103 [Min Grade: D] or APWIT 400

ITAL 202 Italian V 4.0 Credits

Continues ITAL 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ITAL 201 [Min Grade: D] or APWIT 600

ITAL I99 Independent Study in ITAL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL I299 Independent Study in ITAL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL I399 Independent Study in ITAL 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL I499 Independent Study in ITAL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL T180 Special Topics in Italian 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL T280 Special Topics in Italian 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL T380 Special Topics in Italian 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

ITAL T480 Special Topics in Italian 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 96 credits

Japanese

Courses

JAPN 101 Japanese I 4.0 Credits

Introductory Japanese. Includes listening, speaking, reading, and writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APJX N

JAPN 102 Japanese II 4.0 Credits

Continues JAPN 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: JAPN 101 [Min Grade: D]

JAPN 103 Japanese III 4.0 Credits

Continues JAPN 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: JAPN 102 [Min Grade: D]

JAPN 201 Japanese IV 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on Japanese 103.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: JAPN 103 [Min Grade: D]

JAPN 202 Japanese V 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on JAPN 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: JAPN 201 [Min Grade: D]

JAPN 310 [WI] Advanced Writing and Speaking 4.0 Credits

Provides advanced practice in written and oral communication, including journalistic, professional, and creative writing. Examines contemporary cultural contexts through media and news. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: JAPN 202 [Min Grade: D]

JAPN 320 Introduction to Language for the Professions 4.0 Credits

Introduction to communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN 340 Introduction to Power and Resistance 4.0 Credits

Introduction to the analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN 350 Introduction to Language, Media, and Society 4.0 Credits

Introduction to the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN 410 [WI] Advanced Grammar and Translation 4.0 Credits

Provides advanced grammar instruction and fosters translation and communication skills within a contemporary cultural context. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN 420 Advanced Studies in Language for the Professions 4.0 Credits

Advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN 440 Advanced Studies in Power and Resistance 4.0 Credits

Advanced analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN 450 Advanced Studies in Language, Media, and Society 4.0 Credits

Advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Japanese.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: JAPN 310 [Min Grade: D]

JAPN I199 Independent Study in JAPN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JAPN I299 Independent Study in JAPN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JAPN I399 Independent Study in JAPN 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JAPN I499 Independent Study in JAPN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JAPN T180 Special Topics in Japanese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JAPN T280 Special Topics in Japanese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JAPN T380 Special Topics in Japanese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JAPN T480 Special Topics in Japanese 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Jewish Studies

Courses

JWST 101 Introduction to Jewish Studies 3.0 Credits

What is a Jew? Who is a Jew? What defines Judaism? These questions relate to religion, ethnicity, culture, nation, race, and more. A shared heritage unites Jews, yet understandings and interpretations of what it means to be Jewish are hotly contested, especially in the 21st century. In this course, we dig into Jewish thought and history and explore the ways they have shaped ethnic identity, cultural heritage, and religious tradition.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 117 Introduction to World Religions 3.0 Credits

This course introduces students to the world religions from an anthropological perspective. Hence the basic concerns of an anthropological approach - worldview, ritual, myth, and so forth - are introduced early and applied to each of the religions studied.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 201 Jewish Literature and Civilization 3.0 Credits

This course surveys the origins and foundations of Judaism: the core texts and narratives; and the enduring practices, beliefs, and traditions. We will explore biblical and historical accounts of the early history of the Jewish people and assess their influence in shaping Jewish practice, identity, and religious expression. We will also examine Jewish observance and the ways in which the bible and ancient Jewish history left their mark on modern Jewish life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 202 Jewish Life and Culture in the Middle Ages 4.0 Credits

This course surveys the history of the Jewish people from the rabbinic period until the early modern period. Jewish civilization and religion primarily outside of the Land of Israel will be explored. Topics include the encounter with Christianity and Islam; the emergence of the Talmud, Jewish mysticism, and other exegetical tracts; and the development of diverse Jewish communities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 203 Modern Jewish History 4.0 Credits

This is an introductory course that explores the social, cultural, political and religious forces that have shaped Jewry the world over from the 18th to the 21st centuries. Students learn about the move of a traditional society into the modern world. At the same time, the course stresses the strategies that a minority group evolves in order to maintain its identity. Topics will include Hasidism, Emancipation and Enlightenment, modern religious movements, socialism, modern Hebrew and Yiddish literature and culture, immigration to America, the Holocaust, Zionism and the State of Israel, and post-World War II Jewry the world over.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 211 American Jewish Experience 4.0 Credits

This course surveys the Jewish experience in America from the colonial period to the present. We will discuss the various waves of Jewish immigration and examine the religious, cultural, political, and economic activities of American Jews. We will consider the trajectories that shaped the experiences of Jews in America and the heterogeneity of Jewish experience and views. A diverse array of sources and topics will provide the framework for this course. The case study of the Jews in the United States elucidates major national historical issues including immigration, acculturation, minority rights, prejudice and discrimination, intergroup relations, ethnic and racial pride and intermarriage. We will consider how Jews resolved the tensions between being Jewish and American.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 212 Contemporary Jewish Life 3.0 Credits

The course will focus on the social and religious activities of Jews since the 1970s via four community studies. We will attempt to understand the meaning that Jewish people derive from their beliefs, rituals and institutions. The stress will be on Jewish life in the United States, but one study will concentrate on the state of Israel. The goal will be to better understand the dynamics of personal and group identity development during the life cycle and contemporary history since the Holocaust.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 213 Jewish Cultural Tapestry 3.0 Credits

We will examine the different customs and traditions that Jews developed in various parts of the globe throughout history. We will learn about both the rich cultural diversity that developed during the history of local communities and the religious traditions and principles of community organization that have been shared by Jews. The Jews will be treated as a case study to understand the mechanisms by which ethnic and religious groups develop and maintain their group identity despite the fact that they have been dispersed and have experienced minority status. We will argue that the shared religious culture and the paralleled local specificity of culture together have guaranteed the continued existence of this people, the Jews.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 215 Reconstructing History After Genocide 3.0 Credits

The course explores educational restitution to peoples who are victims of genocide. After conceptualizing the world's responsibility to maintain its cultures and help victims of genocide to recover their history, the class will compare educational efforts to document life before the destruction in places such as Rwanda, the former Yugoslavia and among Native Americans. Our main focus will be the politics of teaching about Polish Jewry, the largest community of Jews before WW II that was destroyed by the Nazis in the Holocaust. Students will evaluate sources that describe Jewish life in one city, Lublin, Poland.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 216 Yiddish Literature & Culture 3.0 Credits

The course describes the major Jewish culture during the past thousand years. In a lively course stressing the arts and everyday family life, students will be introduced to the multi-faceted Yiddish language and culture. Through study and meetings with community members, students learn how Yiddish both reflects and gives meaning to life. Texts will include English translations of proverbs, folktales, folksongs, prayers, epics, personal diaries, memoirs, drama, films, memorial literature, modern fiction and poetry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 221 Anthropology of Interfaith Relations 3.0 Credits

This course is meant to be an elective for Jewish Studies, Religious Studies, and for the Certificate in Interfaith and Religious Studies. It aims to introduce students to how anthropological and ethnographic analyses can help us understand the variety of ways in which people of different faiths both conflict with and work amicably together.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 222 Comparative Religious Ethics 3.0 Credits

The eternal teaching of the different religions and how they address such issues as war, sexuality and economics. This online course initiates a sequence of interfaith courses. In that capacity, it aims to introduce students to the religious traditions of Buddhism, Hinduism, Judaism, Christianity, and Islam and to the ways their ethics converge in a deeper understanding of humanity. The goal, however, is that students do not just understand but also feel the emotional connection between ethical principles and the different religious visions behind them. Ultimately, the objective is to foster greater appreciation for the diverse religious orientations toward moral purpose and the ultimate meaning of life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 223 Coexistence and Conflict: Jews, Christians, and Muslims in the Early Mediterranean 4.0 Credits

This course investigates the history of interactions among the early Mediterranean's three major monotheistic religious communities: Jews, Christians, and Muslims. The course explores how religious communities understood themselves and each other as well as how and why multi-faith communities sometimes coexisted peacefully, sometimes coexisted tensely, and sometimes exploded into violence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 224 Judaism and Christianity: Two Religions or One? 3.0 Credits

The relation between Christianity and Judaism is one of the most misunderstood in the history of thought. Christianity is often considered to be diametrically opposed to Judaism, to be a rejection of the Judaic worldview. Indeed, prominent thinkers in the history of Christianity, such as Martin Luther, have reinforced this position. Yet Christianity was originally a development within Judaism, a sect, so to speak, of Judaism. The earliest Christians were Jewish followers of a Jewish leader and conceived of themselves as faithful Jews. So how did the two religions come to be viewed as opposed? Do elements of Judaism remain as part of the foundation of the new faith of Christianity? Where do the two faiths converge and where do they diverge? This course endeavors to answer these important questions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 225 Philosophy of Religion 3.0 Credits

Studies various aspects of religious belief and experience from a philosophical standpoint, considering issues such as the definition and existence of God, the nature and course of evil, and the relationship between faith and reason in a religious life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 226 History of the Holocaust 4.0 Credits

This course surveys Nazi Germany's systematic attempt to exterminate the Jews of Europe between 1941 and 1945. The course stresses the historical study of the Holocaust: the course of events, their origin and context, and their repercussions. We study the general context of the 1930's and 1940's, the perpetrators and their relevant ideology and administrative systems, the victims and intended victims, and also the "bystanders", those among whom the round-ups and extermination took place in Europe as well as in the US. The materials include historical documents, memoirs, and historical accounts, and a variety of films.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 227 History of Antisemitism 4.0 Credits

For centuries, Jews have suffered prejudice, discrimination, and persecution. Jewish people have been vilified for denying the divinity of Jesus Christ; they were unjustly marked as murderers, usurers, and villains of all sorts; they were condemned for their supposed role in defiling and undermining the "white-race"; they were accused of committing the greatest abuses of capitalism, and at the same time, were charged with inventing socialism and Communism. What is antisemitism? How did it start? Why is it so enduring? This course will explore the long history of a perplexing and irrational phenomenon. This course will examine the racial, political, and economic forms of antisemitism in the ancient, medieval, and modern world.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 228 Antisemitism in America 4.0 Credits

The past few years have shown that antisemitism is alive and well in the United States, in spite of a decades-long lull. While the Pittsburgh, San Diego, and Newark shootings, and the Hanukkah attack in Monsey show are the most violent expressions of antisemitism that this country has ever seen, these are not the only times during which Jews were identified as outsiders and a threatening presence. This course will examine Jewish exclusion through the mid-20th century including General Grant's expulsion of Jews, the Leo Frank lynching and Henry Ford's Dearborn Independent, Father Coughlin's antisemitic radio addresses, the Nazi rally and Madison Square Garden. Finally, it will explore the recent rise in antisemitism and relationship between white supremacy and antisemitism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 229 Pirates, Planters, Traders: The Jewish Atlantic World 4.0 Credits

When European empires expanded to the New World, their ships carried Jews to North America, Latin America, and the Caribbean. Jews were relegated to a marginalized group in Europe, but the New World opened up opportunities. They owned plantations and participated in extensive trading enterprises in the New World, including sugar cultivation, the triangulated slave trade, trade in precious gems, and the fur-trade. This course will investigate the ways in which Jews participated in colonial environments in the 16th-18th centuries: their business pursuits and their interactions with Europeans, Africans, and Native Americans. It will also explore Jews' improved status in diverse New World environments, and the ways Jews created hybrid communities in environments formerly devoid of Jewish life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 230 Jewish Humor in Literature and Film 3.0 Credits

This course explores the unique role of Jewish humor in literature and film in the 20th and 21st centuries in relationship to aspects of Jewish life ranging from assimilation to antisemitism, through a selection of novels, short stories, essays, plays, and film. Some of the authors whose works we may discuss and analyze include Philip Roth, Neil Simon, and Melissa Broder in addition to filmmakers such as Mel Brooks, Woody Allen, the Coen Brothers, and Sasha Baron Cohen.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

JWST 298 Field Work in Jewish Studies 3.0 Credits

In this course, students will do independent fieldwork within a Jewish communal organization in the USA or abroad, or ethnographic or archeological fieldwork. The plan of the work, weekly time commitment, and periodic reports will be agreed upon in advance by the student and the faculty member. This is a three-credit elective course for the Louis Stein Jewish Studies Minor. It may also be used as a free elective course for a variety of students.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

JWST 307 Literature of Genocide 3.0 Credits

Genocide is defined as "acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group" (U. N. Office on Genocide Prevention). This course will feature literature, film, and articles, by survivors themselves, historians and other writers, about major genocides and their perpetrators. Topics may include cases from any part of the world or century up to the present.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 330 The Bible as Literature 3.0 Credits

This course provides a close reading of selected books of the Old and New Testaments alongside selected literary works to discover both the literary qualities of these texts and their influence on literature.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

JWST 350 Jewish Health and Medical Ethics 3.0 Credits

This course offers resources for and approaches to Jewish biomedical and health ethics. We will examine Jewish positions on such topics as abortion, medical decisions at the end of life, advance directives, transplantation, reproductive technologies, and allocation of health care resources, considering the role of Jewish texts, values, and ethics in addressing contemporary health and medicine. We will consider what role the history of antisemitism plays in modern considerations around Jewish bodies, paying particular attention to Nazi medical experimentation and the use of those studies in contemporary times. We will look at the long history of antisemitism in the depiction of Jewish bodies and Jewish practice, considering what role these depictions have played in medical considerations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST 377 Jewish Mysticism and Kabbalah 3.0 Credits

In this course students will examine the origins and development of Kabbalah, and will explore a wide range of subjects from the perspective of various Kabbalistic sources. Topics to be covered include: the origins of existence, the soul and its purpose, life and death, reincarnation, angels and demons, meditation, freedom of choice, human strengths and weaknesses. We will also examine song and music in the mystical tradition, and how these ideas may help improve personal characteristic traits. Attention will be paid to understanding the makeup of the human psyche and how Kabbalah sees the role of man in the larger universe.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

JWST I399 Independent Study in Jewish Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JWST T180 Special Topics in Jewish Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study. The difficulty of the course will be appropriate for a 100-level course.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JWST T280 Special Topics in Jewish Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study. The difficulty of the course will be appropriate for a 200-level course.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

JWST T380 Special Topics in Jewish Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study. The difficulty of the course will be appropriate for a 300-level course.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Korean

Courses

KOR 101 Korean I 4.0 Credits

Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APKX N

KOR 102 Korean II 4.0 Credits

Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: KOR 101 [Min Grade: D]

KOR 103 Korean III 4.0 Credits

Introductory Korean. Includes listening, speaking and writing, with individual audio-video practice. Builds on Korean 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: KOR 102 [Min Grade: D]

KOR 201 Korean IV 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on KOR 103.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: KOR 103 [Min Grade: D]

KOR 202 Korean V 4.0 Credits

This course includes listening, speaking, reading, and writing practice, with a focus on cultural competency and conversational skills. Builds on KOR 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: KOR 201 [Min Grade: D]

KOR 310 Advanced Writing & Speaking 4.0 Credits

Provides advanced practice in written and oral communication, including journalistic, professional, and creative writing. Examines contemporary cultural contexts through media and news. Taught in Korean.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: KOR 202 [Min Grade: C]

KOR 320 Introduction to Language for the Professions 3.0 Credits

Introduction to communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in Korean.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: KOR 310 [Min Grade: C]

KOR 350 Introduction to Language, Media, and Society 3.0 Credits

Introduction to the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Korean.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: KOR 310 [Min Grade: C]

KOR 410 Advanced Grammar and Translation 3.0 Credits

Provides advanced grammar instruction and fosters translation and communication skills within a contemporary cultural context. Taught in Korean.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: KOR 310 [Min Grade: C]

KOR 420 Advanced Studies in Language for the Professions 3.0 Credits

Advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. Taught in Korean.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: KOR 310 [Min Grade: C]

KOR 450 Advanced Topics in Language, Media, and Society 3.0 Credits

Advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. Taught in Korean. Topics will vary according to the instructor's expertise.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: KOR 310 [Min Grade: C]

KOR I199 Independent Study in KOR 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR I299 Independent Study in KOR 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR I399 Independent Study in KOR 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR I499 Independent Study in KOR 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR T180 Special Topics in Korean 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR T280 Special Topics in Korean 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR T380 Special Topics in Korean 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

KOR T480 Special Topics in Korean 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Language

Courses

LANG 200 Crossing the Bridge 3.0 Credits

This course is designed for students who are experiencing the "otherness" of culturally diverse groups through living, studying or working abroad. Students will integrate and build on their intercultural experiences through a self-reflective process, and will become aware of the impact the students' own culture has on these experiences.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

LANG T180 Special Topics in Languages 0.5-12.0 Credits

Provides opportunities in language study commonly not taught in the Modern Language Program. Course offers intensive language training and study of the historical, social and cultural imperatives of the country where the language is spoken. May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

LANG T280 Special Topics in Languages 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

LANG T380 Special Topics in Languages 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

LANG T480 Special Topics in Languages 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Law

Courses

LAW 101 Law & Society 4.0 Credits

This course analyzes "law in action": how law works in the everyday lives of individuals and institutions by exploring the complex place of law and legal institutions in the United States. We will examine official legal institutions (such as courts and legislatures) and actors (including police, lawyers, judges) as well as the individuals whose lives are affected by law — those of us who come in contact with law as plaintiffs, witnesses, victims, or defendants. We will address the role that law plays in organizing contemporary life, including its influences on social and political interactions, how law constructs and responds to differences, and mediates, remedies, and reinforces unequal access to power.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 102 Law Lab 2.0 Credits

This course provides opportunities for students to see how law operates in a variety of settings, from prisons to boutique law firms. Class meetings will include trips to museums, courtrooms, and legislatures, guest lectures by legal professionals, and other hands-on, experiential learning activities.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

LAW 110 American Legal Systems 4.0 Credits

This course provides a comprehensive introduction to the American legal system and exposes students to the multiple forms of lawmaking and sources of legal and regulatory power present in America today. Students will learn to differentiate between common law created by judges, statutes and laws created by the legislature, and regulations promulgated by executive agencies. The class will explore the relationship between federal and state law, the role of federalism and the legal underpinnings of the checks and balances system that aims to keep equilibrium between the judicial, legislative, and executive branches. The course will also examine the American system of litigation and the structure of the court system, the jurisdiction of federal and state courts, and the litigation process.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 135 Foundations of Legal Research 2.0 Credits

The course offers a hands-on, skills-based approach to help students learn to conduct research on legal topics efficiently and effectively. The course will introduce students to electronic resources available through Drexel and the web, including databases of primary materials (including state and federal laws, administrative regulations, and judicial opinions) and secondary sources (especially scholarly and news materials) commonly used in legal research.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 201 The Role of the Common Law in the American Legal System 4.0 Credits

This class introduces students to the concept of common-law lawmaking, with focus on the areas of contract, tort (personal injury) and property. It will also address the history of how the common law developed from English law and provide a brief comparison to civil law systems used in other countries.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 210 Public Law: Legislation and Regulation 4.0 Credits

This course is intended to introduce the student to lawmaking through statutes and agency regulation in the modern regulatory state. The course will analyze how statutes are created and passed and provide students with an introduction to statutory interpretation. It will also introduce students to the administrative state, describing the relationship between administrative agencies and other branches of government and discussing the creation and enforcement of regulation.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 211 Public Law II 4.0 Credits

This course introduces students to foundational concepts in public law, such as the types of conflicts courts can adjudicate, how individuals and groups gain access to courts, identifying state actors, and the role of due process in legal proceedings.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 215 Law & Religion in America Today 4.0 Credits

Despite the official separation of church and state, religious questions often arise and need to be adjudicated in secular courts. This course explores which rights are protected by the Constitution's free exercise clause and examines the boundaries of religion and religious protections in a secular context. Specifically, the course examines the ways in which secular American courts handle issues that arise in communities that follow religious law but also use the civil courts to settle their disputes. Students will study the ways in which secular courts must decide questions from marriage and divorce to raising children and custody issues in a wide variety of faith communities and how those courts incorporate or distance themselves from the religious frameworks in which those disputes arise.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 216 Regulating Families 4.0 Credits

The course provides an introduction to the law and legal rights of family members. It explores family law issues such as how laws regulate marriage, divorce, and child custody. Students will be introduced to proceedings in family court as well as out-of-court alternatives for resolution of disputes.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 217 Sex, Gender, Sexuality & the Law 4.0 Credits

This course examines US law, court decisions, and current controversies related to the rights—and the denial of rights—of people in the US based on sex, sexual conduct, sexual orientation, and gender identity and expression.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

LAW 230 Introduction to Trial Skills 4.0 Credits

This course will introduce students to skills needed to be effective advocates in the courtroom. Students will learn how to craft a trial theory with an emphasis on the storytelling aspect of a trial. Students will practice all stages of a trial and be introduced to evidence, objections, and arguing motions. Students will be required to present regularly to develop their skills.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 301 [WI] Legal Reasoning 4.0 Credits

This class introduces students to the study of legal reasoning, including topics such as: the basic forms of argument, reasoning and inference typically found in legal materials; the nature of precedent and the relationship of normative arguments in law to conceptions of justice.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 304 Comparative Legal Institutions 4.0 Credits

This course complements students' study of US law by expanding their understanding of international legal systems, institutions, and individual and group rights. Students will learn about judicial institutions in various nations and examine how similar issues are handled in countries with different legal structures and guarantees.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: LAW 110 [Min Grade: D] and PSCI 220 [Min Grade: D]

LAW 305 Mediation, Arbitration, and the Law of Alternate Dispute Resolution 4.0 Credits

This course explores the theory, practice and law of mediation and arbitration, with an emphasis on the roles that both non-lawyers and lawyers play in these processes. The course will include simulated mediations and arbitrations to foster a deeper understanding of the material and to develop skills in resolving disputes without litigation.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 310 Environmental Law 4.0 Credits

This course focuses on how legal institutions have been used to respond to environmental problems. It provides a basic introduction to federal environmental laws relevant to air and water pollution, hazardous and solid waste and endangered species.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

Prerequisites: LAW 201 [Min Grade: C] and LAW 210 [Min Grade: C]

LAW 312 Immigration Law 4.0 Credits

This course examines how the U.S. immigration system makes legal determinations about who is permitted to enter the United States, and who is forced to leave. Readings focus on statutes, court cases, and administrative regulations to understand how immigration law functions in theory and in practice.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 315 Power, Professionalism, & the Law 4.0 Credits

This course offers a critical perspective on the history, current status, and practices of the legal profession. It examines the roles attorneys and other professionals working in legal settings play in relation to clients, colleagues, and each other.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

LAW 330 Rules of Evidence 4.0 Credits

Students will develop a working understanding of the most commonly used federal rules of evidence. At the end of this course, students will be able to identify common evidentiary issues and argue for the admissibility or inadmissibility of evidence under the rules of evidence covered in class.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

Prerequisites: LAW 230 [Min Grade: D]

LAW 340 Regulating the Commons 4.0 Credits

This course focuses on the notion of the commons and how commonly owned resources should be regulated. It focuses on environmental regulation as the paradigm of commons regulation before turning to the notion of regulating the "cybercommons".

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

Prerequisites: LAW 101 [Min Grade: C] and LAW 201 [Min Grade: C] and LAW 210 [Min Grade: C] and LAW 211 [Min Grade: C]

LAW 360 Advanced Trial Skills 4.0 Credits

This course will teach students to perform advanced trial skills based on strategic case themes and theories. Students will deepen their understanding of and skills in conducting direct and cross-examination of lay, party, and expert witnesses, opening and closing statements, making objections, and introducing exhibits. The course will culminate with each student performing in a mock trial.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

Prerequisites: LAW 330 [Min Grade: D]

LAW 495 [WI] Capstone Seminar in Law 4.0 Credits

The capstone seminar is an opportunity for students to produce an independent paper on a topic of their choice. Students will work with the instructor to produce a paper suitable for use as a writing sample when applying for jobs and/or graduate programs.

College/Department: Thomas R. Kline School of Law

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

LAW I299 Independent Study in Law 1.0-12.0 Credit

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

LAW I399 Independent Study in Law 1.0-12.0 Credit

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

LAW I499 Independent Study in Law 1.0-12.0 Credit

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

LAW T280 Special Topics in Law 1.0-4.0 Credit

This course will explore issues related to law. The topic will vary each time it is offered.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

LAW T380 Advanced Special Topics in Law 2.0-4.0 Credits

This course will explore advanced issues related to law. The topic will vary each time it is offered.

College/Department: Thomas R. Kline School of Law

Repeat Status: Can be repeated multiple times for credit

Legal Studies

Courses

BLAW 201 Business Law I 4.0 Credits

This course focuses on the legal environment in which businesses operate with a special concentration on contracts. The course addresses various aspects of contract law, including formation, performance and remedies for breach and how contract law interacts with other areas of the law in the business environment.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 202 Business Law II 4.0 Credits

Covers sales, negotiable instruments, personal property, and bailments.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 320 Information Privacy, Data and the Law 4.0 Credits

As technological advances continue to evolve, companies are often left to wonder what obligations they have to protect privacy. With the additional threats to privacy, legislatures and the courts are increasingly looking to protect personal data. This course will examine aspects of the evolving world of privacy and the law, including issues surrounding personal data of all forms (consumer, financial and biometric data; employment, health, education, social media and government records). Foundational privacy concepts and principles will be discussed, comparing the approaches to privacy domestically and abroad. At the end of the course, students will understand the core components of privacy, the cultural and legal variations in privacy law, and operational protections companies should give to privacy issues.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW 321 Law of Business Organizations 4.0 Credits

Covers agencies, partnerships, corporations, and limited-liability companies.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 330 Real Estate Law 4.0 Credits

Covers real property laws and the various rights, obligations, and limitations pertaining to land ownership. Analyzes the problems, procedures, and documents involved in the acquisition, mortgaging, and transfer of real property.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 334 Labor Law 4.0 Credits

Examines state and federal law regulating labor relations. Analyzes employment law and its impact on employment practices.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 338 Government Regulation and Business 4.0 Credits

Examines constitutional questions regarding relationship between business and various levels of government in the United States.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 340 International Business Law 4.0 Credits

Examines the law of international commercial transactions, trade, licensing, investments, and dispute resolution.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 342 Criminal Law 4.0 Credits

Surveys state and federal criminal codes and procedures.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

BLAW 343 Marketing Law 4.0 Credits

Covers many of the areas of law that control and affect marketing decisions, including the U.S. Constitution; advertising and false/wrongful advertising; market shares and allocations; restraints of trade and other unfair competition under the antitrust laws; and warranties.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW 346 Entrepreneurial Law 4.0 Credits

This course is intended to address the various legal and ethical issues that confront individuals and companies in starting up new ventures, either within an existing company or a new start-up company.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW 348 White Collar Crime 4.0 Credits

Examines the current federal and local criminal codes as they apply specifically to managers and businesses and the enforcement process.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW 356 Legal Issues in Corporate Governance 4.0 Credits

This course examines the current legal and regulatory environment of corporate governance in the United States. The principal actors in a corporation's governance structure (directors, officers and shareholders) and their roles and responsibilities will be examined. The sources of corporate governance, including laws and regulations, case law, and internal policies and procedures, are studied as well. The course also will analyze and consider the role and applicability of corporate governance in specific case studies and fact patterns, such as Enron and WorldCom.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW 358 Employment Law 4.0 Credits

This class introduces students to the laws of the workplace in order to provide familiarity with common legal issues that arise in the employment context. The course examines issues such as who is an employee versus an independent contractor, when and for what reasons an employer can fire an employee, what anti-discrimination laws regulate the workplace (including Title VII of the Civil Rights Act of 1964, the ADEA and the ADA) and privacy concerns in the workplace. The course informs students of their rights as employees in the workplace as well as their responsibilities as employers. At the conclusion of the course, students should have an understanding of the basic laws that protect employees and regulate employers in the workplace.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW 360 Intellectual Property and Cyber Law 4.0 Credits

This course presents an overview of the Law of Intellectual Property. It examines patents, copyrights, trademarks and trade secrets together with public policy issues including the Constitution and legislation. It also reviews current regulation and legislation relating to the Internet, including privacy and tort issues.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

BLAW I199 Independent Study in Legal Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW I299 Independent Study in Legal Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW I399 Independent Study in Legal Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW I499 Independent Study in Legal Studies 1.0-4.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW T180 Special Topics in Legal Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW T280 Special Topics in Legal Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW T380 Special Topics in Legal Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

BLAW T480 Special Topics in Legal Studies 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Linguistics

Courses

LING 101 Introduction to Linguistics 0.0-3.0 Credits

Introduces major topics in the study of language, including language acquisition, language change, the social use of language, and the analysis of discourse, and teaches basic techniques in linguistic analysis through the use of a wide variety of language data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

LING 102 Language and Society 3.0 Credits

Develops understanding of how language is involved with relations of class, ethnicity, gender and aesthetics in society. The course covers the social investigation of language use, politeness in languages, different varieties of English dialects, slang, and rap, bilingualism and languages in immigrant communities, and language planning.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

LING T180 Special Topics in Linguistics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

LING T280 Special Topics in Linguistics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

LING T380 Special Topics in Linguistics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

LING T480 Special Topics in Linguistics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Management

Courses

MGMT 201 Introduction to Technology Innovation Management 4.0 Credits

This course discusses the basics every manager needs to organize successful technology-driven innovation in both entrepreneurial and established firms. We start by examining innovation-based strategies as a source of competitive advantage and then examine how to build organizations that excel at identifying, building and commercializing technological innovations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 210 Research Methods I 2.0 Credits

This course enables undergraduate students to design research in business and related disciplines. Students develop techniques in the selection and design of appropriate research methodologies in the identification of a research problem in a business environment. The course examines the research process from problem identification and setting through a review of pertinent literature as secondary sources and an examination of the descriptive research design.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 211 Research Methods II 2.0 Credits

This course introduces students to the group of approaches to social science and humanistic research known as qualitative inquiry. These approaches include ethnography, grounded theory, phenomenology, case study, and narrative research, and employ methods of interviewing, discourse/content analysis, and participation observation. Technology used includes digital analog recorders, videotape, and software such as Simstat for text 'mining' and coding. Students will explicate studies that employ these approaches; discuss assumptions of qualitative inquiry; discuss standards of sampling, ethics, and validity, and design a qualitative research proposal.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 260 Introduction to Entrepreneurship 4.0 Credits

The course focuses on entrepreneurship as a generic activity, including start-ups and corporate entrepreneurship. It explores the opportunities and challenges faced by individuals starting up new ventures and the probable paths of career development for the students pursuing entrepreneurship.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 301 Designing Innovative Organizations 4.0 Credits

Designing innovative organizations focuses on effective organizational design in technology innovative organizations, with special emphasis on innovative organizational forms that can provide strategic advantage. Topics include when to use functional, divisional, or matrix organizations, how IT creates new organizational possibilities, and examples of innovative organizational possibilities, such as democratic decision-making, crowd-based organizations, internal resource markets, and other forms of collective intelligence. Team projects include inventing new possibilities for real organizations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 302 Competing in Technology Industries 4.0 Credits

This course provides a set of concepts, tools, and frameworks that are grounded on the theories of strategic management and technological innovation that are necessary to achieve competitive advantages in the technology industries. We will accomplish this objective by using a combination of lectures, class discussions, guest lectures, case memo write-ups, a final exam and a group project that focuses on a live case analysis.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 364 Technology Management 4.0 Credits

This course focuses on the dynamic of technological innovation and change, in particular, how new technologies create entrepreneurial opportunities. The course examines how industries and firms are transformed by new technologies and what factors affect innovation performance.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MGMT 365 Business Plan for Entrepreneurs 4.0 Credits

In this course, students learn how to prepare a comprehensive strategy for launching a new business. The vehicle for achieving this is the preparation of a start-up business plan based on a selected opportunity.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MGMT 260 [Min Grade: D]

MGMT 370 For-Profit Business Consulting 4.0 Credits

In this course, students learn about effective business problem solving through project-based learning. Working in teams, students complete research-driven consulting projects to develop recommendations for a for-profit organization's business challenges, then present their work to the organization at the conclusion of the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

MGMT 371 Nonprofit Business Consulting 4.0 Credits

In this course, student teams complete consulting projects, conducting research and analyses to form insights and recommendations for a nonprofit organization's business challenges. In addition to working closely with faculty, students also interact with and present to leaders within the participating organization.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

MGMT 372 Startup Business Consulting 4.0 Credits

In this course, student teams complete consulting projects, conducting research and analyses to form insights and recommendations that will help propel the growth of a startup organization. In addition to working closely with faculty, students also interact with and present their work to the organization at the conclusion of the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

MGMT 380 International Business Consulting 4.0 Credits

In this course, student teams conduct research to develop business recommendations for an organization abroad. Students complete 10 weeks of the course on campus, then travel on an international residency during the break week immediately following the quarter. During the one-week residency, students present their work to the organization and participate in site visits and cultural experiences. Students must apply and be selected to participate.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

MGMT 450 Strategy and Competitive Advantage 4.0 Credits

Provides an integrated approach to business planning. Develops strategic analysis and decision-making through examination of an organization's internal and external environment. Requires written and oral case reports.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: FIN 301 [Min Grade: D] and ORGB 300 [Min Grade: D] and (MKTG 301 [Min Grade: D] or MKTG 201 [Min Grade: D])

MGMT 451 Management Simulation 4.0 Credits

Requires student teams responsible for the operation of competing firms in a computer-simulated dynamic business environment to conduct top management strategic planning, analysis, and social responsibility.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: FIN 301 [Min Grade: D] and ORGB 300 [Min Grade: D] and (MKTG 301 [Min Grade: D] or MKTG 201 [Min Grade: D])

MGMT I199 Independent Study in MGMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MGMT I299 Independent Study in MGMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MGMT I399 Independent Study in MGMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MGMT I499 Independent Study in MGMT 4.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Junior or Senior.

MGMT T180 Special Topics in MGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MGMT T280 Special Topics in MGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MGMT T380 Special Topics in MGMT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MGMT T480 Special Topics in MGMT 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Management Information Systems

Courses

MIS 200 Management Information Systems 4.0 Credits

Introductory course to Management of Information Systems, a core business function. The course examines how information systems (i.e., information technology, people, procedures, and data) help add value to an organization, and integrate the various functional areas of a business (e.g., accounting, marketing, etc.).

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MIS 342 Systems Analysis and Design 4.0 Credits

Introduces structured and object-oriented systems analysis and design methodologies in classroom and hands-on lab settings. Discusses system life-cycle concepts and techniques such as dataflow diagrams, structure charts, and E-R diagrams. Also covers object-oriented design, prototyping, and rapid application development approaches.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MIS 300 [Min Grade: D] or MIS 200 [Min Grade: D]

MIS 343 Database Design and Implementation 4.0 Credits

Covers data and file structures, object-oriented database design, and the use of SQL for querying databases. Discusses logical and physical database design and offers hands-on experience with commercial database management systems (DBMSs).

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MIS 200 [Min Grade: D] or MIS 300 [Min Grade: D]

MIS 346 Management Information Systems Strategy 4.0 Credits

To discuss Management of Information Systems, and then to elaborate on its application to organizational change, especially to reengineering. This course will introduce the student to central aspects of MIS policy and strategy in the first part of the course and then use these concepts to understand reengineering in the latter part of the course.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MIS 347 Domestic and Global Outsourcing Management 4.0 Credits

To introduce the student to issues in managing the outsourcing of Information Systems. This will be done in a mixture of lectures and student team presentations. The lectures will introduce the students to some of the central themes of outsourcing IS by summarizing current literature. Parallel to these lectures students will form study teams to investigate other important topics of IS outsourcing through a guided literature reading.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MIS 351 Introduction to Programming for Business in C# 4.0 Credits

This course is an introductory course to the process and tools necessary to build a complete information system given a specification. In this course, you will learn basic concepts and techniques in computer programming. This course selects Microsoft Visual Studio.Net and C# as the software development environment and programming language. This language and development system is a complete suite of tools for creating stand-alone applications, portions of larger systems, independent objects, complete distributed systems, and active components of the World Wide Web.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MIS 200 [Min Grade: D] or MIS 300 [Min Grade: D]

MIS 361 Information System Project Management 4.0 Credits

The course is structured around the key phases of a project lifecycle – initiating a project, planning a project, executing a project, controlling a project, and closing out a project. It also pays specific attention to the nine knowledge areas of Project Management as defined by the Project Management Institute (PMI)'s Project Management Body of Knowledge (PMBOK): project scope, cost, time, integration, quality, communication, risk, human resources, and procurement management. Additionally, students will be introduced with choices in project management approaches (such as SAP Project Management and APM).

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MIS 200 [Min Grade: D] or MIS 300 [Min Grade: D]

MIS 364 Information Security Systems Management 4.0 Credits

This course provides a foundation for the management of information security systems. It includes an overview of some key technology concepts that are pertinent for the management of information security systems, while also exploring core legal, governance, risk management, and compliance concepts. The course is taught as a combination of lectures, hands-on group activities, readings and videos.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MIS 200 [Min Grade: D]

MIS 368 Enterprise Cloud Systems Management 4.0 Credits

Cloud computing offers organizations elastic, fine-grained, on-demand, pay-for-use computing resources, such as CPU power, memory, storage, or data transfer. The flexibility of the cloud allows customers to scale system capacities rapidly up or down, which entails lower computing expenses than with fixed, internally maintained resources. Enterprise cloud systems also foster resilience by enabling quicker deployment of new systems to support rapid changes in organizational processes and missions. This course focuses on the business and IT-related aspects of cloud computing and includes direct experience with the cloud services of one or more leading providers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MIS 200 [Min Grade: D]

MIS I199 Independent Study in MIS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS I299 Independent Study in MIS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS I399 Independent Study in MIS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS I499 Independent Study in MIS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS T180 Special Topics in MIS 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS T280 Special Topics in MIS 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS T380 Special Topics in MIS 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MIS T480 Special Topics in MIS 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Manufacturing Engineering Technology

Courses

MET 100 Graphical Communication 3.0 Credits

Introduces engineering graphics and fundamentals of computer aided design using the interactive software package AutoCAD on a personal computer.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman.

MET 101 Engineering Materials 3.0 Credits

Study of tests used to characterize properties of ceramic, polymeric, and metallic materials and how material properties influence their use and design for engineering applications. Testing procedures demonstrations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (CHEM 111 [Min Grade: D] and CHEM 113 [Min Grade: D]) or CHEM 101 [Min Grade: D]

MET 201 Introduction to Manufacturing Processes 0.0-3.0 Credits

Introduces manufacturing and its managed activities: research and development, production, marketing, industrial relations, and finance. Includes laboratory work in organization, staffing, and operating a model manufacturing enterprise.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: MATH 110 [Min Grade: D]

MET 202 Computer-Aided Drafting 4.0 Credits

Introduces computer design using an interactive software package on a microcomputer.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

MET 204 Applied Quality Control 3.0 Credits

Covers variables, procedures, and processes of total quality control within the manufacturing industries. Includes instrumentation for material evaluation, attribute inspection and sampling, supervising for organizational quality improvements, and statistical control. Emphasizes directed laboratory experiences.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: STAT 201 [Min Grade: D]

MET 205 Robotics and Mechatronics 3.0 Credits

Provides a comprehensive technical introduction to robotics and automation in manufacturing. Topics include flow line production, material handling, group technology, and flexible and mechatronics-integrated manufacturing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 153 [Min Grade: D] or PHYS 101 [Min Grade: D]) and MATH 110 [Min Grade: C] or (MATH 121 [Min Grade: C] or MATH 101 [Min Grade: C])

MET 209 Fluid Power 4.0 Credits

Covers the fundamentals of hydraulic/pneumatic systems with an emphasis on applications of Bernoulli's equation. Topics include component types and designs, hydraulic/pneumatic circuit analysis and design of hydraulic/pneumatic systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 153 [Min Grade: D] or PHYS 101 [Min Grade: D]) and (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D])

MET 213 Applied Mechanics 4.0 Credits

Applications of statics and strength of materials with applications to problems in manufacturing. A combined statics and strength of materials course with applications in manufacturing, including: design of bolted connections, simple structures, and beam design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D]) and MATH 122 [Min Grade: D] and (MET 101 [Min Grade: D] or ENGR 220 [Min Grade: D])

MET 300 Principles of Engineering Design 4.0 Credits

This course is designed to introduce students to the concepts of engineering design. Students will develop a thorough understanding of the design process through collaboratively thinking. This course will allow students to apply iterative design process in creating a new product while integrating the marketing, design, and manufacturing functions of the firm. Students will explore design challenges and employ the product design and development process to design a product to meet the challenge.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 226 [Min Grade: D] and EET 311 [Min Grade: D] and MET 213 [Min Grade: D]

MET 301 Advanced Design Graphics 3.0 Credits

Covers the theory and practice of industry's parts and assembly drawings with a specialization in tolerance and geometric dimensioning. Discusses industrial procedures and standards.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 100 [Min Grade: D]

MET 307 HazMat for Manufacturing 0.0-3.0 Credits

Covers the characteristics of hazardous substances and wastes, medical surveillance for plant personnel, toxicology, respirators and protective clothing, environmental direct reading indicators, decontamination procedures, and safe working practices.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: BIO 161 [Min Grade: D] and CHEM 162 [Min Grade: D] and CHEM 164 [Min Grade: D]

MET 308 Maritime Manufacturing 0.0-3.0 Credits

Provides an overview of the key engineering standards, laws, and regulations governing the construction of commercial vessels in the United States and methods of complying with these requirements. Focuses on the ship manufacturing process and the installation and testing of ship systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

MET 310 Advanced Robotics and Mechatronics 3.0 Credits

Covers applied topics related to the integration of computer, robotics, and internet-based automation technologies in modern manufacturing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 205 [Min Grade: D]

MET 316 Computer Numerical Control 3.0 Credits

Discusses theory and application of computer numerical control machines in the manufacturing environment. The laboratory focuses on the programming and operation of CNC machine tools.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 110 [Min Grade: D] or MATH 121 [Min Grade: C] or MATH 101 [Min Grade: D]) and MET 100 [Min Grade: D]

MET 321 Changing World of 3D Printing and Rapid Prototyping 3.0 Credits

This course is an introduction and survey of rapid-prototyping, especially centered on the advent, impact, and utility of 3D printers and supporting digital technology: computer-aided design (CAD) and computer-aided manufacturing (CAM) software. The course will cover both the concepts and practice of 3D printing and prototyping, emphasizing hands-on work developing computer-based design models ("drawings") and fabricating prototypes ("parts") using current tools for desktop manufacturing including 3D printers, laser cutters, desktop engravers, and micromolding and printing. With this knowledge and skill set, students will be able to design, develop and demonstrate a working product suitable for commercialization.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 100 [Min Grade: D] or MEM 201 [Min Grade: D]

MET 322 Design for Manufacturing and Assembly 3.0 Credits

One of the final steps in creating a marketable product is the manufacturing of the components. Throughout the design process, engineers must fully understand a variety of processes in which parts can be produced and assembled. Selecting a manufacturing method and ensuring the parts are capable of production is a difficult but critical part of the product design process. This course will allow students to apply the theory of design for manufacturing (DFM) and design for assembly (DFA) to the overall design process. Topics include practical techniques for selection of materials and processes, design considerations for production, manual assembly and automated assembly, and Boothroyd and Dewhurst methods. Students review case studies and analyze production assemblies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 100 [Min Grade: D] and MET 201 [Min Grade: D]

MET 402 Manufacturing Design with CAD 3.0 Credits

Covers design of tools and fixtures for manufacturing, including general-purpose work holders, modular and dedicated fixtures, jigs, fixturing principles, degree of freedom, locating and clamping components, wire frame and solid modeling, and 3d to 2D conversion. Students design models of fixtures.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 301 [Min Grade: D]

MET 403 Three Dimensional Modeling 3.0 Credits

Covers three-dimensional design with emphasis on manufacturing and industrial standards. Includes computer-aided-manufacturing using solid, surface, and wire-frame models.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 100 [Min Grade: D]

MET 404 Digital Instrumentation 3.0 Credits

Covers digital technology and its application in manufacturing. Covers variables, procedures, and processes of total quality control.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 201 [Min Grade: D]

MET 407 Manufacturing Processes 3.0 Credits

Covers a systematic understanding of the operations, applications, and planning of manufacturing processes. Discusses quantitative evaluations of processing parameters influencing product quality.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (MET 101 [Min Grade: D] or ENGR 220 [Min Grade: D]) and MATH 122 [Min Grade: D]

MET 408 MFG Information Management 3.0 Credits

Covers information management in manufacturing. Topics include cost estimation and control, manufacturing resources planning (MRP), just-in-time (JIT), production and inventory controls, management information systems (MIS), supply chain management (SCM), and other advanced information management technology.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 205 [Min Grade: D] and MATH 122 [Min Grade: D]

MET 409 Green Manufacturing 3.0 Credits

Covers life cycle analysis, pollution prevention, recycling, and lean manufacturing, including characteristics of hazardous substances and wastes, medical surveillance for plant personnel, toxicology, respirators and protective, environmental direct reading indicators, decontamination procedures and safe working practices for MFG.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 111 [Min Grade: D] and CHEM 113 [Min Grade: D]

MET 411 Advanced Computer Numerical Control 3.0 Credits

This course covers applied topics related to the integration of computer, CNC machines, and internet-based automation technologies in modern manufacturing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 316 [Min Grade: D]

MET 421 [WI] Senior Design Project I 3.0 Credits

This course constitutes the first course of a three-quarter course sequence. It aims to train the students in identifying projects of relevance to the society, in planning and scheduling a solution, and in entrepreneurial activities that may result from the project. The course is also intended to cover an industrial project starting from the proposal writing and conceptual design to final steps. This course is focused on proposal writing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

MET 422 Senior Design Project II 3.0 Credits

This course constitutes the second course of a three-quarter course sequence and continues MET 421. It aims to train the students in maintaining the progress of a project on schedule, including resolving any team conflicts. It also trains them how to prepare oral, and submit written progress reports. The students supply summary reports to his/her advisor. This course is focused on following standard design steps from the conceptual to final design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 421 [Min Grade: D]

MET 423 [WI] Senior Design Project III 3.0 Credits

This is the final installment of a 3 course sequence. The course objective is to train students in a project from the initial conceptual design stage to the preliminary and the final design completion, how to conduct design reviews, and how to document and present findings, design concepts, and conclusion in both oral and written formats. Students are also required to build a working prototype of their final design concept and present it during final presentation of the project.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 422 [Min Grade: D]

MET I199 Independent Study in Manufacturing Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MET I299 Independent Study in Manufacturing Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MET I399 Independent Study in Manufacturing Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MET I499 Independent Study in Manufacturing Engineering Technology 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MET T180 Special Topics in MET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MET T280 Special Topics in MET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MET T380 Special Topics in MET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Senior.

MET T480 Special Topics in MET 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Marketing

Courses

MKTG 201 Introduction to Marketing Management 4.0 Credits

Provides a conceptual and applications-oriented framework for marketing decision-making in a dynamic environment. Emphasizes satisfying target customers and achieving organizational objectives through skillful blending of strategies in product development, pricing, promotion, and distribution.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

MKTG 301 Introduction to Marketing Management 4.0 Credits

Provides a conceptual and applications-oriented framework for marketing decision-making in a dynamic environment. Emphasizes satisfying target customers and achieving organizational objectives through skillful blending of strategies in product development, pricing, promotion, and distribution.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

MKTG 321 Selling and Sales Management 4.0 Credits

Covers planning, direction, and control of the personal selling activities of an organization, including recruiting, selecting, training, equipping, assigning, routing, supervising, compensating, motivating, leading, and evaluating a sales force.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 322 Advertising & Integrated Marketing Communications 4.0 Credits

Examines advertising principles, techniques, technologies, and methods; artistic and creative aspects; psychological appeals; and production. Covers advertising and promotion management, including organization and planning, problems and strategies, media selection and evaluation, and agency-client relationships.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 324 Marketing Channels and Distribution Systems 4.0 Credits

Examines philosophies, concepts, principles, and methods that must be employed to achieve maximum effectiveness and efficient.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 326 Marketing Insights 4.0 Credits

Applies analytical tools in the investigation of marketing problems. Emphasizes systematic research design, gathering, and interpretation of information for marketing decision-making.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 344 Professional Personal Selling 4.0 Credits

Prepares students for business-to-business personal selling careers. Uses role-playing and experiential exercises to teach the latest strategies and tactics in prospecting and qualifying, planning sales calls, approaching prospects, making sales presentations, negotiating resistance, confirming and closing "win-win" agreements, and servicing customers to ensure satisfaction.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 347 New Product Development 4.0 Credits

Analyzes the process of discovering new product opportunities and creating new product ideas that are strategically sound. Covers demand analysis, futuristics, new product strategy, creativity techniques, product evaluation, interacting with research and development departments, and developing a marketing plan.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 348 Services Marketing 4.0 Credits

Covers marketing theory, concepts, strategy, and tactics as applied to the unique characteristics and demands of service-oriented industries such as health care, transportation, finance, law, consulting, education, training, tourism, security, entertainment, and hospitality within a global macroenvironment.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 351 Marketing for Non-Profit Organizations 4.0 Credits

Applies the marketing concepts of product, price, promotion, distribution, and benefit-cost maximization to the exchange relations of non-profit organizations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 355 Interactive Marketing 4.0 Credits

Addresses the principles, techniques, and methods of direct, interactive marketing in an era of emerging global technologies. Emphasizes field work, projects, and presentations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 356 Consumer Behavior 4.0 Credits

Applies contemporary behavioral science to consumer decision-making, including the relationship between the efforts of business firms in marketing their products and the reactions of ultimate consumers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 357 Global Marketing 4.0 Credits

Examines international involvement of companies from exporting to the multinational enterprise stage. Covers the nature of international competition; distribution systems; pricing and credit policies; promotional methods; trade barriers and agreements; and the cultural, political, legal, ethical, and technological barriers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 362 Brand and Reputation Management 4.0 Credits

The course focuses on the strategic management of product and organization brands, both corporate and non-profit, and how one can build brands that are highly distinguished reputationally to enhance financial value, attract and keep top talent and build relationships with customers, communities, and other key stakeholders.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 363 Brand & Reputation Management Project 1.0 Credit

Analysis of a "real world" organization's corporate brand and reputation management. Topic and scope must be approved by the Academic Director of the Center for Corporate Reputation Management. The integrative experience required for completion of the Certificate in Corporate Brand and Reputation Management.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MKTG 362 [Min Grade: D] and MKTG 322 [Min Grade: D] and COM 181 [Min Grade: D] and (MKTG 201 [Min Grade: C-] or MKTG 301 [Min Grade: C-])

MKTG 364 Marketing for New Ventures 4.0 Credits

Examines the unique marketing challenges faced by entrepreneurs launching new products and/or services. Topics include: designing new offerings, targeting customer segments, and marketing on a tight budget. The course is designed to be useful for small business owners, managers at large companies, and social entrepreneurs.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 365 Digital Marketing 4.0 Credits

Marketing practices have dramatically shifted with the rise of social media and the proliferation of devices, platforms and applications. This rapidly changing environment presents new opportunities and challenges for marketers. Through a combination of case studies, best practice examples, and the development of social and digital media marketing plans, students learn how the elements of a digital strategy work together with traditional media to attract prospective customers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 366 Customer Analytics 4.0 Credits

Built around the notion of the customer lifecycle, this course will address strategic initiatives in customer strategy including customer acquisition; customer development via up-selling and cross-selling; customer attrition and retention. The course will also cover commonly used marketing analytic tools and techniques such as data exploration/visualization, decile analysis, RFM (recency/frequency/monetary) segmentation, and predictive modeling using logistic regression and machine learning tools (e.g. classification trees such as CHAID). The course uses a combination of lectures, cases, and exercises. We will be taking a very hands-on approach with real-world databases to provide you with tools that can be used immediately on the job.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 201 [Min Grade: C-] or STAT 205 [Min Grade: C-]

MKTG 367 Data-Driven Digital Marketing 4.0 Credits

This course will provide students with an overview of the rapidly-emerging field of digital marketing. Since digital marketing is constantly changing, students will become proficient at learning about new digital marketing platforms, how each channel is used to communicate with customers and be able to develop a list of "key questions" to ask about any new marketing medium. Because data and analytics are an important component of digital marketing, students will also become proficient at using data to evaluate a marketing campaign. One of the best ways to assess marketing strategies is through A/B testing and students will become expert at planning, analyzing and reporting A/B tests. We will also discuss strategies for integrating data-based decision making into organizations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 368 Corporate Responsibility Management 4.0 Credits

Companies increasingly think about their responsibility to have positive impact on society and the environment. In fact, some have argued that this is a sure path to business performance. In actuality, managing corporate responsibly is filled with pitfalls, contradictions, and dilemmas. This course will examine both the opportunities and dangers for leaders at companies large and small.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG 380 Seminar in Marketing Strategy 4.0 Credits

Builds upon marketing concepts learned in other courses and presents an integrated approach to marketing strategy. Uses a number of real-life cases and requires students to work in groups and make project presentations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MKTG 301 [Min Grade: C-] or MKTG 201 [Min Grade: C-]

MKTG I199 Independent Study in MKTG 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG I299 Independent Study in MKTG 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG I399 Independent Study in MKTG 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG I499 Independent Study in MKTG 0.5-6.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG T180 Special Topics in MKTG 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG T280 Special Topics in MKTG 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG T380 Special Topics in MKTG 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

MKTG T480 Special Topics in MKTG 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Materials Engineering

Courses

MATE 100 Materials for Emerging Technologies 2.0 Credits

Evolution of materials engineering; education and the profession; concepts, tools, and techniques; selection and design using metals, ceramics, polymers, and composites; application of materials in a technological society; and materials of the future.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

MATE 101 Fundamentals of Materials 4.0 Credits

Examines principles underlying structure, properties, and behavior of engineering materials, including metals, ceramics, and polymers. Covers topics including bonding; crystal structure; defect structure; alloying; mechanical, electronic, and magnetic properties in relation to structure; phase equilibria; phase transformations; and oxidation and corrosion. All terms.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 102 [Min Grade: D] and MATH 122 [Min Grade: D] and PHYS 101 [Min Grade: D]

MATE 120 Modern Materials in Your World 3.0 Credits

This undergraduate level introductory course in modern materials is designed as an elective course for non-engineering majors. It will introduce the field of materials science and engineering while stressing the importance of materials selection in modern day products. In addition, the course will highlight the importance of sustainable materials in product life cycle design in order to minimize environmental effects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BME

MATE 121 Mechanical Behavior of Materials for Product Design 1.0 Credit

This course introduces Product Design majors to mechanical behavior considerations for materials selection.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Corequisite: MATE 120

MATE 214 Introduction to Polymers 4.0 Credits

Covers polymer molecular structure, polymerization methods, semi-crystalline polymers, glass transition, polymer solution in blends, mechanical properties, and characterization methods.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (MATE 221 [Min Grade: D] or MATE 230 [Min Grade: D]) and CHEM 241 [Min Grade: D]

MATE 220 Fundamentals of Materials 4.0 Credits

Introduces materials and their properties; atomic view and architecture of solids; atomic motion in solids, mechanical, magnetic, electrical and optical properties of materials. Corrosion and degradation of solids.

College/Department: College of Engineering

Repeat Status: Can be repeated 3 times for 16 credits

Prerequisites: CHEM 101 [Min Grade: D] and (MATH 121 [Min Grade: D] or MATH 117 [Min Grade: D]) and PHYS 101 [Min Grade: D]

Corequisite: EXAM 081

MATE 230 Fundamentals of Materials II 4.0 Credits

This course continues the introduction to materials science and engineering from ENGR 220 by exploring additional topics including phase diagrams, phase transformations, mechanical behavior of materials, thermal properties, environmental considerations and society impacts. In addition, the course introduces concepts of data collection and analysis as it relates to mechanical property testing. The course also addresses techniques for successful technical communication.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 220 [Min Grade: D] or MATE 220 [Min Grade: D]

MATE 240 Thermodynamics of Materials 4.0 Credits

Covers the fundamental laws of thermodynamics, statistical meaning of entropy, thermodynamic functions, heat capacity, reactions in gases and condensed phases, phase diagrams, solutions, and reaction equilibria in condensed solutions.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATE 221 [Min Grade: D] or MATE 230 [Min Grade: D]) and (ENGR 210 [Min Grade: D] or MEM 210 [Min Grade: D])

MATE 245 Kinetics of Materials 4.0 Credits

Covers chemical reaction kinetics, thermodynamics and structure of crystal defects, diffusion equations and numerical methods of solution, kinetics in interfacial phenomena, and diffusional transformations.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATE 240 [Min Grade: D]

MATE 280 Advanced Materials Laboratory 4.0 Credits

The goal of the course is to introduce students to state-of-the-art experimental techniques for analysis of structure, composition and properties of materials. Electron microscopy, Raman spectroscopy, indentation and thermal analysis will be described.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 220 [Min Grade: D] or MATE 220 [Min Grade: D]

MATE 315 Processing Polymers 0.0-4.5 Credits

Covers polymer processing, viscous flow and melt rheology, injection molding, extrusion, mechanical behavior, and applications and design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATE 214 [Min Grade: D]

MATE 341 Defects in Solids 3.0 Credits

Main classes of crystalline defects: vacancies, dislocations, stacking faults, surfaces, grain boundaries, geometry, energy considerations, and movement of defects. Defects in specific crystallographic systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MSE.

Prerequisites: MATE 355 [Min Grade: D]

MATE 345 Processing of Ceramics 4.5 Credits

Covers powder production, materials characterization, stability of powder suspensions, rheological and viscoelastic properties of slurries, green-body consolidation, drying, sintering, and structure-property relationships.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATE 355 [Min Grade: D] (Can be taken Concurrently)

MATE 351 Electronic and Photonic Properties of Materials 4.0 Credits

Electrons, principles of quantum mechanics, bonding, free electrons, and band theory solids; lattice vibrations, electronic and vibrational heat capacity; semiconductors and semiconductor devices; dielectrics, magnetic and optoelectronic materials and devices; superconductivity; applications and implications for energy-harvesting, conversion and storage.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATE 355 [Min Grade: D] (Can be taken Concurrently)

MATE 355 Structure and Characterization of Crystalline Materials 3.0 Credits

Bonding in solids; classification of metals, semiconductors, and insulators; crystal systems; crystallographic systems in specific engineering materials, relationships, X-ray generation, X-ray absorption and emission; reciprocal space; geometric representation of crystals, small and wide angle scattering, electron microscope imaging and diffraction.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MSE.

Prerequisites: ENGR 220 [Min Grade: D] or MATE 220 [Min Grade: D]

MATE 366 [WI] Processing of Metallic Materials 4.5 Credits

Covers solidification processing, casting and welding, heat flow analysis, solid-state transformations, precipitation hardening, transformations in steels, martensite transformations, and industrial case studies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATE 245 [Min Grade: D]

MATE 370 Mechanical Behavior of Solids 3.0 Credits

Covers continuum mechanics: three-dimensional stress and strain, hydrostatic and deviatoric components, and isotropic elasticity; Mises yield criterion; fracture criteria; linear elastic fracture mechanics; materials selection; defect-tolerant and defect-free fatigue design; notch effects; and statistics of variation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATE 221 [Min Grade: D] or MATE 230 [Min Grade: D]) and (ENGR 231 [Min Grade: D] or MATH 201 [Min Grade: D] or CAEE 231 [Min Grade: D] or ECE 231 [Min Grade: D])

MATE 375 Materials Selection for Industrial Applications 3.0 Credits

Selection of materials for industrial applications entails a balance between multiple constraints. In this course, students will learn methodologies that consider factors such as material properties, processing techniques, shape, cost, environmental impact, health and safety, and social concerns to determine appropriate materials for industrial applications. Often conflicting constraints that result from these factors need to be evaluated.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATE 315 [Min Grade: D], MATE 345 [Min Grade: D], MATE 366 [Min Grade: D] (Can be taken Concurrently)

MATE 410 Case Studies in Materials 3.0 Credits

Covers interaction of materials processing and design, materials selection, the design-failure interface, cost and capacity in manufacturing. Taught via case studies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MSE.

Cannot enroll if classification is Freshman

Prerequisites: MATE 370 [Min Grade: D]

MATE 426 Materials for Additive Manufacturing 3.0 Credits

This course addresses additive manufacturing (AM) from a materials science and engineering perspective. Processing, structure, property relationships will be examined for metals, polymers, and ceramics as well as composites used in additive manufacturing. Ideas and concepts from powder processing, solidification processing and welding applicable to AM will be discussed. Critical analysis of the literature and special topics via term projects will be used to provide opportunities for students to explore in depth AM topic areas of their own interest.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 220 [Min Grade: D] or MATE 220 [Min Grade: D]

MATE 450 The Nuclear Fuel Cycle & Materials 3.0 Credits

Nuclear fuel cycle, including extraction, enrichment, transmutation in a nuclear reactor, reprocessing, waste processing, repository performance. Materials for nuclear reactors, mechanical and thermal performance, radiation damage.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 220 [Min Grade: D] and (MEM 371 [Min Grade: D] or ECEP 404 [Min Grade: D]) and ECEP 402 [Min Grade: D]

MATE 455 Biomedical Materials 3.0 Credits

Familiarizes students with natural tissues and the implants designed to replace them, treating both components as engineering materials. Includes a review of fundamental topics of materials structure and testing, and case studies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

MATE 458 Advanced Biomaterials 3.0 Credits

Tissue Engineering, matrices, cells, scaffold, engineering properties, constitutive relations, absorbable polymers, cell seeding, cellular isolation, cell-scaffold interaction. May be repeated for credit.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Senior.

MATE 460 Engineering Computational Laboratory 4.0 Credits

Covers numerical techniques, finite differences and finite elements, convergence, and applications in engineering design.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATE 221 [Min Grade: D] or MATE 230 [Min Grade: D]) and (ENGR 232 [Min Grade: D] or MATH 210 [Min Grade: D] or CAEE 232 [Min Grade: D] or ECE 232 [Min Grade: D]) and MATH 200 [Min Grade: D]

MATE 462 Powder Metallurgy 3.0 Credits

Covers commercial and near-commercial methods of powder making, material and process variables, atomization mechanisms, powder properties and characterization, powder compaction, and properties in the green state.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATE 366 [Min Grade: D]

MATE 475 Materials Data Analysis 3.0 Credits

Students will learn and exercise common statistical methods for the analysis and interpretation of numerical data in materials science and engineering. Students will also be exposed to the data mining and machine learning techniques applied in materials science and engineering. The course will emphasize providing students fruitful hands-on experience of commonly used platforms to perform (big) data analysis and solve materials-relevant problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CIVE 375 [Min Grade: D] or MATE 370 [Min Grade: D]

MATE 476 Recycling of Materials 3.0 Credits

This course will examine the selection criteria for recycling component materials. Recycling involves both reusing materials for energy applications and reprocessing materials into new products.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATE 240 [Min Grade: D] and MATE 245 [Min Grade: D]

MATE 482 Materials for Energy Storage 3.0 Credits

The course will address principles of operation of electrochemical energy storage devices and describe materials used in those devices.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: ENGR 220 [Min Grade: D]

MATE 483 Environmental Effects on Materials 3.0 Credits

Environmental degradation is explored with a focus on electrochemical corrosion reactions in metals and alloys due to atmospheric, aqueous, chemical or elevated temperature exposure. In addition, high temperature degradation of ceramics and degradation of polymers due to exposure to heat, light and chemicals will be addressed. The role of these environmental effects during service and the impact on performance and reliability will be explored.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATE 245 [Min Grade: D]

MATE 491 [WI] Senior Project Design I 2.0 Credits

Introduces the design process, including information retrieval, problem definition, proposal writing, patents, and design notebooks. Includes presentations on problem areas by experts from industry, government, and education.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MATE 280 [Min Grade: D] and MATE 315 [Min Grade: D] and MATE 351 [Min Grade: D]

MATE 492 Senior Project Design II 3.0 Credits

Continues MATE 491. Requires written and oral progress reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MATE 491 [Min Grade: D]

MATE 493 [WI] Senior Project Design III 3.0 Credits

Continues MATE 492. Requires written and oral final reports, including oral presentations by each design team.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MATE 492 [Min Grade: D]

MATE I199 Independent Study in MATE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MATE I299 Independent Study in MATE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MATE I399 Independent Study in MATE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MATE I499 Independent Study in MATE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

MATE T180 Special Topics in MATE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MATE T280 Special Topics in MATE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MATE T380 Special Topics in MATE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MATE T480 Special Topics in MATE 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Mathematics

Courses

MATH 100 Fundamentals of Mathematics 3.0 Credits

Course covers properties of real numbers, algebraic expressions, rational expressions, linear and quadratic functions and graphs. This course is intended to give students the background needed to enroll in MATH 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman or Sophomore .

Corequisite: EXAM 082

MATH 101 Introduction to Analysis I 4.0 Credits

Covers linear, quadratic, exponential, and logarithmic functions; systems of linear equations; elementary linear programming; matrix algebra; inverse; and mathematics of finance.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 100 [Min Grade: C-] or APEM 070 or APC 060 or APMA49 P or APCA49 P

Corequisite: EXAM 080

MATH 102 Introduction to Analysis II 4.0 Credits

Covers limits, continuity, derivatives, indefinite and definite integrals, and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 101 [Min Grade: D] or MATH 171 [Min Grade: C-]

Corequisite: EXAM 080

MATH 105 Algebra, Functions, and Trigonometry 6.0 Credits

Properties of real numbers, algebraic expressions, rational expressions, linear and quadratic functions and graphs, and additional topics from algebra. Topics from geometry and trigonometry essential for the study of calculus.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 082

MATH 107 Probability and Statistics for Liberal Arts 3.0 Credits

Probability and statistics in everyday life. The pitfalls of interpreting statistical data. A basic introduction to probability, chance, and gambling. Examples include coin-tossing, dice and roulette wheels.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 100 [Min Grade: D] or MATH 101 [Min Grade: D] or APEM 070

MATH 108 Mathematics for Nursing Professionals 3.0 Credits

Math foundations needed in the calculation of dosages and solutions of medications. Topics include systems of measurement and calculating dosages involving tablets, capsules, liquids, and powders.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

MATH 109 Practicum for Math 110 1.0 Credit

This supplement to MATH 110 emphasizes team-based approaches to working and learning, regular problem solving, and an appreciation for how mathematics is connected with other disciplines. Individual drills, small-group problem sets, and in-class discussion will reinforce the concepts in MATH 110 and develop learning strategies that are useful in other courses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 110

MATH 110 Precalculus 3.0 Credits

Reviews topics from algebra, geometry, and trigonometry essential for the study of calculus. For students planning to take Calculus I.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman.

Prerequisites: MATH 100 [Min Grade: C] or APC 060 or APMA49 P or APCA49 P

Corequisite: EXAM 082

MATH 111 Practicum for Math 116 1.0 Credit

The purpose of this course is to improve the study habits and learning strategies that are essential for success in MATH 116 and other math courses. This course emphasizes team-based approaches to working and learning, regular problem solving, and an appreciation for how mathematics is connected with your discipline. Through individual drills, small-group problem sets, and in-class discussion we will reinforce concepts taught in your freshman mathematics sequence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 116

MATH 112 Practicum for Math 121 1.0 Credit

The purpose of MATH 112 is to improve the study habits and learning strategies that are essential for success in MATH 121 and other math courses. MATH 112 emphasizes team-based approaches to working and learning, regular problem solving, and an appreciation for how mathematics is connected with your discipline. Through individual drills, small-group problem sets, and in-class discussion we will reinforce concepts taught in your freshman mathematics sequence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 121

MATH 113 Practicum for Math 122 1.0 Credit

The purpose of MATH 113 is to improve the study habits and learning strategies that are essential for success in MATH 122 and other math courses. MATH 113 emphasizes team-based approaches to working and learning, regular problem solving, and an appreciation for how mathematics is connected with your discipline. Through individual drills, small-group problem sets, and in-class discussion we will reinforce concepts taught in your freshman mathematics sequence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 122

MATH 114 Practicum for Math 117 1.0 Credit

The purpose of this course is to improve the study habits and learning strategies that are essential for success in Calculus and Function II (MATH 117) and other math courses. This course emphasizes team-based approaches to working and learning, regular problem solving, and an appreciation for how mathematics is connected with your discipline. Through individual drills, small-group problem sets, and in-class discussion we will reinforce concepts taught in your freshman mathematics sequence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 117

MATH 115 Practicum for MATH 200 1.0 Credit

The purpose of MATH 115 is to improve the study habits and learning strategies that are essential for success in MATH 200 and other math courses. MATH 115 emphasizes team-based approaches to working and learning, regular problem solving, and an appreciation for how mathematics is connected with your discipline. Through individual drills, small-group problem sets, and in-class discussion we will reinforce concepts taught in your freshman mathematics sequence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 200

MATH 116 Calculus and Functions I 4.0 Credits

This is the first course in a two-term sequence designed to introduce students to key concepts from differential calculus while reviewing essential topics from algebra, geometry, and precalculus. Material includes limits and derivatives of algebraic functions and applications. Some students may need a one-credit concurrent practicum course (MATH 111) depending on their calculus exam score and summer preparatory review participation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: APC 036 or MATH 100 [Min Grade: C] or APMA49 P or APCA49 P

Corequisite: EXAM 082

MATH 117 Calculus and Functions II 4.0 Credits

This is the second course in a two-term sequence designed to introduce students to key concepts from differential calculus while reviewing essential topics from algebra, geometry, and precalculus. Material includes limits and derivatives of transcendental functions and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 116 [Min Grade: C-]

Corequisite: EXAM 082

MATH 119 Mathematical Foundations for Design 0.0-4.0 Credits

This course serves as an introduction to the mathematical concepts and tools most useful to students majoring in the Design Arts. Topics include functions, graphs, plane and fractal geometry, trigonometry, polar coordinates, and elementary topology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman or Sophomore .

Corequisite: EXAM 080

MATH 121 Calculus I 4.0 Credits

Functions, limits and continuity, derivatives, transcendental functions, and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Freshman.

Prerequisites: MATH 110 [Min Grade: C-] or MATH 105 [Min Grade: C-] or APC 070 or APCA50 P

Corequisite: EXAM 080

MATH 122 Calculus II 4.0 Credits

Definite integrals, Fundamental Theorem of Calculus, integration techniques, applications of integration, numerical integration and differential equations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 117 [Min Grade: C-] or MATH 121 [Min Grade: C-]

Corequisite: EXAM 080

MATH 123 Calculus III 4.0 Credits

Differential equations, Taylor's theorem, sequence and series, convergence, power series.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

Corequisite: EXAM 080

MATH 171 Introduction to Analysis A 3.0 Credits

Polynomials (including linear and quadratic functions), exponential and logarithmic functions, financial applications, matrices, inverse matrices, and solutions of linear systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 100 [Min Grade: C-] or APEM 070 or APC 060 or APMA49 P or APCA49 P

MATH 172 Introduction to Analysis B 3.0 Credits

Matrices, inverse matrices, and solutions of linear systems, limits, continuity, rates of change and derivatives, techniques of differentiation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 171 [Min Grade: C-] or MATH 101 [Min Grade: D]

MATH 173 Introduction to Analysis C 3.0 Credits

Applications of differentiation (including graphing and optimization), definite and indefinite integrals, techniques of integration, applications of integration.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 172 [Min Grade: C-]

MATH 180 Discrete Computational Structures 4.0 Credits

Covers basic concepts of discrete mathematics that are important to computing, including elementary set theory, recurrence relations, and graph theory.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 102 [Min Grade: D] or MATH 121 [Min Grade: D] or MATH 172 [Min Grade: C-] or MATH 117 [Min Grade: D]

MATH 200 Multivariate Calculus 4.0 Credits

Vectors, curves, partial derivatives, gradient, constrained optimization, coordinate system, multiple integrals, and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

Corequisite: EXAM 080

MATH 201 Linear Algebra 4.0 Credits

Systems of linear equations, matrix algebra, determinants, vector spaces, eigenvalues and eigenvectors, orthogonality, diagonalization, applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 121 [Min Grade: D] or MATH 117 [Min Grade: D] or MATH 102 [Min Grade: D]

Corequisite: EXAM 081

MATH 205 Survey of Geometry 3.0 Credits

Axiomatic approach to geometry: plane geometry, transformational geometries, and an introduction to classical non-Euclidean geometries. Includes experimental approaches using appropriate software tools.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

MATH 210 Differential Equations 4.0 Credits

Covers solution methods and properties for scalar and vector differential equations. Topics include linear and nonlinear equations, numerical methods, separation of variables, and transform methods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D] and MATH 201 [Min Grade: D]

Corequisite: EXAM 081

MATH 220 [WI] Introduction to Mathematical Reasoning 3.0 Credits

A transition course that develops the reasoning skills necessary for later courses. Emphasizes writing and presentation skills. Topics taken from set theory, logic, induction, relations, functions, and properties of the real number system.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 123 [Min Grade: C-] or MATH 200 [Min Grade: C-]

MATH 221 Discrete Mathematics 3.0 Credits

Elementary set theory, combinatorics, elementary number theory, graphs, and special topics chosen from formal language theory, graph algorithms, coding theory, and other applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 220 [Min Grade: C] or CS 270 [Min Grade: D] or ECE 200 [Min Grade: D]

Corequisite: EXAM 081

MATH 222 [WI] Combinatorics 3.0 Credits

Select combinatorial topics such as recurrence relations, generating functions, inclusion-exclusion, and graph theory. Emphasis on techniques for writing mathematical arguments and proofs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 220 [Min Grade: C]

MATH 235 Math Competition Problem Solving Seminar 0.5-4.0 Credits

Problems from math competitions (such as the Putnam exam) are solved by students in this course. This course may be repeated four times for credit as topics vary.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 4 times for 32 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 200 [Min Grade: D]

MATH 238 History of Mathematics 3.0 Credits

This course explores the history of mathematical concepts. Both the people involved and the environment in which the developments took place will be studied. Mathematics from the time of Babylonia to the present will be discussed. The presentation will take a thematic approach, which may vary each term.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

MATH 239 Mathematics for the Life Sciences 4.0 Credits

A broad survey of mathematical topics that are fundamental for application in the life science: multivariate calculus, differential equations, elementary probability. Emphasis on application.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 102 [Min Grade: D] or MATH 122 [Min Grade: D]

MATH 250 Mathematics of Investment and Credit 3.0 Credits

Interest Rate Measurement, Valuation of Annuities, Loan Repayment, Bond Valuation Recommended for students taking actuarial exam FM2.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 123 [Min Grade: D]

MATH 261 Linear Algebra 3.0 Credits

Covers matrix arithmetic systems of linear equations, including vector spaces, coordinate systems, determinants, characteristic value problems, and Euclidean spaces, and application to quadratic forms and linear differential equations. Problems from engineering and science will be solved using applications such as MATLAB during the lab.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D]

MATH 262 Differential Equations 3.0 Credits

Covers solutions of first-order equations, undetermined coefficient and variation of parameter methods of solution of higher order linear equations, systems of equations, and Laplace transform. Problems from engineering and science will be solved using applications such as MATLAB during the lab.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 261 [Min Grade: D]

MATH 285 Differential Equations II 3.0 Credits

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 210 [Min Grade: D]

MATH 291 Complex and Vector Analysis for Engineers 4.0 Credits

Complex and Vector Analysis for Engineers. Covers gradient, divergence, and curl; integral theorems curvilinear coordinates, complex differentiation and integration, Cauchy's Theorem, power series, residues and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D]

MATH 300 Numerical Analysis I 4.0 Credits

The course covers root finding and fixed points, polynomial interpolation, splines, numerical integration and numerical differentiation. The course emphasizes computational solutions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D] and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D]) and (CS 171 [Min Grade: D] or CS 123 [Min Grade: D])

MATH 301 Numerical Analysis II 3.0 Credits

A continuation of MATH 300. This course covers numerical solutions of initial value problems for ordinary differential equations, boundary value problems, and data approximation including least squares fit and the Fast Fourier Transform.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 300 [Min Grade: D]

MATH 305 Introduction to Optimization Theory 4.0 Credits

Provides a broad survey of mathematical techniques in optimization theory used in operations research and management science. Includes topics selected from the following categories: linear programming, integer programming, network flows, and nonlinear programming.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D]

MATH 310 Probability and Statistics 4.0 Credits

Not open to mathematics or computer science majors. Covers probability, probability distribution of discrete and continuous random variables, moment-generating functions, distribution of sample statistics, estimation and statistical tests, tests for goodness of fit, and regression analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is CS or major is MATH or classification is Freshman

Prerequisites: MATH 200 [Min Grade: D]

MATH 311 Probability and Statistics I 4.0 Credits

Discrete and continuous probability distributions, conditional probabilities, expected value and variance, joint probability distributions, discrete marginal distributions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 122 [Min Grade: D]

Corequisite: EXAM 081

MATH 312 Probability and Statistics II 4.0 Credits

This course covers joint & marginal distributions for continuous random variables, distributions of functions of random variables, moment-generating function technique, the central limit theorem. Estimation, consistency, unbiasedness, maximum likelihood, and simple linear regression.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 200 [Min Grade: D] and (MATH 311 [Min Grade: D] or ENGR 361 [Min Grade: D])

Corequisite: EXAM 081

MATH 313 Probability and Statistics III 3.0 Credits

This course covers confidence intervals, minimum variance unbiased estimation, hypothesis testing, type I and type II errors, likelihood ratio tests, tests for means and variances. Chi-square goodness-of-fit tests, categorical data analysis, and analysis of variance.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 312 [Min Grade: D]

MATH 316 Mathematical Applications of Symbolic Software 3.0 Credits

Mathematical Applications of Symbolic Software. Topics from calculus are investigated via complex problems requiring the use of symbolic mathematical software, primarily Maple. Numerical, graphical, and algebraic approaches are integrated. Limits, derivatives, root-finding, integration, and infinite series are explored in this context.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 123 [Min Grade: D] and MATH 200 [Min Grade: D]

MATH 318 [WI] Mathematical Applications of Statistical Software 3.0 Credits

Mathematical Applications of Statistical Software. Applications of modern statistical technologies and software, such as SAS, are used to describe and analyze data. Some topics covered are data management, collecting data, inferences for single and multiple population means, proportions count data, regression, correlation and nonparametric statistical methods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 310 [Min Grade: D] or MATH 312 [Min Grade: D]

MATH 319 Techniques of Data Analysis 4.0 Credits

An applied course that considers the acquisition, analysis, visualization, and presentation of data. Emphasizes computation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 318 [Min Grade: D]

MATH 320 Actuarial Mathematics 3.0 Credits

Covers probability in a risk management context. Univariate probability distribution including binomial, negative binomial, Poisson, uniform, exponential, normal, lognormal, Pareto, and Weibull distributions. Multivariate distributions including conditional and marginal probability distributions, joint moment generating functions, probability and moments for linear combinations of independent random variables and related topics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 311 [Min Grade: C-]

MATH 321 Vector Calculus 4.0 Credits

Covers vector algebra; gradient, divergence, curl, and curvilinear coordinates; Green's theorem, divergence theorem, and Stokes' theorem; and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D]) and MATH 200 [Min Grade: D]

MATH 322 Complex Variables 4.0 Credits

Introduces functions of one complex variable. Topics include the basic properties of analytic functions, power series, integration, residues and poles, and conformal mapping with applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D]

MATH 323 Partial Differential Equations 4.0 Credits

Covers basic concepts and solution techniques for the standard partial differential equations of mathematical physics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D]

MATH 331 Abstract Algebra I 4.0 Credits

Covers theory of groups, homomorphism and isomorphism, theory of rings, integral domains, ideals, unique factorization, and theory of fields.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATH 220 [Min Grade: C-] or CS 270 [Min Grade: C-]) and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D])

MATH 332 Abstract Algebra II 3.0 Credits

Covers further topics in abstract algebra, including canonical decomposition of linear transformation, bilinear forms, multilinear algebra and determinants, finite fields, and selected short subjects.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 331 [Min Grade: C-]

MATH 387 Linear Algebra II 3.0 Credits

Covers linear transformations, including kernel and range; eigenvalues and eigenvectors; diagonalization of symmetric matrices; and application to differential equations, quadratic forms, and Markov chains. Fall.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 261 [Min Grade: D] or MATH 201 [Min Grade: D]

MATH 401 Elements of Modern Analysis I 3.0 Credits

Covers the real number system, elementary topology, limits, infinite series, continuity, derivatives, and the Riemann integral.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATH 220 [Min Grade: C-] or CS 270 [Min Grade: C-]) and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D]) and MATH 200 [Min Grade: D]

MATH 402 Elements of Modern Analysis II 3.0 Credits

Covers continuation of integration theory, improper integrals, sequences and series, power series, and uniform convergence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 401 [Min Grade: C-]

MATH 410 Scientific Data Analysis I 3.0 Credits

Fundamental principles and applications of statistics for scientific data analysis. Topics include data exploration, principles of probability distributions, Central Limit Theorem, hypothesis testing, z, t and F tests, one-way analysis of variance, linear regression, and contingency table analysis. Programming statistical applications in R will be included.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D] or MATH 239 [Min Grade: D]

MATH 411 Scientific Data Analysis II 3.0 Credits

Scientific data analysis and experimental design. Topics include multiple regression and model selection, nonlinear and logistic regression, analysis of covariance, multi-factor analysis of variance, nested, factorial and repeated measures experimental designs, random effects, and introduction to bootstrap methods and randomization tests. Programming statistical applications in R will be included.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 410 [Min Grade: C-]

MATH 422 Introduction to Topology 4.0 Credits

Covers topological space, metric spaces, function, continuity, compactness, and connectedness.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 220 [Min Grade: C]

MATH 449 Mathematical Finance 3.0 Credits

This course is an introduction to the mathematics of finance. The main topics include: fixed income mathematics (duration, convexity, compounding conventions, immunization of bond portfolios, yield curve stripping), foundations of the arbitrage theory (pricing of futures and forwards, swaps, put/call parity) and introduction to stochastic derivative pricing (Black-Scholes and beyond).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 311 [Min Grade: D]

MATH 450 Introduction to Graph Theory 3.0 Credits

Introduction to Graph Theory. Topics covered include paths and cycles, Eulerian graphs, Hamiltonian graphs, trees, matching, coloring, planarity, and some additional topics in special graphs such as interval graphs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D]) and (MATH 221 [Min Grade: D] or MATH 222 [Min Grade: D])

MATH 475 Cryptography 3.0 Credits

Classic cryptosystems, elementary number theory, RSA, ElGamal, discrete logarithms, digital signatures, plus a special topic selected from elliptic curves, information theory, and quantum cryptography.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D]) and MATH 311 [Min Grade: D]

MATH 483 Introduction to Monte Carlo Methods 3.0 Credits

Covers system simulation, Monte Carlo methods, discrete event modeling techniques, queuing models, programming considerations, statistical definitions and concepts, random number generation, output analysis, and design of computer experiments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 311 [Min Grade: C]

MATH 489 Tensor Calculus 3.0 Credits

Covers tensor algebra, including coordinate transformations, fundamental quadratic form, covariant and contravariant tensors, Riemannian metric, and applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATH 201 [Min Grade: C] or MATH 261 [Min Grade: C]) or ENGR 231 [Min Grade: C]) and MATH 200 [Min Grade: C]

MATH I199 Independent Study in MATH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

MATH I299 Independent Study in MATH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

MATH I399 Independent Study in MATH 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

MATH I499 Independent Study in MATH 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

MATH T180 Special Topics in Mathematics 0.0-12.0 Credits

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

MATH T280 Special Topics in Mathematics 0.0-12.0 Credits

Covers topics in pure or applied mathematics. Different topics may be considered in different quarters.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

MATH T380 Special Topics in Mathematics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

MATH T480 Special Topics in Mathematics 0.0-12.0 Credits

Covers topics in Mathematics of interest to students or faculty. Different topics may be considered during different quarters.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Mathematics Education

Courses

MTED 363 Middle Years Mathematics Methods (4-8) 1.5 Credit

This course focuses on critical knowledge and skills for teaching mathematics in middle years, including learning theories and psychology in mathematics education. The major goal is to provide prospective middle school teachers the opportunity to develop concepts, skills, and pedagogical procedures for effective teaching of mathematics. Additionally, we will consider important social and cultural aspects of teaching math that impact student learning, as well as reflect on how teaching mathematics can be made exciting, intriguing, and understandable for students. This course has a Stage 1-2 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

MTED 417 Mathematics Methods and Content: Early Childhood 3.0 Credits

Students will know and effectively deliver standards-based academic math content, based on age appropriate understanding, and individual and groups needs including a respect for the unique needs of all types of learners. This course requires additional field experience hours. This course has a Stage 3 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

MTED 418 Mathematics Methods and Content 3.0 Credits

Course emphasizes diagnostic instruction in mathematics by allowing students to complete problems that their students will be expected to work, noting the error and correction process, as well as gaining an awareness of student difficulties in mathematics.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: MTED 417 [Min Grade: B]

MTED 419 Teaching Secondary Mathematics 3.0 Credits

This course emphasizes the major issues in learning and teaching mathematics in the secondary school. Topics will include instructional practices, learning theories, philosophies of assessment, and curriculum in the secondary school. Throughout the course, emphasis will be placed on the appropriate use of technology. This course has a Stage 3 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

MTED 428 Cultural and Historical Significance of Mathematics 3.0 Credits

The course explores how mathematics reflects and influences the ideas and movements in culture, history, biography and philosophy. An emphasis on teaching methods is integrated throughout the course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Mechanical Engineering & Mechanics

Courses

MEM 201 Foundations of Computer Aided Design 0.0-3.0 Credits

Covers application of modern, computer-aided graphics techniques and the use of state-of-the-art, computer-aided design/drafting package(s). Includes topics such as principles of computer-aided design/drafting and interactions with computer-aided manufacturing, rapid prototyping, and other modern manufacturing processes; engineering graphics and graphics languages in computer-aided design and/or drafting; creation of a drawing environment; database and file management, editing, modification, displaying, dimensioning, plotting and printing; special editing techniques; 3-D modeling, solid modeling, shading, and rendering; and file transfer. Students must have Sophomore class standing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

MEM 202 Statics 3.0 Credits

Covers two-and three-dimensional vector representation of forces, moments and couples; static equilibrium of particles, rigid bodies, and engineering structures; analysis of external and internal forces in structures via methods of free body diagrams; and properties of cross-sectional areas.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 185 [Min Grade: D] or PHYS 101 [Min Grade: D]

MEM 210 Introduction to Thermodynamics 3.0 Credits

Introduces thermodynamics from a classical point of view. Covers work, heat, entropy, thermodynamic properties, equations of state, and first and second law analysis of closed systems, control volumes, and selected thermodynamic cycles.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D] and PHYS 101 [Min Grade: D]

Corequisite: EXAM 081

MEM 220 Fluid Mechanics I 4.0 Credits

Covers general physical properties of a fluid; kinetics of fluid motion; material derivative, vorticity, strain, and dynamics of fluids; and derivation of conservation laws in control volume form with applications.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (MATH 200 [Min Grade: D] or MATH 189 [Min Grade: D]) and MEM 202 [Min Grade: D] and MEM 310 [Min Grade: D]

MEM 230 Mechanics of Materials I 0.0-4.0 Credits

Covers definitions of stress and strain, uniaxial loading, torsion, bending moments and shear forces in beams, bending stresses and shear stress in beams, and stress transformation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 202 [Min Grade: D]

MEM 238 Dynamics 4.0 Credits

Covers kinematics and kinetics in two and three-dimensional space, force and acceleration, linear and angular momentum, and energy methods.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MATH 189 [Min Grade: D] or MATH 200 [Min Grade: D]) and MEM 202 [Min Grade: D]

MEM 255 Introduction to Controls 4.0 Credits

Introduces the concepts of modeling of mechanical, electrical, electromechanical, thermal, and hydraulic systems; linearization; state-space model; time-domain analysis; transfer functions; frequency-domain analysis; analysis of systems involving automatic control of position, speed, power, flow, pressure, temperature, and other physical quantities; basic concept of feedback; basic concept of stability; computer-aided analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 238 [Min Grade: D] and (MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D]) and (MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D] or ENGR 232 [Min Grade: D])

MEM 260 Thinking Like a Mechanical Engineer 3.0 Credits

Covers introductory data gathering, presentation, evaluation, and analysis. Students will acquire logic and programming skills by using spreadsheets and engineering analysis software tools. In-class assignments, mini-design problems, hands-on experiments, and computer-based activities are used to work with data and collaboratively solve more difficult problems that lead them to think like a mechanical engineer.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM 261 Introduction to Mechatronics for Mechanical Engineers 3.0 Credits

Mechatronics is an interdisciplinary field that combines principles of mechanical engineering, electronics, computer science, and control theory to design and build automated systems. Students will learn in the intersection between hardware elements (i.e., sensors, actuators, and microprocessors) and software elements (i.e., software and control theory) and create their own mechatronics device. Mechatronics is an essential foundation for the expected growth in automation and manufacturing.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Prerequisites: PHYS 102 [Min Grade: D] and MATH 201 [Min Grade: D] and MEM 161 [Min Grade: D] and (ENGR 131 [Min Grade: D] or ENGR 132 [Min Grade: D])

MEM 304 Introduction to Biomechanical Engineering 3.0 Credits

An overview of the application of mechanical engineering to biological systems. Covers basic anatomy and physiology; tissue, joint, cell, and protein mechanics; joint kinematics; biofluid mechanics; biothermodynamics; biotransport; biomimetic controls; and biomanufacturing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D] and PHYS 101 [Min Grade: D] and CHEM 102 [Min Grade: D] and BIO 141 [Min Grade: D]

MEM 310 Thermodynamic Analysis I 4.0 Credits

Covers second law of thermodynamics as applied to closed systems, control volumes, and thermodynamic cycles (Carnot); entropy and isentropic relationships; gas (Otto, Diesel, Stirling, Ericsson, Brayton), vapor (Rankine), and refrigeration cycles.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGR 210 [Min Grade: D] or MEM 210 [Min Grade: D]

MEM 311 Thermal Fluid Science Laboratory 2.0 Credits

Introduces modern laboratory techniques, including statistical analysis of experimental data; thermodynamic properties and equations of state; and dynamic and static temperature measurements with potentiometers, bridge circuits, and oscilloscopes. Fall.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 220 [Min Grade: D] and MEM 310 [Min Grade: D]

MEM 320 Fluid Dynamics I 3.0 Credits

Covers equation of motion for compressible flow; static, total, and stagnation concepts; one-dimensional isentropic, normal shock, including Fanno and Rayleigh flows and choked flow; two-dimensional supersonic flow, including Prandtl-Meyer flow and oblique shocks; analysis and design of compressible flow devices, including supersonic nozzles, diffusers, wind tunnels, inlets, and combustors.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 220 [Min Grade: D]

MEM 321 Fluid Mechanics II 4.0 Credits

Covers differential analysis of fluid flow, including the Euler's equations, potential flows, and the Navier-Stokes equations; angular momentum and its application to turbomachinery; external flow and boundary layers, and an introduction to compressible flow.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 220 [Min Grade: D]

MEM 330 Mechanics of Materials II 4.0 Credits

Reviews mechanics of materials, beam theory, combined loading, stress transformation, shear center, asymmetrical bending, deflection of beams, statically indeterminate beams, energy methods, inelastic bending, and beam column instability.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 230 [Min Grade: D]

MEM 331 Experimental Mechanics I 0.0-2.0 Credits

Covers static testing methods, including strain gages, extensometers, photoelasticity, and model analysis; practical applications of experimental stress analysis; and verification of standard materials tests, including tensile, shear, and buckling. Winter. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 238 [Min Grade: D] (Can be taken Concurrently) and MEM 230 [Min Grade: D]

MEM 333 Mechanical Behavior of Materials 3.0 Credits

Introduces the deformation and failure of engineering materials; Emphasizes application of the fundamentals to engineering design to prevent failure; Covers material damage and failure under multi-axial stresses, yielding, fracture mechanics, fatigue crack growth, fatigue life estimation, and deformation and failure of composite materials.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Pre-Junior or Senior.

Prerequisites: MEM 230 [Min Grade: D]

MEM 345 Heat Transfer 4.0 Credits

Covers fundamentals of conduction, convection, and radiation; steady and unsteady heat conduction; fundamentals of boundary layer flows; introduction to forced and free convection for external and internal flows; blackbody radiation; and radiation and surface radiation properties.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGR 210 [Min Grade: D] and (MEM 220 [Min Grade: D] or CIVE 320 [Min Grade: D]) and (MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D] or ENGR 232 [Min Grade: D])

MEM 351 Dynamic Systems Laboratory I 0.0-2.0 Credits

Includes experiments involving modeling and simulation of linear and non-linear dynamic systems, including feedback controls. Spring.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 255 [Min Grade: D]

MEM 355 Performance Enhancement of Dynamic Systems 4.0 Credits

This course introduces measures of performance of dynamical systems, means of computing/evaluation of such measures, and how to design controllers to improve performance.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 255 [Min Grade: D]

MEM 360 Numerical Methods in Mechanical Engineering Design 3.0 Credits

Understand and implement numerical methods to solve Mechanical Engineering problems with the aid of a digital computer. Problems will be drawn from all fields of interest to mechanical engineers, including solid and fluid mechanics, heat transfer, robotics, aerodynamics and orbit mechanics, systems dynamics, and control. The course will cover numerical methods such as roots of equations, linear algebraic equations, systems of nonlinear equations, optimization, curve fitting, integration, and differential equations. Python will be used as a programming language.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is MECH or major is MSE.

Prerequisites: MATH 201 [Min Grade: C], MATH 210 [Min Grade: C] (Can be taken Concurrently) or (ENGR 131 [Min Grade: C] or ENGR 132 [Min Grade: C])

MEM 361 Engineering Reliability 3.0 Credits

Reviews probability concepts and modeling of random phenomena, including parameter estimation, empirical determination of distribution models, catastrophic failure models, material strength and fatigue life distribution, and reliability improvement.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: MATH 290 [Min Grade: D] or MATH 201 [Min Grade: D] or MATH 261 [Min Grade: D] or ENGR 231 [Min Grade: D]

MEM 371 Introduction to Nuclear Engineering I 2.0 Credits

Introduces the fundamental scientific, technical, social and ethical issues in nuclear engineering; nuclear reactions and radiation, radiation protection and control, nuclear energy production and utilization, nuclear fuel cycle, nuclear fuel cycle, nuclear materials, controlled fusion and thermonuclear plasma systems, basics of plasma physics and plasma chemistry, nuclear waste management, nuclear reactor safety, analysis of severe nuclear accidents, risk assessment and related issues of engineering ethics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] and (ENGR 210 [Min Grade: D] or CHE 206 [Min Grade: D])

MEM 373 Space Systems Engineering I 3.0 Credits

Introduction to space engineering through presentation of two topics that serve as the foundation of space systems analysis and design: rocket propulsion and orbital mechanics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 220 [Min Grade: D] and MEM 238 [Min Grade: D] and MEM 310 [Min Grade: D]

MEM 374 Space Systems Engineering II 3.0 Credits

Introduction to design principles and theory of satellite systems engineering, including design theories and parameters involved in satellite development, as well as real life conditions such as applications, product assurance, assembly, and testing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 373 [Min Grade: D]

MEM 395 Hess Undergraduate Scholars Research 0.5-3.0 Credits

A change for undergraduates to experience independent research as part of the MEM Hess Honors Program. Weekly group meetings to discuss the details of the research endeavor are coupled with independent student in a research laboratory. May be repeated five times for credit.

College/Department: College of Engineering

Repeat Status: Can be repeated 5 times for 18 credits

Prerequisites: MEM 310 [Min Grade: D]

MEM 400 Internal Combustion Engines 3.0 Credits

Covers engine types and trends, thermodynamics of engines and engine processes, ideal and actual engine processes and cycles, combustion and emissions, fuel chemistry and properties, detonation and knock, and engine testing and performance.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 310 [Min Grade: D]

MEM 402 Power Plant Design 3.0 Credits

Covers heat cycle arrangement, equipment selection, analysis of cost demands, and diversity factors. Includes economic studies of plant and cycle arrangements.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 310 [Min Grade: D]

MEM 403 Gas Turbines & Jet Propulsion 3.0 Credits

Covers fundamentals of thermodynamics and aerothermodynamics, and application to propulsion engines; thermodynamic cycles and performance analysis of gas turbines and air-breathing propulsion systems, turbojet, turboprop, ducted fan, ramjet, and ducted rocket; theory and design of ramjets, liquid and solid rockets, air-augmented rockets, and hybrid rockets; aerodynamics of flames, including the thermodynamics and kinetics of combustion reactions; supersonic combustion technology and zero-g propulsion problems; and propulsion systems comparison and evaluation for space missions.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 220 [Min Grade: D] and MEM 310 [Min Grade: D]

MEM 405 Principles of Combustion I 3.0 Credits

Covers thermochemistry, the relationship between heats of formation and bond energies, heat capacity and heats of reaction, chemical equilibrium, calculation of flame temperature, and composition of burned gas.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 410 [Min Grade: D]

MEM 406 Principles of Combustion II 3.0 Credits

Covers laminar flame propagation in premixed gases, detonation and deflagration, burning of liquid and solid fuels, and diffusion flames.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 405 [Min Grade: D]

MEM 410 Thermodynamic Analysis II 3.0 Credits

Covers thermodynamic analysis of ideal and real mixtures and gas phase reacting systems; Maxwell relations; chemical and phase equilibrium; air-conditioning; and combustion.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 310 [Min Grade: D]

MEM 413 HVAC Loads 3.0 Credits

Human comfort and associated models; state-of-the-art methods of calculating building peak heating and cooling loads; analysis of different psychrometric processes; different types of secondary systems: description, operating principles, modeling, simulation and sizing of secondary systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 345 [Min Grade: D] and (MEM 310 [Min Grade: D] or AE 220 [Min Grade: D])

MEM 414 HVAC Equipment 3.0 Credits

Standard and real, single-stage multistage refrigeration cycles; vapor compression components (compressor, expansion devices, condensers, and evaporators); heat pumps; absorption systems; boilers; heat exchangers; cooling coils, cooling towers; part-load energy performance; annual energy; annual energy estimation methods (degree-day, bin method, modified degree-day).

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 345 [Min Grade: D] and (MEM 310 [Min Grade: D] or AE 220 [Min Grade: D])

MEM 415 Fuel Cell Engines 3.0 Credits

Introduces fundamental aspects and operating principles of fuel cell systems, including: basic electrochemical principles, thermodynamics required for understanding the operation, components including functions and materials, electrochemical performance characteristics, analysis of system losses and efficiency, various fuel cell types, current state of technology, application areas/implementation, and current technical challenges.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (MEM 220 [Min Grade: D] or CHE 302 [Min Grade: D] or CIVE 320 [Min Grade: D]) and MEM 310 [Min Grade: D]

MEM 417 Introduction to Microfabrication 3.0 Credits

This course focuses on the fundamentals of microfabrication technologies. The materials, principles, and applications of silicon-based microfabrication technologies such as photolithography, wet/dry etching, deposition techniques, surface micromachining, and polymer micromachining are covered. This course also includes two lab sessions through which students have hands-on experiences in microfabrication.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

MEM 419 Microfluidics and Lab-on-a-Chip 3.0 Credits

This course focuses on design, manufacturing, and application of lab-on-a-chip systems as well as understanding microfluidic phenomena. The lecture covers novel microfluidic phenomena, microsensors, microactuators, and case studies. This course also includes two lab sessions through which student have hands-on experiences in lab-on-a-chip technology.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: MEM 417 [Min Grade: D]

MEM 420 Aerodynamics 3.0 Credits

Covers steady and unsteady flow, flow around a body, wing theory, thin airfoil theory, fundamental equation of finite-wing theory, and aerodynamic characteristics of wings. Introduces potential theory and boundary layer phenomena.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 220 [Min Grade: D]

MEM 423 Mechanics of Vibration 4.0 Credits

Covers free and forced vibrations of one-, two-, and multiple-degree-of-freedom systems; continuous systems; and transient and random vibration problems. Includes use of digital computer for homework and special class problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 238 [Min Grade: D] and (TDEC 222 [Min Grade: D] or ENGR 232 [Min Grade: D] or MATH 210 [Min Grade: D] or MATH 262 [Min Grade: D])

MEM 424 Biomechanics 3.0 Credits

Introduces modeling of dynamics of biomechanical systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 202 [Min Grade: D] and MEM 238 [Min Grade: D]

MEM 425 Aircraft Design & Performance 3.0 Credits

Introduces aerodynamics and airfoils; steady flight; power required and power available curves; range and endurance; takeoff, glide, and landing; stick force and control-free stability; moment coefficients and derivatives; and designing to specification. Students must have Junior class standing.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

MEM 426 Aerospace Structures 3.0 Credits

Covers properties of wing and fuselage sections, torsion of thin-walled and skin-stringer multiple-cell sections, non-symmetrical bending of wing and fuselage sections, shear in thin-walled and skin-stringer sections, and buckling. Introduces matrix methods.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 230 [Min Grade: D]

MEM 427 Finite Element Methods 3.0 Credits

Introduces the fundamental theory and formulations of finite element method and its application in structural mechanics and thermal/fluid science. Topics include formulation of 1-D and 2-D elements, isoparametric elements, static and dynamic analysis of trusses, beams, and frames, 2-D plane problems, and heat transfer problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 230 [Min Grade: D]

MEM 428 Introduction to Composites I 3.0 Credits

Introduces anisotropic elasticity, lamina stiffness and compliance, plane stress and strain, test methods, and failure criteria.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 330 [Min Grade: D]

MEM 429 Introduction to Composites II 3.0 Credits

Covers laminated plate theory, stiffness and compliance of laminated plates, effect of laminated configuration on elastic performance, and strength production.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 428 [Min Grade: D]

MEM 430 Advanced Stress Analysis 4.0 Credits

Examines three-dimensional representation of stress and strain, coordinate transformation, stress strain relationships for anisotropic and isotropic materials, equilibrium equations, boundary value problems, governing equations in plane strain and plane stress problems, Airy's stress function, two-dimensional problems in polar coordinates, and selected applications to stress analysis problems in mechanical engineering.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 330 [Min Grade: D]

MEM 431 Machine Design I 3.0 Credits

Covers static strength and fatigue theories of failure, fasteners, welded joints, springs, roller bearings, and lubricated spur gears.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: MEM 202 [Min Grade: D] and MEM 230 [Min Grade: D] and MEM 238 [Min Grade: D]

MEM 435 Introduction to Computer-Aided Design and Manufacturing 0.0-4.0 Credits

Covers fundamental use of CAD/CAM systems for geometry definition, finite element applications, and introductory computer graphics concepts.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: MEM 201 [Min Grade: D]

MEM 436 Introduction to Computer-Aided Manufacturing 3.0 Credits

Examination of the basic elements that are used to integrate the design and manufacturing processes. Robotics computerized-numerical controlled machine, and CAD/CAM systems. Manufacturability considerations when integrating unit process elements.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 201 [Min Grade: D] and MEM 435 [Min Grade: D]

MEM 437 Manufacturing Process I 3.0 Credits

Examines the basic elements used to integrate the design and manufacturing processes; robotics, computerized-numerical-controlled machines, and CAD/CAM systems; and manufacturability considerations when integrating unit process elements.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 220 [Min Grade: D] and MEM 230 [Min Grade: D]

MEM 438 Manufacturing Process II 3.0 Credits

Covers plastics and reinforced plastics processes, theory of polymer and plastic process, simple models of polymer flows, and manufacturability of plastics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 437 [Min Grade: D]

MEM 440 Thermal Systems Design 3.0 Credits

This course covers fundamentals of thermal system design; the role of design in engineering practice; economic analysis used for design of thermal systems; advanced concepts and analysis of heat exchangers and distillation equipment; modeling of thermal systems; simulation of thermal systems; fundamentals of optimization and design of optimized thermal systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 345 [Min Grade: D]

MEM 444 Biofluid Mechanics 3.0 Credits

This course introduces flow-related anatomy and pathophysiology, and biomedical flow devices and their design challenges. Analysis methods to solve biological fluid mechanics design problems are introduced and several interdisciplinary team projects are assigned to apply fluid mechanics to practical biological or medical problems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 220 [Min Grade: D] or BMES 451 [Min Grade: D]

MEM 445 Solar Energy Fundamentals 3.0 Credits

This course focuses on basic theories of solar radiation, solar thermal energy, and photovoltaics. Students will learn basic radiation heat transfer, solar radiation, solar thermal collection and storage, passive and active solar heating/cooling, physics of photovoltaic cells, and characteristics and types of solar cells.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 345 [Min Grade: C] and PHYS 201 [Min Grade: C]

MEM 446 Fundamentals of Plasmas I 3.0 Credits

Introduces the fundamentals of plasma science and modern industrial plasma applications in electronics, fuel conversion, environmental control, chemistry, biology, and medicine. Topics include quasi-equilibrium and non-equilibrium thermodynamics, statistics, fluid dynamics and kinetics of plasma and other modern high temperature and high energy systems and processes.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] or TDEC 201 [Min Grade: D] or PHYS 112 [Min Grade: D] or PHYS 187 [Min Grade: D]

MEM 447 Fundamentals of Plasmas II 3.0 Credits

Continues the development of the engineering fundamentals of plasma discharges applied in modern industrial plasma applications in electronics, fuel conversion, environmental control, chemistry, biology, and medicine. Topics include quasi-equilibrium and non-equilibrium thermodynamics, statistics, fluid dynamics of major thermal and non-thermal plasma discharges, operating at low, moderate and atmospheric pressures.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 446 [Min Grade: D]

MEM 448 Applications of Thermal Plasmas 3.0 Credits

Introduces applications of modern thermal plasma processes focused on synthesis of new materials, material treatment, fuel conversion, environmental control, chemistry, biology, and medicine. Topics Include thermodynamics and fluid dynamics of high temperature plasma processes, engineering organization of specific modern thermal plasma technologies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] or TDEC 201 [Min Grade: D] or PHYS 112 [Min Grade: D] or PHYS 187 [Min Grade: D]

MEM 449 Applications of Non-Thermal Plasmas 3.0 Credits

Application of modern non-thermal plasma processes focused on synthesis of new materials, material treatment, fuel conversion, environmental control, chemistry, biology, and medicine. Topics Include non-equilibrium thermodynamics and fluid dynamics of cold temperature plasma processes, engineering organization of specific modern non-thermal plasma technologies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 201 [Min Grade: D] or TDEC 201 [Min Grade: D] or PHYS 112 [Min Grade: D] or PHYS 187 [Min Grade: D]

MEM 451 Orbital Mechanics 3.0 Credits

Introduces two-body problems, satellite orbits, their characterization and determination; transfer maneuvers between orbits; path planning for inter-planetary travels.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 238 [Min Grade: D]

MEM 453 Aircraft Flight Dynamics & Control I 3.0 Credits

Covers general equations of motion for aircraft; linearization based on small disturbance theory and modal analysis to identify longitudinal open-loop characteristics; review of classical control theory; state space analysis; and autopilot design, including classical, pole placement, and optimal.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 355 [Min Grade: D]

MEM 454 Aircraft Flight Dynamics & Control II 3.0 Credits

Covers observers; lateral dynamics; Dutch roll, roll convergence, and spiral modes; autopilot design and evaluations; and inertial cross-coupling computer simulation and analysis.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 453 [Min Grade: D]

MEM 455 Introduction to Robotics 0.0-4.0 Credits

Introduces basic concepts in robot operation and structure, including actuators, sensors, mechanical components, robot control and robot programming.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 238 [Min Grade: D] and MEM 255 [Min Grade: D]

MEM 456 Robotics II 3.0 Credits

Covers homogeneous kinematics of robots; velocities and accelerations; and static forces in manipulators, including iterative Newton-Euler formulation of manipulator dynamics.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 455 [Min Grade: D]

MEM 457 Robotics III 3.0 Credits

Covers robotic-based automated manufacturing, including robot work cell configurations, applications of robots in manufacturing, material transfer, assembly, and inspection.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MEM 456 [Min Grade: D]

MEM 458 Micro-Based Control Systems I 0.0-3.0 Credits

Provides hands-on experience in real-time control and manipulation of hardware dynamic systems, including microcomputer, architecture, software, and device drivers. Emphasizes real-time interfacing of data acquisition and control systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 355 [Min Grade: D]

MEM 459 Control Applications of DSP Microprocessors 3.0 Credits

Continues MEM 458. Provides real-time control and manipulation of hardware dynamic systems. Emphasizes real-time interfacing of data acquisition and control systems. Topics include Code Composer Studio, Microprocessor C programming, Pulse width modulation (PWM), Quadrature encoder pulse (QEP) circuits, DSP system control and interrupts, Digital loop systems, design of PID digital controllers, design of digital controllers in state space, microcomputer controller implementation, sensors and actuators, and implementation of digital controllers in microprocessors.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MEM 458 [Min Grade: D]

MEM 462 [WI] Introduction to Engineering Management 3.0 Credits

Introduces the general theory of management, including the processes of planning, organizing, assembling resources, supervising, and controlling.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

MEM 475 Medical Robotics I 3.0 Credits

Use of robots in surgery, safety considerations, understanding robot kinematics, analysis of surgeon performance using a robotic devices, inverse kinematics, velocity analysis, acceleration analysis, various types of surgeries case study.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 238 [Min Grade: D]

MEM 476 Medical Robotics II 3.0 Credits

Force and movement for robot arms, robot dynamics, computer vision, vision based control, combining haptics, vision and robot dynamics in a cohesive framework for the development of a medical robotic system.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 475 [Min Grade: D]

MEM 477 Haptics for Medical Robotics 3.0 Credits

Introduction to haptics, physiology of touch, actuators, sensors, non-portable force feedback, portable voice feedback, tactile feedback interfaces, haptic sensing and control.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MEM 238 [Min Grade: D]

MEM 478 Computer-Aided Tissue Engr 3.0 Credits

Introduction to the engineering aspects of tissue reengineering and integrated CAD/CAE/CAM technology applied to tissue engineering with hands-on experience combining CAD, medical image processing, 3-D reconstruction software, and solid freeform fabrication of tissue scaffolding.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

MEM 491 [WI] Senior Design Project I 3.0 Credits

Introduces the design process, including information retrieval, problem definition, proposal writing, patents, and design notebooks. Includes presentations on problem areas by experts from industry, government, and education. The Senior Design sequence (MEM 491/492/493) should be taken in the students' final year in the BSME program.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MEM 435 [Min Grade: D] and (MEM 331 [Min Grade: D] or MEM 351 [Min Grade: D] or MEM 311 [Min Grade: D])

MEM 492 [WI] Senior Design Project II 3.0 Credits

Continues MEM 491. Requires written and oral progress reports.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MEM 491 [Min Grade: D]

MEM 493 [WI] Senior Design Project III 3.0 Credits

Continues MEM 492. Requires written and oral final reports, including oral presentations by each design team at a formal Design Conference open to the public and conducted in the style of a professional conference.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MEM 492 [Min Grade: D]

MEM I199 Independent Study in Mechanical Engineering & Mechanics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM I299 Independent Study in Mechanical Engineering & Mechanics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM I399 Independent Study in Mechanical Engineering & Mechanics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

MEM I499 Independent Study in Mechanical Engineering & Mechanics 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM T180 Special Topics in MEM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM T280 Special Topics in MEM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM T380 Special Topics in MEM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MEM T480 Special Topics in MEM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Mechanical Engineering Technology

Courses

MHT 201 Kinematics 3.0 Credits

Study of four-bar linkages, sliders, and other devices using orthogonal of vectors, instantaneous centers, equivalent linkages, and effective cranks. Graphic solutions are emphasized, including an introduction to computer software.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: PHYS 153 [Min Grade: D]

MHT 205 Thermodynamics I 3.0 Credits

Students are introduced to the general theory of heat and matter; laws of thermodynamics; energy-transformation principles and availability of energy; and properties and processes for substances and ideal gases.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 153 [Min Grade: D] or PHYS 101 [Min Grade: D]) and MATH 122 [Min Grade: D]

MHT 206 Thermodynamics II 3.0 Credits

First and second law analysis of power cycle components. Analysis of gas power cycles, including Otto & Diesel engines and Brayton cycle turbines. Analysis of traditional power plant cycles, including Rankine, Refrigeration and heat pump.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 205 [Min Grade: D]

MHT 214 Technology Laboratory I 3.0 Credits

Conduct experiments to determine the physical properties of incompressible fluids and to measure the flow rates of velocities utilizing pilot tubes, orifice plates, Venturi and Weirs flow meter, U-tube differential manometers and piezometers. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: MHT 301 [Min Grade: D] (Can be taken Concurrently)

MHT 220 Applied Statics 3.0 Credits

Explores forces, moments, couples, statistics of particles, and rigid bodies in two and three dimensions. Examines external and internal distributed forces, first moments and centroids, and structures such as trusses, frames and machines.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 282 [Min Grade: D] and MATH 122 [Min Grade: D]

MHT 222 Applied Dynamics I 4.0 Credits

This course deals with the motion of bodies under the action of a single or multiple forces. It covers kinematics and kinetics of particles in rectilinear and curvilinear motions using various coordinate systems, work and energy, impulse and momentum, planar kinematics using analytical and graphical methods. Kinetics of rigid bodies using force and acceleration, work and energy, and impulse and momentum principles.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 213 [Min Grade: D]

MHT 224 Applied Dynamics II 3.0 Credits

Impulse and momentum of particles; kinematics and dynamics of rigid bodies-force-mass and acceleration; dynamics of rigid bodies - work and energy. Impulse and momentum; introduction to mechanical vibration.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 222 [Min Grade: D]

MHT 226 Measurement Techniques and Instrumentation 3.0 Credits

The course focuses on basic concepts of measurement and measurement systems and techniques, causes of errors and error propagation; uncertainty analysis, data collection and analysis using statistical methods, data acquisition systems; Knowledge delivery is based on integrated experiential learning modules involving various measurement sensors and instruments.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 154 [Min Grade: D] or PHYS 102 [Min Grade: D]) and EET 209 [Min Grade: D] and STAT 201 [Min Grade: D]

MHT 295 Environmental Control Plasma Laboratory 2.0 Credits

The course presents engineering principles of non-thermal plasma application to air cleaning from Volatile Organic Compounds by combining hands-on laboratory experience with lectures. The students learn the engineering and physical principles of non-equilibrium plasma systems using the unique pulsed corona system of the Drexel Plasma Institute Environmental Laboratory.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 111 [Min Grade: D] and CHEM 113 [Min Grade: D]

MHT 301 Fluid Mechanics I 3.0 Credits

Examine hydrostatics; principles governing fluids at rest; pressure measurement; hydrostatic forces on submerged areas and objects; simple dams. Discuss fluid flow in pipes under pressure; fluid energy; power and friction loss; Bernoulli's theorem. Flow measurement.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 205 [Min Grade: D] and MET 213 [Min Grade: D] and MET 209 [Min Grade: D]

MHT 310 Applied Strength of Materials I 3.0 Credits

Topics include axially loaded members, stress and strain, allowable stresses, factor of safety, temperature effects, indeterminate members, torsional stresses and deformation. Students also examine shear moment beams; and flexural and transverse shearing stresses in beams.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 222 [Min Grade: D]

MHT 312 Applied Strength of Materials II 3.0 Credits

A study of determinate and indeterminate beam deflections and reactions by superposition, integration and moment area methods. Topics include combined stresses; principal stresses; Mohr's circle; and theories of failure.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 310 [Min Grade: D]

MHT 314 Thermo and Heat Transfer Analysis 3.0 Credits

Explores basic thermodynamic and heat transfer concepts and relations including fundamental of conduction, convection, and radiation using modern experiential methods to analyze thermodynamics systems and the related heat transfer mechanisms.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 205 [Min Grade: D]

MHT 316 Fluid Mechanics Laboratory 3.0 Credits

Conduct experiments to determine the physical properties of incompressible fluids and to measure the flow rate of velocities as the fluid flows through open channels, partially filled conduits, conduits under pressure, pipe networks, and turbines and pumps.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 301 [Min Grade: D]

MHT 401 Mechanical Design I 4.0 Credits

An introduction to mechanical design, the design process, design factors, creativity, optimization, human factors, and value engineering. Topics include simple design, properties and selection of materials; stress concentrations; strength under combined stresses; theories of failure; impact; and fluctuating and repeated loads.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MET 100 [Min Grade: D] and MET 213 [Min Grade: D]

MHT 402 Mechanical Design II 4.0 Credits

Topics include deformation and design of belt drives, chair drives, detachable fasteners and bearings, lubrication, and journal bearings. Covers stresses and power transmission of spur, bevel, and worm gear, shaft design, and clutches and brakes.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 401 [Min Grade: D]

MHT 403 Fluid Mechanics II 3.0 Credits

Consider pipe networks and reservoir systems, flow in open channels and uniform flow energy, friction loss, minor losses, velocity distribution, alternate stages of flow, critical flow, non-uniform flow, accelerated, retarded flow and hydraulic jump.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: MHT 301 [Min Grade: D]

MHT 404 Advanced Materials 3.0 Credits

Lectures on inorganic materials, i.e., polymers, glasses, ceramics, concrete, wood, and materials having important electrical and magnetic properties; also a summary of the most up-to-date applications for the fabrication and uses of both metals and nonmetals.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MET 101 [Min Grade: D]

MHT 405 HVAC 3.0 Credits

Heating, Ventilation, and Air Conditioning (HVAC) focuses on air conditioning principles, including psychometrics and heat pumps. Examines calculation of heating and cooling loads in accordance with ASHRAE practices, principles of gas compression, analysis of vapor compression; refrigeration systems, low temperature refrigeration cycles, and absorption refrigeration systems.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: MHT 206 [Min Grade: D]

MHT T180 Special Topics in MHT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MHT T280 Special Topics in MHT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MHT T380 Special Topics in MHT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

MHT T480 Special Topics in MHT 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Middle East and North Africa Studies

Courses

MENA 101 The Middle East and North Africa Today: Culture and Democracy 3.0 Credits

During the last decades, Middle East and North Africa (MENA) has been in the grips of momentous socio-political conflicts and wars, but most recently, the region has witnessed wide spread uprisings for democratic change. Yet, authoritarianism still dominates politics in the region. This course aims to examine the economic, political, and cultural causes behind the lack of democracy in the region, and will expose students to contrasting perspectives on the topic including structural and cultural arguments. Amongst other examples, we will examine the role of the US, the impact of the Israeli/Palestinian conflict on democracy in the region, and the role of Islamic and women's movements in the recent Arab uprisings. The course will cover Tunisia, Egypt, Syria, Morocco, Saudi Arabia, Iraq, and Iran among others.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

MENA T280 Special Topics in Middle Eastern and North Africa Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 48 credits

Military Science

Courses

MLSC 101 Basic Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 102 Basic Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 103 Basic Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 110 Leadership and Personal Development 1.0 Credit

Introduces students/cadets to the personal challenges and competencies that are critical for effective leadership. Focus is placed on developing basic knowledge and comprehension of the U.S. Army's Leadership Dimensions while gaining a "big picture" understanding of the Army ROTC program, its purpose in the U.S. Army and our nation, and its advantages for the student. Classes are conducted for one hour once each week.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 120 Foundations in Leadership 1.0 Credit

Reviews leadership fundamentals such as setting direction, problem solving, listening, presenting briefs, providing feedback and using effective writing skills. Students/cadets are also exposed to key fundamentals of skills required to be successful as an MS II cadet; namely, military map reading and land navigation, and small unit operations/leadership drills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 130 Continuing Studies: Foundations in Leadership 1.0 Credit

Continues to develop leadership fundamentals, while emphasizing increased awareness of and proficiency in military map reading and land navigation skills, and small unit operations/ leadership drills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]

MLSC 201 Basic Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 202 Basic Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 203 Basic Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 210 Innovative Tactical Leadership 2.0 Credits

Explores the dimensions of creative and innovative tactical leadership strategies and styles by studying historical case studies and engaging in interactive student exercises. Focus is on continued development of the knowledge of leadership values and attributes through an understanding of rank, uniform, customs and courtesies.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B]

MLSC 220 Leadership in Changing Environments 2.0 Credits

Examines the challenges of leading in complex contemporary operational environments. Students/cadets are exposed to more complex land navigation/map reading tasks, as well as more advanced small unit operations/ leadership drills. Cadets develop greater self awareness as they practice communication and team building skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B]

MLSC 230 Adaptive Team Leadership 2.0 Credits

Challenges cadets to study, practice, and evaluate adaptive leadership. Cadets begin to analyze and evaluate their own leadership values, attributes, skills, and actions. Primary attention is given to preparation for LDAC and the development of both tactical skills and leadership qualities.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B]

MLSC 301 Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B]

MLSC 302 Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B]

MLSC 303 Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B]

MLSC 310 Leadership in Contact 2.0 Credits

Uses increasingly intense situational leadership challenges to build cadet awareness and skills in leading small units. Skills in decision-making, persuading, and motivating team members when "in combat" are explored, evaluated, and developed.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B]

MLSC 320 Complex Team Leadership Issues 2.0 Credits

Challenges cadets with more complex leadership issues to further develop, practice, and evaluate adaptive leadership. Cadets continue to analyze and evaluate their own leadership values, attributes, skills, and actions in preparation for the Leadership Development and Assessment Course (LDAC). Primary attention is given to preparation for LDAC and the development of both tactical skills and leadership qualities.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B]

MLSC 330 Military Leadership Co-op Preparation 2.0 Credits

Continues the methodology of MLSC 320 by using increasingly intense situational leadership challenges to build cadet awareness and skills in leading small units. Skills in decision-making, persuading, and motivating team members when "in combat" are explored, evaluated, and developed. Emphasis is also placed on honing oral and written communication skills and mastering group dynamics while conducting tactical and Garrison operation orders.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B]

MLSC 390 Special Topics in Military Science 0.5-12.0 Credits

Special Topics of interest in Military Science. May be repeated for credit.

College/Department: University Courses

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

MLSC 399 American Military History 3.0 Credits

American Military History focuses on the American Military Experience from 1609 to the present. This course continues exploration of the dynamics of leading in the complex situations of historical and current military operations. Cadets examine differences in cultural environments, military law, principles of war, and rules of engagement throughout the course of American history. Aspects of interacting with non-government organizations, civilians on the battlefield, and host nation support are examined and evaluated. Integrate the Basic Knowledge of Military History to Your Education as a Future Officer and constitutes 24 hours of instruction.

College/Department: University Courses

Repeat Status: Not repeatable for credit

MLSC 401 Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B] and MLSC 330 [Min Grade: B]

MLSC 402 Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B] and MLSC 330 [Min Grade: B] and MLSC 410 [Min Grade: B]

MLSC 403 Leadership Lab/Practicum 0.0 Credits

Provides hands-on experience to reinforce leadership fundamentals, while emphasizing increased awareness of and proficiency in military skills.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B] and MLSC 330 [Min Grade: B] and MLSC 410 [Min Grade: B] and MLSC 420 [Min Grade: B]

MLSC 410 Developing Adaptive Leaders 2.0 Credits

Develops cadet proficiency in planning, executing, and assessing complex operations, functioning as a member of a staff, and providing leadership performance feedback to subordinates. Cadets are given situational opportunities to assess risk, make ethical decisions, and provide coaching to fellow ROTC cadets.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B] and MLSC 330 [Min Grade: B]

MLSC 420 Leadership in Contemporary Environments 2.0 Credits

Explores the dynamics of leading in the complex situations of current military operations. Cadets examine differences in customs and courtesies, military law, principles of war, and rules of engagement in the face of international terrorism. Aspects of interacting with non-government organizations, civilians on the battlefield, and host nation support are examined and evaluated.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B] and MLSC 330 [Min Grade: B] and MLSC 410 [Min Grade: B]

MLSC 430 Advanced Leadership in Contemporary Environments 2.0 Credits

Continues exploration of the dynamics of leading in the complex situations of current military operations. Culminates the ROTC curriculum with a capstone "hands-on" small unit leadership exercise which tests the cadet's tactical, technical and leadership skills utilizing an intense, realistic tactical scenario based on actual military operations in the contemporary operating environment of the 21st century.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (MLSC 110 [Min Grade: B] or MLSC 120 [Min Grade: B]) and MLSC 130 [Min Grade: B] and MLSC 210 [Min Grade: B] and MLSC 220 [Min Grade: B] and MLSC 230 [Min Grade: B] and MLSC 310 [Min Grade: B] and MLSC 320 [Min Grade: B] and MLSC 330 [Min Grade: B] and MLSC 410 [Min Grade: B] and MLSC 420 [Min Grade: B]

Music

Courses

MUSC 101 University Chorus 0-1 Credits

A large chorus that studies and performs music of many styles; performs each term. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 102 Chamber Singers 1.0 Credit

A select choir that performs advanced choral repertoire; performs frequently on and off campus. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 103 Naturally Sharp (Vocal Jazz Ensemble) 0-1 Credits

Naturally Sharp is a select group of singers, chosen by audition in the fall from the University Chorus. Naturally Sharp performs vocal jazz repertoire from the past hundred years with a three-piece backup band. Singers must also be able to do solos.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Corequisite: MUSC 101

MUSC 104 All-College Choir 0-1 Credits

All-College Choir is a non-auditioned, mixed voice ensemble that performs repertoire of various styles, genres and eras - including music of the classical tradition, jazz, spirituals, American musical theater, folk and pop.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 105 Concert Band 1.0 Credit

Performs a wide variety of music written for a large band; concerts given each term. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 106 Guitar Ensembles 1.0 Credit

Performs a wide variety of music written for a small guitar ensemble; concerts given at least twice a year. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 107 Jazz Ensembles 1.0 Credit

Offers rehearsal, study, and performance of jazz compositions for both large and small ensembles; concerts given on and off campus, sometimes with guest soloists. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 108 Jazztet 0-1 Credits

Jazztet is a subset of the larger Jazz Orchestra. Its size can vary based upon the availability of instrumentation and the desire of the director. Its purpose is to present jazz music in a small instrumentation format. Performances are typically part of the greater Jazz Orchestra concerts at the end of each term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Corequisite: MUSC 107

MUSC 109 University Orchestra 1.0 Credit

This is a full orchestra that performs concert repertoire of various periods from the 18th century to the present day. Wind, brass, and percussionists must be in the concert band in order to participate.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 110 Keyboard Ensembles 1.0 Credit

Performs a wide variety of music written for a small keyboard ensemble; concerts given at least twice a year. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 111 Chamber Music Ensemble 1.0 Credit

Various small ensembles performing a variety of music of many periods and styles. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 112 Fusion Band 1.0 Credit

Performs a wide variety of music written for a small fusion ensemble. The Fusion Band gives concerts at least twice a year. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 113 Percussion Ensembles 1.0 Credit

Performs a wide variety of music written for a small percussion ensemble. The ensemble gives concerts at least twice a year. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 114 Mediterranean Ensemble 0-1 Credits

The Drexel University Mediterranean Ensemble is open to any student with an interest in performing traditional music from the Balkans, the Middle East and Northern Africa. All instruments are welcomed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 115 Gospel Choir 1.0 Credit

Performs gospel music drawn from both traditional and contemporary sources. Performance opportunities for both singers and instrumentalists. Concerts given on and off campus each term. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 116 Pep Band 0-1 Credits

Pep Band is a group of roughly forty-five student musicians primarily from the concert band. The purpose of the Pep Band is to support the Drexel Dragons basketball team and play from the bleachers at home games as well as travel to tournaments.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 117 Rock Ensemble 0-1 Credits

Rock Ensemble is an ensemble where students have the opportunity to gain experience working as a group rehearsing, arranging, organizing, recording, and ultimately performing songs in the rock/pop/contemporary genres. By choosing music that is both of high quality and varied, students have a unique opportunity to develop a strong work ethic while being exposed to various musical challenges.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 118 Chamber Music: Strings 0-1 Credits

MUSC 118 forms its participants into various sized string groups from trios and quartets to octets. The repertoire spans music of the classical tradition and beyond, from the modern day back to the 17th century.

These small groups will perform as part of a larger chamber recital at the end of each term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 120 Music Fundamentals 3.0 Credits

Music Fundamentals teaches students essential skills and knowledge relating to Western music. Focus is placed on ear training and core music theory concepts. This course perfectly compliments any student's musical playing ability, beginning to advanced, and is essential to further musical development.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 121 Music Theory I 3.0 Credits

MUSC 121 covers the foundations of: notation, major/minor scales and keys, intervals, chord construction, phrase construction, small forms, and basic techniques of harmonizing a melody. The methodology centers on analysis combined with application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 122 Music Theory II 3.0 Credits

MUSC 122 covers: texture and textural reduction, chromatic harmony, modulation, and large forms. This is a continuation of MUSC 121 and provides more depth into the topics of that course as well as offers advanced material. The methodology combines musical analysis with application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 121 [Min Grade: D]

MUSC 124 Jazz Theory 3.0 Credits

Jazz Theory introduces musical concepts and skills as they pertain to this specific style of music. The material discussed is foundational knowledge for jazz composition, arranging, and improvisation. Therefore, this course is suitable for students interested in jazz performance or composition.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 121 [Min Grade: D]

MUSC 125 Ear Training I 1.0 Credit

Introduces the basics of ear training and sight singing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 121 [Min Grade: D]

MUSC 126 Ear Training II 1.0 Credit

Continues MUSC 125.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 125 [Min Grade: D]

MUSC 130 Introduction to Music 3.0 Credits

Provides an introduction to music, including elements of melody, harmony, rhythm, texture, structure, history, and an introduction to various genres. Emphasizes listening with understanding.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 134 Mambo, Samba, Salsa, and More 3.0 Credits

This course introduces the various Latin American musical traditions, as well as their historical contexts, evolution, inter-connectivity and current importance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 152 Survey of Songwriting 3.0 Credits

This course will examine the art and craft of songwriting. Students will listen to and analyze many examples from folk and popular music, from the 1930's through to the present day. Students will use this knowledge, as well as that of basic music fundamentals, to compose a song at the end of the term.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 190 Class Piano I 2.0 Credits

Uses a group situation to teach basic performance skills and beginning instruction on piano.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 191 Class Guitar I 2.0 Credits

Uses a group situation to teach basic performance skills and beginning instruction on guitar.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 192 Class Percussion I 2.0 Credits

Uses a group situation to teach basic performance skills and beginning instruction on percussion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 193 Class Voice I 2.0 Credits

Uses a group situation to teach basic performance skills and beginning instruction in voice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 194 Class Bass I 2.0 Credits

Class Bass I uses group instruction to teach basic performance skills and techniques on electric bass guitar and upright bass.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 6 credits

MUSC 195 Class Bass II 2.0 Credits

Class Bass II uses group instruction to teach advanced performance skills and techniques on electric bass guitar and upright bass.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 6 credits

MUSC 196 Jazz Class Piano 2.0 Credits

Students will learn the fundamentals in jazz piano playing by studying the melodic, harmonic and rhythmic aspects associated with jazz. Students will learn how to read, "lead sheets" and improvise over modal and standard chord changes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 229 Modern Arranging Techniques 3.0 Credits

Modern Arranging Techniques. Discusses the capabilities and ranges of varying instruments. Students study modern arranging techniques utilizing strategies and standard music material.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 122 [Min Grade: D]

MUSC 231 European Classical Music History 3.0 Credits

This course surveys and analyzes compositions from antiquity through the modern period in European music history. After an overview of musical vocabulary, we will study selected masterpieces of Western music, thereby gaining a greater appreciation for developments of musical style.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 232 European Classical Music History II 3.0 Credits

This course surveys and analyzes compositions from the Romantic Era through the 21st Century in European classical music history.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 234 The Beatles 3.0 Credits

This course will examine the cultural phenomena of The Beatles from their early history as a band through the end of their regular collaboration in 1970. While The Beatles have been examined in many different ways, this course will concentrate on their productivity as a rock band through the single pop song, the pop album, and film. It will also serve to provide a more in depth study of the group and their influence on other popular culture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 235 History of Film Music 3.0 Credits

This course surveys film music from the silent film era to the present.

Topics will include the composers of the genre, the changing musical styles through the decades, and the techniques used by film composers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 236 Rock Music Through the Mid-60s 3.0 Credits

Surveys rock music from its roots through the mid-60s.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 238 Rock Music Since the Mid-60s 3.0 Credits

Surveys rock music from the mid-60s through the mid-90s.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 241 Private Lesson 1.0 Credit

Weekly private music lessons on an instrument or voice as indicated by the section number. Lessons are fifty minutes per week. The specific day and time is mutually agreed upon by the instructor and the student. Musical style, level of ability, and learning objectives are individually based. Students are encouraged to contact the instructor if they have questions. Students are charged a lab fee every term they register.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC 249 Digital Music Composition 3.0 Credits

Digital Music Composition teaches students how to compose music intended to be produced by a computer and related to software, opposed to composing for acoustic instruments. Students will learn how to use specific music software and explore contemporary compositional techniques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 121 [Min Grade: D]

MUSC 252 Music Composition 3.0 Credits

Music Composition engages students in writing music for ensembles ranging from solo performer to large ensemble. Techniques of the common practice period as well as modernist harmonic techniques will be introduced and applied. Live performance of student projects will be provided and is an important feature of the course.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 229 [Min Grade: D]

MUSC 290 Class Piano II 2.0 Credits

Class Piano II is a continuation of Class Piano I. By the end of the term students will be able to perform a number of simple songs, play several scales and chord progressions, and have basic note reading skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 190 [Min Grade: D]

MUSC 291 Class Guitar II 2.0 Credits

Class Guitar II is a continuation of Class Guitar I. In this course students continue to work on note reading in first position, develop rhythmic skills and reading ability in different keys, learn movable barred chords and power chords, and learn basic finger picking technique.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 191 [Min Grade: D]

MUSC 300 Improvisation 0.0-3.0 Credits

Provides study and practice of various improvisatory styles in music. Includes classroom lectures, listening, and solo and ensemble performance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 323 Songwriting 3.0 Credits

Addresses basic songwriting techniques including form, melody, rhythm, lyrics, and production. Projects are required.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 121 [Min Grade: D]

MUSC 331 World Musics 3.0 Credits

Surveys various musical traditions from around the world in their cultural contexts. Includes selected music from Africa, the Americas, Europe, South Asia, Southeast Asia, Northeast Asia, West Asia, and Oceania.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 333 Afro-American Music USA 3.0 Credits

Examines the African heritage and related New World forms outside the United States. Covers work songs, spirituals, blues, folk music, ragtime, gospel, rhythm and blues, jazz, etc.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 334 The Power of Black American Music 3.0 Credits

Provides an overview of American Folk music established by Black Americans in the early 1600s. Attention will be given to the African and Caribbean heritage exploring the religious, economic, cultural, and social environment that gave birth to work songs, spirituals, ragtime, blues, jazz, country, gospel, rock 'n' roll, rhythm & blues, soul, and hip hop. The course provides the opportunity to listen to music and highlight the musical inventions Black Americans brought to the new world.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 336 History of Jazz 3.0 Credits

Surveys the music popularly known as jazz from before 1900 through the stylistic changes and trends of the 20th century. Covers precursors, early jazz, big bands, bebop, the new music, etc.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 337 Hip-Hop Music History 3.0 Credits

Hip-Hop Music History is a comprehensive exploration of the origins of hip-hop music, and its meteoric rise to a preeminent genre of popular American music today. Instruction for this course comprises of the examination of hip-hop's noteworthy practitioners, the corroborative technology and propitious media which support it, and the often innovative practice of musical and lyrical creativity that defines the genre.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 338 [WI] American Popular Music 3.0 Credits

Examines popular music (dances, marches, ragtime, jazz, musical comedy, movie music, swing, rock, etc.) from Colonial times to the present, with cultural-historical contexts.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MUSC 342 Applied Music-Recital 2.0 Credits

Students will present a public recital featuring significant solo repertoire. Repertoire choices for recital must be made through the Applied Music instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MUSC 241 [Min Grade: D]

MUSC I199 Independent Study in Music 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC I299 Independent Study in Music 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC I399 Independent Study in Music 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC I499 Independent Study in Music 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC T180 Special Topics in Music 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC T280 Special Topics in Music 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC T380 Special Topics in Music 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MUSC T480 Special Topics in Music 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Music Industry Program

Courses

MIP 132 Survey of the Music Industry 3.0 Credits

This course provides students with an overview of the music industry.

The following topics will be addressed: major music industry players (e.g. managers, agents, business managers, promoters), record label operations & functions (e.g. recording deals, royalties, the album cycle), Songwriting/Publishing, Live Music/Touring, & Merchandising.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 133 Audio Production I 3.0 Credits

The objective of this course is to develop an understanding of the best practices of using a Digital Audio Workstation to create a music project. The class will be a combination of lecture modules and in-class hands-on practice.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 161 Copyrights in the Music Industry 3.0 Credits

This course is an in-depth exploration of what, how, when and where intellectual property exists in the music industry, with a particular emphasis on the role that copyrights play.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 179 Introduction to Sound Recording 3.0 Credits

This course introduces the art of sound recording, including the fundamentals of sound, sound capture, acoustic environments, and recording technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 212 Audio Systems 3.0 Credits

This course explores the fundamentals of sound capture, audio signals, audio devices, sound systems, and signal interconnections.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 227 Listening Techniques 2.0 Credits

Students will develop critical listening skills needed for all aspects of music production including commercial arranging, tracking, and mixing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 233 Audio Production II 3.0 Credits

This course will help students develop proficiency in using Pro Tools for advanced music production and sound editing tasks. By engaging in hands-on exercises, lectures, and collaborative projects, students will acquire a comprehensive understanding of advanced recording, editing, and mixing techniques within the Pro Tools environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 133 [Min Grade: C]

MIP 270 Live Music I 3.0 Credits

This course will cover the various business aspects of producing and promoting successful tours and concerts. The class will place emphases and cover in great detail: (1) the promoter's ability to purchase talent and produce shows, taking into consideration such matters as competition, population, guarantees and percentage splits, ticket pricing and distribution, advertising budgets, production costs, sponsorships, rental agreements, labor, security, concessions, tour packages, and promoter-owned venues; and (2) managing and producing a tour, focusing on a tour theme and marketing plan, routing, itineraries, riders, offers, contracts, sub-contractors, show and tour personnel, merchandising, sponsorships, day-of-show and show settlements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 275 Marketing in the Music Industry I 3.0 Credits

This course aims to provide students with a comprehensive understanding of the foundations of marketing and promotion in the music industry, including the essential concepts, strategies, and tactics used by artists and music professionals to create impactful campaigns.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 276 Sound Recording for Business Concentration 3.0 Credits

Sound recording techniques are presented to provide Music Industry Business Concentration students with basic recording competency through practical application. Students are required to create several recordings through projects that require teamwork and self-analysis.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 279 Sound Recording I 3.0 Credits

Basic sound recording procedures are presented with an emphasis on microphone techniques, signal-flow, and session workflow. Requires students to create several multitrack recordings, including editing and mixing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Cannot enroll if classification is Freshman

Prerequisites: MIP 233 [Min Grade: D]

MIP 280 Record Label Operations 3.0 Credits

This course is a general overview of record label operations including the different roles at labels, different types of labels, and how the role of labels have changed over time.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 282 Streaming and Radio Promotion 3.0 Credits

This course provides an overview of how radio and music streaming is used in record promotion and artist development and includes both theory and practical applications.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 283 Community Recording 3.0 Credits

Community Recording is an enterprise designed to foster empowerment and self-expression through music. It brings members of the Mantua, Powelton, and Drexel communities together to create a sustainable creative collective that produces and releases music and shares knowledge and techniques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 293 [WI] Survey of Music Production 3.0 Credits

This course analyzes various music recordings, including the genres of jazz, pop, R&B, and rock, from the modern recording era (1930's to the present) and discusses the production techniques used to create them.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 318 Music Merchandising 3.0 Credits

Students work in interdisciplinary groups with Design and Merchandising students to create a comprehensive merchandise extension program including product selection, production, distribution and promotion within the context of the artists' overall brand package.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 331 Live Music II 3.0 Credits

This course will cover the various business aspects of producing and promoting a successful concert. The class will place emphases and cover in great detail: the promoter's ability to purchase talent and a produce show, taking into consideration such matters as competition, population, guarantees and percentage splits, ticket pricing and distribution, advertising budgets, production costs, sponsorships, rental agreements, labor, security, concessions, tour packages, and promoter-owned venues; routing, itineraries, riders, offers, contracts, sub-contractors, show personnel, merchandising, sponsorships, day-of-show and show settlements.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 270 [Min Grade: D]

MIP 333 Audio Production III 3.0 Credits

This course will develop students' understanding of digital audio and MIDI production techniques using Ableton Live by integrating in-class demonstrations, lectures, and hands-on projects and activities. Through these methods, students will acquire a comprehensive understanding of Ableton Live's capabilities and develop practical skills using this software to create high-quality audio productions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 233 [Min Grade: D]

MIP 336 Contracts and Legal Issues in the Music Industry 3.0 Credits

This course explores contractual agreements and the legal issues affecting the music industry today, such as free speech in radio and music lyrics, rights of publicity for recording artists, fair use and piracy, as well as the various standard agreements in common use in the music and recording industries.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 161 [Min Grade: D] and BLAW 201 [Min Grade: D]

MIP 338 Audio Seminar 2.0 Credits

Students present Extra Curricular recording projects to the instructor and fellow students for an in-class critique. The in-class critique will give the student direct feedback on their creative work and allow them to compare their work against the work of their peers. The production critiques will be moderated by the instructor and grades will be assessed based on in-class participation and presentations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 4 credits

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 379 [Min Grade: D]

MIP 341 Live Music III 3.0 Credits

This course builds on the fundamental relationships in the concert business, from the technical and artistic aspects of concert promotion learned in Live Music II and introduces music tour planning. Students will examine how to hire employees for tour, create budgets, negotiate contracts, promote a tour and the logistics of tour production, marketing and managing government regulations, that in the end, will maximize revenue over multiple shows. Additionally, students will examine the effects of touring over extended times vs single shows, for artists and their touring parties.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 270 [Min Grade: D] and MIP 331 [Min Grade: D]

MIP 350 Artist Development 3.0 Credits

This course introduces concepts including what an A&R rep does, historically and today; artist development in the major label and independent markets; and A&R methods using industry data.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 361 Music Publishing 3.0 Credits

This course explores the fundamental responsibilities of a music publisher including reviewing, evaluating, marketing, licensing, monetizing, representing and protecting original music, as well as the rights of songwriters and related content creators. Students will discover how music publishing is a crucial element of support in a thriving music industry and will learn how music publishers build value for their creative clients.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 161 [Min Grade: C]

MIP 365 Cities of Music and Culture 3.0 Credits

This course is designed to give students an introductory insight and understanding of the music industry in the chosen location of the class. This class is a Study Tour.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 366 Music Supervision 3.0 Credits

Students will be introduced to the creative and administrative elements of music supervision including sourcing, evaluating, licensing, and placing music into visual productions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 161 [Min Grade: D] or MIP 361 [Min Grade: D]

MIP 374 Entrepreneurship in the Music Industry 3.0 Credits

Students will learn how to devise, conceive, create and implement a music industry-related business through the drafting of a business plan. This course is team-driven and will involve student discussions and critique.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

MIP 375 [WI] Marketing in the Music Industry II 3.0 Credits

Building on the foundations of Marketing in the Music Industry I, this course provides students with an advanced and applied understanding of the strategies and tactics used to promote music and music-related content across different channels and through various forms of media. Students will utilize insights-driven reasoning, creative ideation, and critical thinking to solve marketing challenges, meet promotional objectives, and drive engagement with target audiences. This course is team-driven and involves extensive student discussions, critique, and group project work in and outside of the classroom.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 132 [Min Grade: D] and MIP 275 [Min Grade: D]

MIP 376 MAD Dragon Music Group 3.0 Credits

MAD Dragon Music Group is designed to immerse students in the world of the independent music business and includes all of the professor led, student operated enterprises that create, organize and administer MAD Dragon Music Group projects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: MIP 132 [Min Grade: C]

MIP 379 Sound Recording II 3.0 Credits

An advanced examination of current state of the art sound recording techniques. Special attention is paid to concert recording, digital and analog mixing techniques, advanced compression and equalization techniques, and time-based processing. Research methods in sound are introduced.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI and classification is Junior or Pre-Junior or Senior.

Prerequisites: MIP 279 [Min Grade: C]

MIP 381 Audio for Video 3.0 Credits

This course will introduce the student to the technological and creative aspects of creating post-production audio for visual media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 233 [Min Grade: D] and MIP 279 [Min Grade: D]

MIP 382 Scoring to Picture 3.0 Credits

This course will expand the students' ability to create and produce an original score for an audio/visual element, drawing upon their creative and technological skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Cannot enroll if classification is Freshman

MIP 384 Synthesis and Sampling 3.0 Credits

The primary goal of this course is to provide students with a comprehensive understanding of synthesis and sampling techniques used in contemporary music production. Throughout the course, students will develop practical skills and knowledge related to various synthesis techniques, sound design, and the creative application of sampling, ultimately enabling them to produce innovative and high-quality audio elements for various musical genres and projects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 133 [Min Grade: D]

MIP 387 Studio Maintenance 3.0 Credits

Introduces the student to basic maintenance and troubleshooting techniques used in the modern recording studio. Basic electronic components, cabling, soldering skills, audio measurements, and equipment calibration are emphasized.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 279 [Min Grade: C]

MIP 388 Production Company Management 2.0 Credits

Students will research the basic financial, business, marketing, and networking practices of successful freelancers in the music industry and explore career development strategies to thrive in the music industry gig economy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Cannot enroll if classification is Freshman or Sophomore

MIP 389 Live Sound I 3.0 Credits

This course covers all aspects of sound reinforcement for live performances, including system design, equipment usage, and acoustical concerns. The course uses both lecture and hands-on components for greater student understanding.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 391 Analog Recording 3.0 Credits

This class enables students to practice the art of analog recording, editing and mixing. It puts in perspective the concepts, tools, and techniques of studio production that can be taken for granted in the digital domain. The constraints and aesthetic choices that are magnified by the analog format are very important parts of a holistic music production curriculum.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI and classification is Junior or Senior.

Prerequisites: MIP 379 [Min Grade: C]

MIP 393 Live Sound II 3.0 Credits

This course is an examination of current state-of-the-art sound reinforcement techniques. Special attention is paid to system design and optimization, digital mixing console operation, wireless systems, and concert recording.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MIP 389 [Min Grade: D]

MIP 394 Music Industry Data Analytics 3.0 Credits

Through this course, students will gain a deep understanding of the role of data in the business of music, balancing theoretical concepts, illustrative case studies, and practical application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 132 [Min Grade: D] and STAT 201 [Min Grade: D]

MIP 395 Innovation in the Modern Music Industry 3.0 Credits

This course studies the profound evolution of the music industry by examining entrepreneurial and technological innovation in the post-Napster era. Through in-depth discussions, critical analysis, and collaborative projects, students will gain insight into the cultural, business, and creative transformations driving today's music landscape, as well as their own potential to contribute to future industry innovation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

MIP 396 Global Recording Business 3.0 Credits

This course is designed to give students a global perspective of the recording business. Students will research individual markets and compare and contrast them in order to evaluate business conditions and consider future economic prospects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 132 [Min Grade: D]

MIP 418 Audio for Media II 3.0 Credits

This course will present advanced concepts and techniques utilized for creating post-production audio for video, television, and film. Students will also explore other current and future media, such as gaming and VR/XR/MR (virtual reality, extended reality, and mixed reality).

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: FMTV 321 [Min Grade: D]

MIP 433 Audio Production IV 3.0 Credits

In this course, students will gain in-depth knowledge of advanced vocal and drum production techniques using Pro Tools, Ableton Live and Logic Pro. The course is structured around weekly studio sessions and hands-on learning experiences, covering a wide range of topics from vocal recording, and editing to drum replacement and multi-DAW production. Throughout the course, students will have the opportunity to work on various aspects of audio production, including vocal coaching, comping, tuning, alignment, repair, and mixing. Additionally, students will be introduced to multi-DAW production workflows and the process of creating multitrack and stems for mixing and mastering purposes.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 133 [Min Grade: D]

MIP 467 Artist Management 3.0 Credits

This course examines the components that comprise an artist's professional team. The course will explore and analyze the central role that managers, attorneys, agents, business managers, services firms, record labels and other entities each play in representing, developing, and supervising the artist's overall business and brand.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Cannot enroll if classification is Freshman

MIP 470 Music Industry Colloquium 1.0 Credit

Students will be exposed to state-of-the-art research and industry experience from practitioners and researchers from the local and national stage. This course requires weekly participation in the department colloquium.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 4 credits

MIP 477 Music Production 3.0 Credits

The students in this class learn contemporary music production techniques through a combination of lecture, demonstration and independent work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 379 [Min Grade: D]

MIP 481 Mixing 3.0 Credits

This is an advanced audio engineering course that will focus on the technical and creative processes of mixing. Proper equipment usage, methods, formats, and production goals for various genres of music are covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is MUSI.

Prerequisites: MIP 379 [Min Grade: D]

MIP 483 Mastering 2.0 Credits

This course explores the various technical processes involved in professional audio mastering, including dynamic range control, spectral balancing, distortion, and noise detection.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: MIP 481 [Min Grade: D]

MIP 490 [WI] Music Industry Research Methods 3.0 Credits

This course is a general overview of research methods used in the music industry. The course presents a conceptual basis for designing research and assessing research quality and illustrates these concepts through in-depth reviews of research areas, including (1) qualitative studies, (2) surveys and (3) experiments. The course also touches on basic descriptive statistics, inferential statistics and measures of association. This is a writing intensive course.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

MIP 491 Senior Project in Music Industry 3.0 Credits

Senior Project is a thesis course in which student groups engage over two quarters of senior year in intensive research on a topic selected by a jury among individual proposals. The thesis will result in some form of publishable material.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Can enroll if major is MUSI and classification is Senior.

MIP 495 Directed Studies in Music Industry 0.5-12.0 Credits

Provides supervised individual study of special topics in the music industry. Departmental permission required.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is MUSI.

MIP I199 Independent Study in Music Industry Program 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP I299 Independent Study in Music Industry Program 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP I399 Independent Study in Music Industry Program 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP I499 Independent Study in Music Industry Program 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP T180 Special Topics in Music Industry Program 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP T280 Special Topics in Music Industry Program 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP T380 Special Topics in Music Industry Program 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

MIP T480 Special Topics in Music Industry Program 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Naval Science

Courses

NSC 100 Naval Science Drill 0.0 Credits

A professional laboratory covering various aspects of naval leadership and professional development. While emphasis is given to military marching, formation, and parade, the course also includes lectures from sources in and out of the Navy. Guest speakers cover topics such as leadership, Navy career paths, equal opportunity, rights and responsibilities, AIDS awareness, terrorism/counter-terrorism, naval warfare doctrine, employment of naval forces, ethics and values, operations security, and safety.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 101 Naval Orientation/Introduction to Naval Science 0.0 Credits

A course designed to familiarize the student with the history, characteristics and present employment of sea power. Particular emphasis is placed upon our naval forces and their capability in achieving and maintaining our national objectives. Naval organization and operational functions are discussed in conjunction with sea power concepts. Additionally, the student is given an insight into the Naval Service, shipboard organization and safety, time management skills and study techniques.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 102 Seapower and Maritime Affairs 2.0 Credits

A broad survey of naval history designed to add historical perspective to current defense problems. Topics covered include: naval power as an aspect of national defense policy, navies as an instrument of foreign policy, strategy selection, resource control, technology, and manning.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 201 Leadership & Management 2.0 Credits

This course emphasizes principles of leadership, personnel and material management, and subordinate development in the context of the naval organization. Practical applications are explored through experiential exercises and case studies.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 202 Navigation I 2.0 Credits

A comprehensive study of the theory and practice of terrestrial, and electronic navigation and the laws of vessel operations. Topics include fundamentals of coastal and harbor piloting, electronic navigation and mean of navigating without reference to land. An in-depth study of the international and inland nautical Rules of the Road is also included. Case studies and practical exercises are used to reinforce the fundamentals of marine navigation.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 301 Engineering 2.0 Credits

This course provides an overview of how propulsion and electricity are provided to our Navy's fighting ships. The basic engineering principles relating to thermodynamics, steam propulsion (conventional and nuclear), gas turbine propulsion, internal combustion engines, electricity generation and distribution, and various support systems will be taught. Ship design, stability, damage control, and some engineering-related ethical issues will also be discussed.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 302 Weapons 2.0 Credits

This course provides an overview of the theory and concepts underlying modern weapons systems. The principles behind sensors and detection systems, tracking systems, computational systems, weapon delivery systems, and the fire control problem will be examined, with a consistent emphasis on the integration of these components into a "weapons system". Case studies will be used to illustrate and reinforce concepts introduced in the course.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 310 Evolution of Warfare 2.0 Credits

This course is designed to add broad historical perspective to understanding military power. Treating war and the military as an integral part of society, the course deals with such topics as: war as an instrument of foreign policy, military influences on foreign policy, the military as a reflection of society, manning and strategy selection.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 401 Navigation II 2.0 Credits

Insight into modern naval operations is gained through analysis of relative motion pertaining to ships at sea, underway replenishment, ship handling, and tactical communications. The process of command and control and leadership is examined through case studies of actual incidents at sea.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 402 Leadership and Ethics 2.0 Credits

The capstone course of the NROTC curriculum, this course is intended to provide the midshipman with the ethical foundation and basic leadership tools to be effective junior officers. Topics such as responsibility, accountability, ethics, the law of armed conflict, military law, division organization and training, and discipline are introduced through practical exercises, group discussion, and case studies.

College/Department: University Courses

Repeat Status: Not repeatable for credit

NSC 410 Fundamentals of Maneuver Warfare 2.0 Credits

Maneuver Warfare is designed to provide a foundation of knowledge regarding leadership, tactics, and general military skills. Specific topics range from introduction to leadership and problem resolution, to Boyd's decision cycle and military law. Ideas are introduced and reinforced through a wide range of instructional methods, to include lecture, group discussion, practical application, and case studies.

College/Department: University Courses

Repeat Status: Not repeatable for credit

Neuroscience

Courses

NEUS 201 Academics & Career: Neuroscience 1.0 Credit

This course prepares students for their post-college future in neuroscience. Through developing a portfolio of work, creating reflections on the undergraduate experience and coop, learning about job and graduate school opportunities, and preparing for the senior year, students prepare for graduation and beyond.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Nursing

Courses

NURS 120 Contemporary Health Care 3.0 Credits

Students will examine the role of nursing within the health care system; recognizing historical influences on current practice, organizational structures of healthcare, and informatics to promote quality care. Nursing standards, ethics, scholarship, policy and government are introduced.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 221 Concepts of Pathophysiology in Nursing 3.0 Credits

This course builds upon the theoretical foundations of nursing theory, human anatomy, and physiology by addressing basic concepts, principles, and processes associated with common genetics, pathologies, physiologic alterations in body systems, and the body's ability to compensate for these changes.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 103 [Min Grade: C] and MATH 101 [Min Grade: C] and BIO 226 [Min Grade: C] and (NURS 120 [Min Grade: C] or NURS 121 [Min Grade: C])

NURS 225 Health Assessment for Nursing Practice 5.0 Credits

This course will focus on the concepts, skills, and attitudes of health assessment that is fundamental to professional nursing practice within a framework of clinical decision-making. It will also emphasize the professional nurse/patient relationship that promotes and assesses health throughout the lifespan.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NACE or major is NURS.

Prerequisites: HSCI 103 [Min Grade: C] and MATH 101 [Min Grade: C]

Corequisite: NURS 226

NURS 226 Fundamentals of Nursing Practice 6.0 Credits

This course will focus on the concepts, skills, and attitudes fundamental to professional nursing practice within a framework of clinical decision-making. It will also emphasize the professional nurse/patient relationship within the framework of relationship based care that promotes health throughout the lifespan.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NACE or major is NURS.

Prerequisites: HSCI 103 [Min Grade: C] and MATH 101 [Min Grade: C]

Corequisite: NURS 225

NURS 310 Courageous Action: Leading Authentically 3.0 Credits

This course is the first in a series of three courses included in the Macy Undergraduate Leadership Fellow's Program. Completion of all courses earns students nine credits and recognition as a Macy Undergraduate Leadership Fellow. Courageous Action: Leading Authentically will enable students in the undergraduate health professions programs an opportunity to embark on paths of personal leadership development; gain a deeper understanding and appreciation of differences; provide students with ideas, techniques, and tools to assist them in their leadership development journeys; explore concepts such as the power of your life story, discovering your authentic self, knowing and clarifying your values, leadership principles, ethical boundaries, and understanding your motivated capabilities.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NURS.

NURS 311 Group Dynamics and Leading Teams 3.0 Credits

This course is the 2nd in a series of 3 courses of the Macy Undergraduate Leadership Fellow's Program. NURS 311 focuses on leading teams and understanding group dynamics that are inherently linked to interpersonal processes/relationships and structural characteristics that influence teams and individual behavior during interactions. This course will explore various aspects of group dynamics such as emotional intelligence, power, perception, motivation, leadership, and decision-making. The goal is to develop skills in diagnosing opportunities and threats that face teams, enhance teamwork expertise as well as one's judgment, understanding, and competence to be better facilitators of one's own and others' learning in a variety of group situations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 310 [Min Grade: C]

NURS 312 Leadership in Action and Community Health 3.0 Credits

This course is the third in a series of 3 courses of the Macy Undergraduate Leadership Fellow's Program. Grounded in a social justice perspective, this course encourages critical thinking about health outcomes framed by the broad context of the political and social environment. This course offers a hands-on opportunity for students to explore what it means to be civically engaged since they are required to engage in 40 hours of service in the community throughout Spring Quarter. The goals are to support understanding of complex health issues and to empower students in their development as agents of positive change. This course will draw heavily on students' involvement in service and will weave these together with elements of other academic coursework and future academic/career goals.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 310 [Min Grade: C] and NURS 311 [Min Grade: C]

NURS 317 [WI] Genetics for Healthcare Professionals 3.0 Credits

This course will explore genetic concepts and principles as they pertain to human variation in health and disease. Theoretical research and literature on selected disorders including immunity and cancer will be reviewed and discussed with emphasis on clinical application. Multidisciplinary approaches to intervention will be discussed from a nursing perspective. Political, social and ethical issues raised by recent advances such as genetic engineering, gene therapy, reproductive technology and the Human Genome Project will be analyzed. Clinical application of moral, ethical and legal issues will be integrated throughout the course.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 320 Health and Illness Concepts I 6.0 Credits

This course will focus on nursing care of common health alterations for the adult population. Emphasis will be on the development of evidence-based, holistic care pertaining to the prevention, treatment, recovery, and long-term management of alterations related to the concepts of oxygenation, homeostasis, and perfusion.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 120 [Min Grade: C] and NURS 221 [Min Grade: C] and NURS 225 [Min Grade: C] and NURS 226 [Min Grade: C]

Corequisite: NURS 323

NURS 321 Health and Illness Concepts II 6.0 Credits

This course will focus on nursing care of common health alterations. The focus will be on the development of evidence-based, holistic care pertaining to the prevention, treatment, recovery, and long term management of alterations related to homeostasis and protection and movement.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 320 [Min Grade: C] and NURS 323 [Min Grade: C]

Corequisite: NURS 329

NURS 322 Concepts of Mental Health Nursing 6.0 Credits

This course focuses on the development of competencies for the practice of mental health nursing with emphasis on the use of self in relationships with patients and health team members. An understanding of the brain-behavior connection and the importance of the therapeutic nurse-patient relationship will provide the framework for exploring factors which contribute to stress, maladaptive behaviors and mental illness. Emphasis will be on the development of evidence-based, holistic care pertaining to the prevention, treatment, recovery, and long-term management of alterations related primarily to the concepts of coping and stress tolerance, emotions, cognitive functions, and maladaptive behavior.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: PSY 120 [Min Grade: C] (Can be taken Concurrently) and NURS 320 [Min Grade: C] and NURS 323 [Min Grade: C] and NURS 321 [Min Grade: C] and NURS 329 [Min Grade: C]

NURS 323 Nursing Pharmacology Concepts I 3.0 Credits

This course introduces the professional nursing student to the concepts of pharmacology and drug therapies, pharmacological-therapeutic classes of drugs, and important drug information resources. Knowledge of pharmacology provides the nurse with information to provide drug related patient care; optimizing beneficial effects of medications while minimizing adverse effects. The focus of the course is pharmacology basics and drugs affecting the cardiovascular, renal, respiratory, and endocrine systems. In addition, immune and biologic modifiers, chemotherapeutic agents, and psychotherapeutic drugs are presented. Legal, ethical, and cultural considerations in pharmacology as well as lifespan considerations with regard to pharmacotherapeutics and medication administration are addressed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 120 [Min Grade: C] and NURS 221 [Min Grade: C] and NURS 225 [Min Grade: C] and NURS 226 [Min Grade: C]

Corequisite: NURS 320

NURS 325 [WI] Critical Issues in Nursing 4.5 Credits

The health care system has undergone dramatic shifts, driven by changing economic, demographic, and technological forces. This course explores the impact of these forces on health care delivery, and concerns relating to ethical, legal, and social issues that influence nursing practice.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL.

NURS 326 Reproductive Health Across the Lifespan 6.0 Credits

This course focuses on management of human reproductive health and sexual issues with an emphasis on women and newborn health. It explores social determinants of health and their impact on health promotion, risk reduction, and disease prevention for the child bearing family. Women's health clinical settings will be utilized for clinical practice.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 320 [Min Grade: C] and NURS 323 [Min Grade: C] and NURS 321 [Min Grade: C] and NURS 329 [Min Grade: C] and NURS 322 [Min Grade: C]

NURS 327 Population Health Concepts 6.0 Credits

The focus of this course is the professional nurse's role in working with aggregates in the community. The principles of health promotion and illness prevention form the basis of effective population health nursing practice. Epidemiological and multiple sources of data are used to understand the social and ecological determinants of health.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 320 [Min Grade: C] and NURS 321 [Min Grade: C] and NURS 322 [Min Grade: C] and NURS 323 [Min Grade: C] and NURS 329 [Min Grade: C] and NURS 328 [Min Grade: C]

NURS 328 Pediatric Health Concepts 6.0 Credits

The concepts of human development and family dynamics in healthcare will be introduced. Building upon the concepts from previous courses, students will develop evidence-based, holistic, and ethically sound plans of care for pediatric populations. Prevention, treatment, recovery, and long-term management of health alterations in pediatric populations will be addressed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 320 [Min Grade: C] and NURS 321 [Min Grade: C] and NURS 323 [Min Grade: C] and NURS 329 [Min Grade: C] and NURS 322 [Min Grade: C]

NURS 329 Nursing Pharmacology Concepts II 3.0 Credits

This course will introduce the professional nursing student to the concepts of pharmacology and drug therapies, pharmacologic-therapeutic classes of drugs, and important drug information resources. Pharmacological knowledge goes beyond medication preparation and administration and involves knowledge of the mechanism of action, drug effects, therapeutic uses, side effects, and adverse effects. The focus of the course will be on pharmacology basics and drugs affecting the gastrointestinal, immunological, neurological, musculoskeletal, and dermatological systems. Legal, ethical, and cultural considerations in pharmacology, herbal, botanical and nutritional supplements, and lifespan perspectives for medication administration will also be discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 323 [Min Grade: C] and NURS 320 [Min Grade: C]

Corequisite: NURS 321

NURS 330 [WI] Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice 4.5 Credits

This course will introduce the student to the theoretical and research bases on which practice is built. Students will examine the knowledge that guides nursing interventions and critique published research reports. The importance of reviewing the nursing literature in order to maintain currency in practice will be addressed. Ethical issues as they relate to research, theory, and practice will be discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: HSCI 345 [Min Grade: C] and NURS 325 [Min Grade: C]

NURS 333 Appreciative Inquiry into Nursing: Science, Theory, and Patterns of Knowing 4.5 Credits

This course examines the scientific, theoretical, conceptual, and philosophical bases of professional nursing. Students explore classic literature and essays that have shaped and guided the development of the nursing profession. Nursing theories, grand and middle-range, are reviewed, critiqued, and considered as opportunities to influence the context of nursing care and to positively impact nursing outcomes. Students draw connections between theory and practice and consider how nurses' ways of knowing influence allyship, advocacy, and activism.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 334 Nursing Research: Investigations to Improve Health Outcomes 4.5 Credits

This course focuses on the nursing process as a whole and explores each of its component parts. Students will contrast quantitative and qualitative research paradigms. Critical appraisal tools will guide research study evaluations to determine the quality of selected studies. Institutional Review Board processes will be considered in the pursuit of human subjects' protections. Nursing science will be examined as a component of empirical ways of knowing within the nursing profession.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: HSCI 345 [Min Grade: C]

NURS 335 Genetics and Genomics: Application to Nursing Practice 4.5 Credits

This course focuses on current issues in genetics, genomics, and pharmacogenomics and healthcare. Genetic and genomic influences across the healthcare continuum (health prevention, health promotion, disease management, and personalized medicine) are addressed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 338 Introduction to Complementary & Integrative Health 3.0 Credits

This course provides an introduction to the underpinning philosophy and practice of complementary and integrative health (CIH). It presents an evidence-based review of the major categories including: phytotherapy, clinical aromatherapy, mind-body interventions, and the role of spirituality in health and healing. In addition, students explore effective relaxation techniques that help to integrate the mind-body-spirit connection, which support health and well-being.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 340 Transformational Leadership 4.5 Credits

The purpose of this course is to broaden the Registered Nurse's scope of knowledge in transformational leadership and how it can be implemented formally and informally in the healthcare setting. Clear communication improves patient outcomes as well as creating a healthier work environment for all providers. These two themes (Communication and Healthy Work Environments) are crucial elements introduced in this course. The course also expands the learner's skills of self and situational leadership.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 341 Using Genetics and Genomics to Inform Nursing Care Delivery 4.5 Credits

The course focuses on pharmacogenetics with integration of related nursing practice concerns including ethical, legal, and social issues. This course focuses on specific diseases, including cancers, cardiovascular diseases, prenatal diseases, and psychiatric illnesses. Students learn to conduct individual and family genetic risk assessments, construct human pedigrees, and identify red flags that necessitate comprehensive evaluation. Students investigate current issues in genetics, genomics, and pharmacogenomics and healthcare as well as genetic and genomic influences across the healthcare continuum.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 342 Inclusive and Equitable Health Assessment: Promoting Health; Respecting Diversity 4.5 Credits

This course seeks to enhance professional nurses' expertise in health assessment by broadening and deepening their comfort with and knowledge of healthcare system barriers to equitable and inclusive care. Current practices, particularly typical health assessment practices, are critiqued and opportunities for creating a clinical milieu and care encounter experience that are respectful and excellent are investigated. Physical examination, patient/client interviewing, history-taking and diagnostic tests are explored from the perspective of diversity, equity, and inclusion during care delivery, particularly health assessment. LGBTQ+ and other marginalized groups' health assessment needs are explicated and explored.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 343 Leading and Managing Complex Systems of Health 4.5 Credits

This course focuses on nursing leadership and management in the healthcare environment with the goal of enhancing students' development as effective and productive leaders and team members. Leadership and management are differentiated. Just culture and quality and safety competencies, including patient-centered care, evidence-based practice, teamwork and collaboration, safety, quality improvement and informatics, are examined. The nurse leader's responsibility for policy development and implementation are discussed. Personal opportunities for professional development are analyzed. Systems theory is explored and applied to nursing care delivery systems. Basic ideas of healthcare economics are identified and related to healthcare decision making and delivery.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 344 Safety Science and Quality Improvement: Delivering a Safe and Excellent Care Experience 4.5 Credits

This course focuses on evidence-based strategies and resources that are designed and implemented to enhance the safety and improve the quality of delivered care in healthcare systems. QSEN competencies are examined as expectations of professional nursing practice. Safety science is investigated, and quality improvement methods are introduced. Events that pose patient safety threats and responses to safeguard patients are considered. Workplace violence in the healthcare environment and its negative implications to the healthcare team and patient safety are explored.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 345 Holistic Self-Care 3.0 Credits

Holistic Self-Care provides students with an A-Z approach to "living" a holistic, balanced life, complete with step-by-step guidelines necessary to incorporate dietary and lifestyle changes and effective stress reduction and stress management techniques to assist in navigating through the common challenges associated with student life and beyond. Students will be required to purchase a "Holistic Student Stress Reduction Kit", complete with specific essential oils, Meditation DVD, and guided stress reduction techniques.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 346 Health Assessment 6.0 Credits

This course is designed to assist professional nurses in developing interviewing skills, physical assessment techniques, and preventive health interventions when working with diverse and vulnerable populations.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL.

Prerequisites: NURS 325 [Min Grade: C]

NURS 347 Educating Patients, Professionals, and the Public to Improve Health Outcomes 4.5 Credits

This course is designed to teach students best practices for educating patients, family members, professional and ancillary staff, and interprofessional colleagues. Students explore the contemporary challenges of health education with keen consideration of health maintenance; health restoration; and disease and disability prevention. Health literacy in the adult population, including those clients living with disabilities and chronic illnesses, is emphasized. Assessment of instructional materials is practiced and opportunities for technology use in education are explored.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 348 Responding to the Challenges of Global and Population-based Health Needs 4.5 Credits

This course focuses on global health needs and population-based, aggregate-focused nursing care using epidemiology, public health models, population health nursing principles, and health agency reports. Students learn about social and structural determinants of health and the influence of these factors on the circumstances of health within community aggregates locally and internationally. Current health issues are analyzed and discussed from a nursing perspective with a focus on health outcomes. Disparities in health are examined.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 349 Transitions of Care: Investigating Palliative Care and End-of-Life Care across the Life Span 4.5 Credits

This course explores palliative and hospice care delivery models and differentiates them by investigating their goals, priorities, insurability, and impact on the patient and family health experience. Students examine these transitions in care and consider published databased literature and gray literature to develop a rich understanding of the opportunities inherent in these specialized approaches to symptom management, curative treatment, and end-of-life care. Opportunities for professional development are considered.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 350 Independent Study in Nursing 1.0-3.0 Credit

This is a guided independent study. Students study a subject under the supervision of the nursing faculty member. May be repeated for credit.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 9 credits

NURS 351 Healthy Aging: Personal and Professional Opportunities to Promote Aging Well 4.5 Credits

This course is designed to stimulate new ways to think about aging and creative, evidence—based opportunities to promoting aging well when guiding personal health and promoting the health of others. Critical and timely issues concerning aging are explored including aging in place, dementia care, transitions, hand-offs, and safety. Professional resources are investigated. Aging is examined within the context of intersectionality; and diversity, equity, and inclusion challenges and opportunities are prioritized.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 380 Complex Systems of Care: Technology, Patient Safety & Quality 6.0 Credits

The course explores potential and actual ethical implications of advances in science and technology and the importance of creating a culture of safety within the healthcare environment. The course provides learners with opportunities to explore and create linkages between technology, cost-effectiveness, safety, quality outcomes and the delivery of care. Course activities promote critical reflection and communication skills needed for learners to become active, effective, and safe members of interdisciplinary care teams.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL.

Prerequisites: NURS 325 [Min Grade: C]

NURS 407 [WI] Issues in Aging and Longevity 4.5 Credits

This course focuses on current issues in promoting longevity with healthy aging. Current biopsychosocial theories on aging are explored. The multidisciplinary needs of older adults, including relationship challenges, are addressed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL.

Prerequisites: NURS 325 [Min Grade: C] and NURS 330 [Min Grade: C]

NURS 410 Pharmacology for Practicing Nurses 5.0 Credits

This course builds upon the practicing nurses' educational and experiential foundation in pharmacotherapeutics. Course emphasis includes the pharmacokinetics and pharmacodynamics of drug classes commonly encountered by the professional nurse. The interaction between pharmacodynamics and pathophysiology of disease states is analyzed. Critical evaluation of complex safety and interaction issues is developed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL.

NURS 420 Health and Illness Concepts III 6.0 Credits

This course will focus on the nursing care, assessment and management of patients with complex healthcare needs related to the constructs of homeostasis, regulation, perfusion, oxygenation, protection, and attributes and role of the nurse.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 320 [Min Grade: C] and NURS 321 [Min Grade: C] and NURS 323 [Min Grade: C] and NURS 326 [Min Grade: C] and NURS 328 [Min Grade: C] and NURS 329 [Min Grade: C]

NURS 421 Holistic Gerontological Nursing 6.0 Credits

This course will focus on a holistic and interprofessional approach to nursing care and coordination to meet the unique health needs of a diverse and growing population of older adults. The continuum of aging, including normal changes of aging, health and illness, acute and chronic conditions, and the end of life will be emphasized. Students' clinical experiences will be in a variety of settings reflective of health promotion and palliative care delivery options available to meet the health and illness trajectory needs of the older adult.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 320 [Min Grade: C] and NURS 321 [Min Grade: C] and NURS 323 [Min Grade: C] and NURS 328 [Min Grade: C] and NURS 329 [Min Grade: C]

NURS 422 Leadership Concepts in Nursing 0.0-3.0 Credits

This course will focus on the professional nursing role in applying principles of leadership and management across the continuum of care. Emerging and new roles for nurse entrepreneurs and professional practitioners will be explored. Also emphasizes the role of the professional nurse in efficient patient care management in complex health care settings and advocacy in health policy.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 321 [Min Grade: C] and NURS 329 [Min Grade: C]

NURS 423 [WI] Research Basis of Nursing Practice 4.0 Credits

This course will introduce the student to the theoretical and research basis on which practice is built. Students will examine the knowledge that guides nursing interventions and critique published research reports. The importance of reviewing the nursing literature in order to maintain currency in practice will be addressed. Ethical issues as they relate to research, theory and practice will be discussed. This course is for BSN Co-Op students only.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NURS 321 [Min Grade: C] and NURS 329 [Min Grade: C] and HSCI 345 [Min Grade: C]

NURS 455 The Science and Art of Self-Care 3.0 Credits

The objective of this course is designed to familiarize students with an understanding of the theoretical basis that underlies the principle of stress and the need for self-care. The intention of the course is to help students evaluate current stressors in order to initiate healthier coping skills and other self-care modalities. This course emulates the current mood of the American Nurses Association's Healthy Nurse, Healthy Nation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 460 Population Health: Local & Global 6.0 Credits

Using the framework of Social Determinants of Health (Healthy People 2020) this course explores the skills, research, and roles needed by a community/public health professional working as part of an interdisciplinary team including community/global -based partners and health officials to promote a healthier community. The student will apply skills in community assessment; program planning and evidence-based population health interventions in order to help identify populations within the community attain and maintain their optimum level of health. In this course, 'community' may be defined as either a local or global community of the student's choice.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL or major is NURS.

Prerequisites: NURS 330 [Min Grade: C] and NURS 325 [Min Grade: C]

NURS 465 Senior Capstone in Nursing 4.5 Credits

The student, with faculty supervision, plans a project that will be implemented this quarter. This project will integrate the academic and practical knowledge the student has acquired in the RN-BSN curriculum. Students will develop objectives relevant to the project, critique the literature, and present a plan for implementation.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NUOL and classification is Senior.

Prerequisites: NURS 407 [Min Grade: C] (Can be taken Concurrently) and NURS 325 [Min Grade: C] and NURS 330 [Min Grade: C]

NURS 481 Issues & Resolutions in End of Life Care 3.0 Credits

Promotes understanding of complexities associated with care of clients and families across the lifespan at end-of-life. Explores nursing management of individuals and families facing end-of-life care and decisions. Emphasis on evidenced-based practice in legal, ethical and professional decision-making framework. Conforms with AACN/ELNEC model.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NURS and classification is Senior.

NURS 482 Cultural Dimensions of Nursing Care 3.0 Credits

The focus of this course will be on strategies for providing culturally competent nursing care in a multicultural society. Emphasis is placed on evidence-based nursing practice within a framework of ethical, legal, and professional decision making.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NURS and classification is Senior.

NURS 483 Human Trafficking 3.0 Credits

This course introduces students to what human trafficking is, how to identify victims, what health problems are common among this population, special considerations to be aware of when working with trafficking victims and how to access services for them. In addition, the course will distinguish between various types of human trafficking/slavery such as sex trafficking, bonded and forced labor, domestic servant labor and child soldiers. It will also provide an overview of the history of human trafficking and counterstrategies, discuss the causes and physical, emotional and social consequences of human trafficking, and will assess the achievements of counter-strategies devised and implemented by governments, international organizations, private sectors and NGOs.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NURS 485 Perioperative Nursing I 3.0 Credits

This course is an introduction to the scope and standards of practice of the nurse in the perioperative environment. Emphasis will be on the development of essential foundational knowledge, skills and attitudes aligned with the fundamentals of perioperative practice designed for nursing schools by the Association of periOperative Registered Nurses (AORN) Guidelines and the Quality and Safety Education for Nurses (QSEN) competencies. Interrelated concepts of thermoregulation, homeostasis, hemostasis, protection, and safety will be stressed to enhance clinical judgement and clinical application. Simulation and perioperative units will be used for the evaluation of student's ability to deliver care in the perioperative setting.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

NURS 486 Perioperative Nursing II 3.0 Credits

This course builds upon the foundation of Periop Nursing I and the scope, standards, and practice of the nurse in the delivery of patient centered, team based, collaborative, safe, evidence based and quality care for the perioperative patient. Emphasis will be on the continuation of essential foundational knowledge, skills and attitudes aligned with the fundamentals of perioperative practice designed for nursing schools by the Association of periOperative Registered Nurses (AORN) Guidelines and the Quality and Safety Education for Nurses (QSEN) competencies. Interrelated concepts of aseptic practices, universal protocol, quality and safety, positioning the perioperative patient, teamwork, collaboration and leadership will be stressed to enhance clinical judgement and clinical application.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: NURS 485 [Min Grade: B]

NURS 487 Perioperative Nursing III 3.0 Credits

This course builds upon the foundation of Periop Nursing II and the scope, standards, and practice of the nurse in the delivery of patient centered, team based, collaborative, safe, evidence based and quality care for the perioperative patient. Emphasis will be on the continuation of essential foundational knowledge, skills and attitudes aligned with the fundamentals of perioperative practice designed for nursing schools by the Association of Perioperative Registered Nurses (AORN) Guidelines and the Quality and Safety Education for Nurses (QSEN) competencies. Interrelated concepts of aseptic practices, universal protocol, quality and safety, positioning the perioperative patient, teamwork, collaboration and leadership will be stressed to enhance clinical judgment and clinical application.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: NURS 485 [Min Grade: B] and NURS 486 [Min Grade: B]

NURS 495 Comprehensive Nursing Concepts 3.0 Credits

This course will serve as a comprehensive review of important and essential concepts from the nursing curriculum. Students will focus on those concepts that they need to improve for the successful practice of professional nursing. Students will utilize the Nursing Academic Clinical Support Services (NACSS) to review procedures practiced throughout the nursing curriculum, in particular the core professional skills, and will use computerized testing to gauge their mastery of professional nursing content.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: NURS 421 [Min Grade: C] and NURS 328 [Min Grade: C] and NURS 326 [Min Grade: C]

Corequisite: NURS 420

NURS I199 Independent Study in Nursing 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NURS I299 Independent Study in Nursing 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NURS I399 Independent Study in Nursing 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NURS I499 Independent Study in Nursing 0.0-12.0 Credits

Self-directed course within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NURS T180 Special Topics in Nursing 0.0-3.0 Credits

Course consists of content that faculty or students have requested to meet special needs or interests. Content is variable and offered on a one-time, infrequent, or trial basis. Actual course description will be determined by the instructor. May be repeated up to 3 times for credit if topics vary.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 12 credits

NURS T280 Special Topics in Nursing 0.0-3.0 Credits

Course consists of content that faculty or students have requested to meet special needs or interests. Content is variable and offered on a one-time, infrequent, or trial basis. Actual course description will be determined by the instructor. May be repeated up to 3 times for credit if topics vary.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 12 credits

NURS T380 Special Topics in Nursing 0.0-3.0 Credits

Course consists of content that faculty or students have requested to meet special needs or interests. Content is variable and offered on a one-time, infrequent, or trial basis. Actual course description will be determined by the instructor. May be repeated up to 3 times for credit if topics vary.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 12 credits

NURS T480 Special Topics in Nursing 0.0-3.0 Credits

Course consists of content that faculty or students have requested to meet special needs or interests. Content is variable and offered on a one-time, infrequent, or trial basis. Actual course description will be determined by the instructor. May be repeated up to 3 times for credit if topics vary.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 12 credits

Nutrition & Food Science

Courses

NFS 100 Nutrition, Foods, and Health 2.0 Credits

Covers the six nutrient categories and how they function in the body. Includes nutritional implications of major diseases, food safety issues, and current food and nutrition controversies with an emphasis on personal health.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NFS 101 Introduction to Nutrition & Food 1.0 Credit

Provides basic understanding of required nutrients and how they are used in the body. Students complete a computerized nutrient analysis and apply the science of nutrition and food to food choices to improve their personal health.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 100 [Min Grade: C] (Can be taken Concurrently)

NFS 202 Nutrition: Wellness and Weight Management 3.0 Credits

This course is designed for undergraduate students who want to learn the positive and negative effects of foods, diet and lifestyle on disease and longevity. Students will be provided with evidence-based research related to wellness, lowering disease risk and weight management.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 100 [Min Grade: B-]

NFS 203 Nutrition II: Nutrition in the Lifecycle 4.0 Credits

Covers nutrition in human life cycles with emphasis on prenatal, maternal, infant, childhood, adolescent, adulthood and later maturity. Also covers nutrient requirements and typical health and disease problems of each stage of the life span. Laboratory activities provide application of nutrition topics in preventive health activities related to the life span, with emphasis on diet-evaluation techniques.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: NFS 200 [Min Grade: C] or NFS 101 [Min Grade: C] or NFS 230 [Min Grade: C]

NFS 205 Introduction to Human Lactation 3.0 Credits

This course will provide a foundation in breastfeeding and human lactation, including breastfeeding education and promotion during the prenatal period, successful initiation of breastfeeding, prevention of many common pitfalls, and ongoing breastfeeding support. This course covers the fifteen specific areas required by Baby Friendly USA for all nurses working in prenatal and perinatal areas in Baby-Friendly Hospitals.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NFS 215 Nutritional Chemistry 3.0 Credits

Covers the chemistry of carbohydrates, lipids, proteins, and nucleic acids and their behavior in the body's major metabolic mechanisms, including the role of vitamins and minerals in enzyme systems critical to normal human nutrient metabolism.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 103 [Min Grade: C]

Corequisite: NFS 217

NFS 217 Nutrient Quality & Composition 1.0 Credit

Applications of principles of nutritional chemistry involving macronutrients and micronutrients.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CHEM 103 [Min Grade: C]

Corequisite: NFS 215

NFS 220 Normal & Lifespan Nutrition 4.0 Credits

Builds on basic nutrition principles to include nutrient metabolism and chemical and biological aspects of nutrition. Addresses special nutrient needs of people through the life cycle.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: CHEM 103 [Min Grade: C]

NFS 230 Intermediate Nutrition 4.0 Credits

The role of nutrients in body structure and function. Factors involved in the availability, digestion, absorption, and utilization of nutrients. Identification of the normal nutritional needs of individuals, and sources of nutrients.

The interpretation of current research in nutritional studies.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is NURS

Prerequisites: NFS 101 [Min Grade: C]

NFS 265 Professional Issues in Nutrition and Foods 3.0 Credits

Introduces professional issues in dietetics, food science, and nutrition science. Covers issues affecting current and future practice, and resources available to professionals in these fields.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: NFS 230 [Min Grade: C]

NFS 305 Clinical Issues in Human Lactation 3.0 Credits

The focus of this course will be to understand clinical aspects of lactation, including in- depth infant and maternal assessment and composition of human milk. Emphasis will be on first recognizing normal anatomy and physiology and then exploring presentations of the difficulties that breastfeeding dyads encounter. The course will examine the effects of infant and maternal characteristics as well as the effects of the birth on breastfeeding outcomes. Strategies to improve breastfeeding success will be discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NFS 315 Nutrition in Chronic Disease 4.0 Credits

This course provides a basic understanding of nutrition therapy and its role in the prevention and treatment of medical conditions.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 220 [Min Grade: C] or NFS 230 [Min Grade: C]

NFS 320 Pediatric Nutrition 3.0 Credits

This course provides an overview of pediatric nutrition assessment, as well as nutrition therapy and its role in the prevention and treatment of medical conditions found in the newborn through adolescent.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 101 [Min Grade: C] or NFS 220 [Min Grade: C] or NFS 230 [Min Grade: C]

NFS 325 Nutrition & Exercise Physiology 3.0 Credits

An advanced level course covering nutrient needs to maximize exercise performance. Energy metabolism, with emphasis on macronutrient and micronutrient needs during different levels of exercise will be emphasized. Benefits of exercise in the prevention and treatment of chronic diseases and the safety of ergogenic aids will be discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 100 [Min Grade: C] or NFS 101 [Min Grade: C] or NFS 230 [Min Grade: C]

NFS 345 Foods and Nutrition of World Cultures 3.0 Credits

Provides an understanding of the diversity of cultural food choices and their nutritional implications. Includes an emphasis on cultural groups in the United States and methods to provide nutrition education to culturally diverse groups.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: CULA 115 [Min Grade: C]

NFS 370 Foodservice Systems Management 4.0 Credits

In-depth analysis of food purchasing, financial management of foodservices, cost controls, marketing in foodservice, equipment layout and design, and management/leadership theories and applications.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: HRM 215 [Min Grade: C]

NFS 391 Community Nutrition 4.0 Credits

Studies nutrition services provided by national, state, and local governments and private organizations. Discusses nutritional needs-assessment techniques and program-development methods. Field trips will be made to community nutrition programs.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: NFS 203 [Min Grade: C]

NFS 405 Public Policy of Breastfeeding 3.0 Credits

This course will examine the barriers to optimal breastfeeding using a socioecologic framework. Participants will gain a better understanding of the different factors that influence breastfeeding behaviors. Strategies to more effectively protect, promote and support breastfeeding will be discussed.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

NFS 415 Advanced Nutrition I: Macronutrition 4.0 Credits

Covers biochemical and physiological topics of macronutrient metabolism, with emphasis on ingestion, digestion, absorption, and excretion of carbohydrate, protein, and lipid.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: NFS 230 [Min Grade: C]

NFS 416 Advanced Nutrition II: Micronutrients 4.0 Credits

Provides in-depth study of vitamin and mineral absorption, metabolism, and degradation, with an emphasis on human health requirements and a thorough understanding of nutrient and dietary requirements.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: NFS 415 [Min Grade: D]

NFS 431 Nutrition Counseling 4.0 Credits

Emphasizes nutrition-counseling techniques for use with individuals and small groups. Includes development of nutrition education materials as well as verbal and non-verbal communication skills.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NFSC and classification is Senior.

Prerequisites: NFS 443 [Min Grade: C]

NFS 443 Medical Nutrition Therapy I 3.0 Credits

First of a three-course sequence examining the interrelationships of physiology, biochemistry, and nutrition as related to medical nutrition therapy. Emphasizes nutritional assessment and the role of nutrition in preventing and treating diseases/disorders: gastrointestinal diseases, diabetes, obesity, and cardiovascular disease.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: NFS 416 [Min Grade: C]

NFS 444 Medical Nutrition Therapy II 3.0 Credits

Second of a three-course sequence examining the interrelationships of physiology, biochemistry, and nutrition as related to medical nutrition therapy. Emphasizes nutrition assessment and the role of nutrition in preventing and treating disease/disorders; disease of the liver, pancreas, and gallbladder; pulmonary disease; renal disease; cancer; HIV/AIDS; allergies, pediatric disease; and metabolic disturbances.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: NFS 443 [Min Grade: C]

NFS 445 Medical Nutrition Therapy III 3.0 Credits

Third of a three-course sequence examining the interrelationships of physiology, biochemistry, and nutrition as related to severe/stressful conditions which require enteral or parenteral nutrition or other advanced medical nutrition therapies.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: NFS 444 [Min Grade: C]

NFS 475 Advanced Seminar in the Dietetics Profession 3.0 Credits

Reviews, evaluates, and synthesizes contemporary professional issues in dietetics.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Junior or Pre-Junior or Sophomore

Prerequisites: NFS 203 [Min Grade: C]

NFS 485 Lactation Supervised Practice 3.0 Credits

Lactation Supervised Practice is designed to prepare competent, entry-level lactation consultants who will be eligible to sit the International Board Lactation Consultant Examination by completing Pathway 2. The course will provide appropriate experiences to practice the roles of lactation consultant under the supervision of a preceptor.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: NFS 205 [Min Grade: C] and NFS 305 [Min Grade: C] and NFS 405 [Min Grade: C]

NFS 494 Senior Project I 2.0 Credits

First in a series of capstone courses in which student carry out the research process. In NFS 494, students work cooperatively to identify an applied, discipline oriented problem and then develop research hypotheses and a written research proposal in response to that problem.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is NFSC and classification is Senior.

NFS 495 Senior Project II 2.0 Credits

Second in a series of capstone course in which students carry out the research process. In NFS 495, students work cooperatively to carry out the research objectives according to the research proposal developed in NFS 494.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 494 [Min Grade: D]

NFS 496 Senior Project III 2.0 Credits

Third in a series of capstone course in which students carry out the research process. In NFS 496, students work cooperatively to document the finding of their research in NFS 495. Students make oral and poster presentations as well as produce a written report of their research results.

College/Department: College of Nursing Health Professions

Repeat Status: Not repeatable for credit

Prerequisites: NFS 495 [Min Grade: D]

NFS 497 Research 1.0-3.0 Credit

Provides individual research in nutrition under faculty supervision.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated 3 times for 12 credits

Restrictions: Cannot enroll if classification is Freshman

NFS I199 Independent Study in Nutrition & Food Science 0.5-9.0 Credits

Provides individual study in nutrition under faculty supervision.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS I299 Independent Study in Nutrition & Food Science 0.5-9.0 Credits

Provides individual study in nutrition under faculty supervision.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS I399 Independent Study in Nutrition & Food Science 0.5-9.0 Credits

Provides individual study in nutrition under faculty supervision.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS I499 Independent Study in Nutrition & Food Science 0.5-9.0 Credits

Provides individual study in nutrition under faculty supervision.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS T180 Special Topics in Nutrition & Food Science 0.5-9.0 Credits

Covers selected topics of study in the field of nutrition and food.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS T280 Special Topics in Nutrition & Food Science 0.5-9.0 Credits

Covers selected topics of study in the field of nutrition and food.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS T380 Special Topics in Nutrition & Food Science 0.5-9.0 Credits

Covers selected topics of study in the field of nutrition and food.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

NFS T480 Special Topics in Nutrition & Food Science 0.5-9.0 Credits

Covers selected topics of study in the field of nutrition and food.

College/Department: College of Nursing Health Professions

Repeat Status: Can be repeated multiple times for credit

Operations Management

Courses

OPM 200 Operations Management 4.0 Credits

Provides students with an understanding of the transformation process, which converts inputs into outputs. This is the primary function of every manufacturing/service organization, and how it adds value to the outputs. Discusses the decision-making process and techniques for planning and controlling the operations function.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

OPM 315 Service Operations Management 4.0 Credits

Analyze service systems from the viewpoint of the operations manager to understand where and in what ways the body of knowledge developed in operations management, strategy, and marketing can be applied and where other approaches are necessary. Focus on understanding what customers want, designing systems and procedures delivering services, and controlling quality.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

OPM 324 Operations Planning 4.0 Credits

This course offers students who have completed an introductory study of operations management the opportunity to further their knowledge of the discipline. Building on students' understanding of essential operational structures, the course focuses on concepts and tools that allow operations managers to allocate available resources effectively in view of demand from internal and external customers. Key topics studied include design of products, services, and facilities; forecasting demand; material requirements planning; and analysis of waiting lines and inventory systems.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: OPM 200 [Min Grade: D] and (STAT 201 [Min Grade: D] or STAT 205 [Min Grade: D])

OPM 341 Supply Chain Management 4.0 Credits

Presents and explains the concepts, insights, practical tools and decision support systems that are important for the effective managements of supply chains. Long-term strategic design issues, shorter-term tactical and operational issues are closely examined. State-of-the-art concepts of globally optimal decision making, often across traditional organizational boundaries are emphasized.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: OPM 324 [Min Grade: D] and OPR 320 [Min Grade: D]

OPM 342 Sustainable Supply Chain Management and Logistics 4.0 Credits

This course is a survey of solutions and techniques to design, evaluate, and improve supply chain operations with the goal of promoting environmental, social, and economic sustainability. Topics include product and process design for sustainability, cradle-to-cradle design, "green" sourcing and procurement, reverse logistics and closed-loop supply chains, supply chain coordination for sustainability, end-of-life management, facilities location and design, sustainable transportation and logistics solutions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: OPM 200 [Min Grade: C]

OPM 344 Revenue Management 4.0 Credits

The course will convey to future business leaders innovative ways to boost profitability. It will explore how firms can improve the operational management of the demand for their products (goods or services) to more effectively align it with their supply through business analytics lenses. It will introduce quantitative methods to improve decision-making, with special emphasis on spreadsheet modeling and analysis.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: OPR 320 [Min Grade: C-] and (STAT 201 [Min Grade: C-] or STAT 205 [Min Grade: C-])

OPM I199 Independent Study in OPM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

OPM I299 Independent Study in OPM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

OPM I399 Independent Study in OPM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

OPM I499 Independent Study in OPM 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated 3 times for 12 credits

OPM T180 Special Topics in OPM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

OPM T280 Special Topics in OPM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

OPM T380 Special Topics in OPM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

OPM T480 Special Topics in OPM 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated 3 times for 12 credits

Operations Research

Courses

OPR 320 Linear Models for Decision Making 4.0 Credits

Applies modeling and mathematical techniques to complex decision problems in business, with a focus on deterministic systems. Covers linear programming, integer programming, goal programming and networks.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MATH 102 [Min Grade: D] or MATH 122 [Min Grade: D]

OPR 330 Advanced Decision Making and Simulation 4.0 Credits

Applies modeling and mathematical techniques to complex decision problems, with a focus on nonlinearity and uncertainty in the business environment. Covers nonlinear programming, dynamic programming, queuing theory, Markov Processes, decision analysis and simulation.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: OPR 320 [Min Grade: C-] and (STAT 201 [Min Grade: C-] or STAT 205 [Min Grade: C-] or MATH 312 [Min Grade: C-])

OPR 340 Decision Models for the Public Sector 4.0 Credits

This course will cover the basics of analytical modeling, optimization, and simulation as tools for decision-making in the public sector. The students will analyze cases illustrating the powerful impact of using these tools in cities across the country. Of particular focus will be the implementability of these tools and their recommendations in the real-world. Moreover, a city, especially one as big as Philadelphia, is a complex and dynamic environment, so we will investigate how to address some of the resulting challenges in our analyses. Specifically, we will address scenarios involving the improvement of existing operations, optimal resource allocation and distribution, and measuring and improving the quality and efficiency of service delivery.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: OPR 320 [Min Grade: C-]

OPR 350 Optimization in Finance 4.0 Credits

Quantitative finance can be grouped into the following categories: (1) valuation of financial instruments by the use of risk-neutral probability distributions; (2) financial planning using real-life probability distributions. This course focuses on financial planning. There are two key ideas: the first is to model decision making and planning as a mathematical optimization problem with variables, an objective function, and constraints. The second is to model uncertainty using the tools of probability theory. This is an introductory course: we focus on building models and use standard spreadsheet software to find solutions.
College/Department: LeBow College of Business
Repeat Status: Not repeatable for credit

OPR I199 Independent Study in OPR 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR I299 Independent Study in OPR 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR I399 Independent Study in OPR 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR I499 Independent Study in OPR 0.5-4.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR T180 Special Topics in OPR 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR T280 Special Topics in OPR 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR T380 Special Topics in OPR 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

OPR T480 Special Topics in OPR 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.
College/Department: LeBow College of Business
Repeat Status: Can be repeated multiple times for credit

Organizational Behavior

Courses

ORGB 300 [WI] Organizational Behavior 4.0 Credits

Provides conceptual understanding of various principles of management and organizational processes and the opportunity for skill-building in the areas of individual, interpersonal, and intergroup organizational behaviors.
College/Department: LeBow College of Business
Repeat Status: Not repeatable for credit
Restrictions: Cannot enroll if classification is Freshman or Sophomore

ORGB 320 Leadership: Theory and Practice 4.0 Credits

This course provides both a theoretical and practical understanding of leadership through theoretical and experiential learning. Course time will be devoted to lecture and course discussion that will teach students theories of leadership and hands-on activities that will demonstrate the practicality and applicability of these theories.
College/Department: LeBow College of Business
Repeat Status: Not repeatable for credit

ORGB 370 Dynamic Team Consulting 4.0 Credits

This course examines the fundamentals of collaboration by engaging students in real business issues and is uniquely designed to partner with business leaders from a local company. Over the course of the term, students will work in a team tasked with creating innovative solutions while learning how to be an effective team member and moderate effective teaming processes. This course will define conceptual and theoretical issues to effective teaming through guided debriefing sessions focusing on self-reflection and active learning. We will examine topics such as team design, culture, team processes, leadership, and emergent states to provide you with a set of principles to help you manage teamwork.
College/Department: LeBow College of Business
Repeat Status: Not repeatable for credit

ORGB 400 Team Development and Leadership 4.0 Credits

This course examines how team structures, member characteristics, and interpersonal processes influence the effectiveness of work teams, and the dynamics of interpersonal relationships within and across team boundaries. This course also examines forms and functions of team leadership to provide students with a set of general principles to help them lead teams in a range of situations. This course uses an experiential learning format; students will engage in a series of team activities, each of which will be followed by a debriefing.
College/Department: LeBow College of Business
Repeat Status: Not repeatable for credit

ORGB 420 Negotiations and Conflict Resolution 4.0 Credits

This course provides both a theoretical understanding of the central concepts in negotiation and conflict management through applied experience in these processes. Through classroom exercises, discussion, and personal reflection, students will improve their ability to negotiate and manage conflicts through gained confidence in these processes.
College/Department: LeBow College of Business
Repeat Status: Not repeatable for credit
Restrictions: Can enroll if classification is Junior or Pre-Junior or Sophomore or Senior.

ORGB 430 Strategic Career Development 4.0 Credits

This course provides a conceptual understanding of career management and a practical application of this material to the career decisions that students currently face and will face in the future. A blend of theory, case analysis, and self-assessments relate course concepts to effective techniques for managing a career at different phases of life.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

ORGB I199 Independent Study in ORGB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ORGB I299 Independent Study in ORGB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ORGB I399 Independent Study in ORGB 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ORGB I499 Independent Study in ORGB 1.0-4.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if classification is Junior or Senior.

ORGB T180 Special Topics in ORGB 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ORGB T280 Special Topics in ORGB 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ORGB T380 Special Topics in ORGB 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

ORGB T480 Special Topics in ORGB 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Peace Engineering

Courses

PENG 445 Introduction to Peace Engineering 3.0 Credits

Developed in partnership with professional peacebuilders from the PeaceTech Lab and USIP's Academy for International Conflict Management and Peacebuilding in Washington, DC, this course introduces engineering students to the concepts and skills practiced in the field of international peacebuilding and conflict transformation. This course provides students with first-hand accounts of peacebuilders describing challenges and opportunities in their work, short presentations outlining key theories and concepts that guide that work, and opportunities to think about how this knowledge, skills, and attitudes can be applied to real-life peacebuilding dilemmas.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

PENG 450 Conflict Management for Engineers 3.0 Credits

As the pace of science and technology innovation increases, so too does the role of engineers in solving some of the world's toughest challenges. The prevention of violent conflict and the pursuit of a sustainable peace is just such a challenge. Developed in partnership with professional peacebuilders from the PeaceTech Lab and the US Institute of Peace's Academy for International Conflict Management and Peacebuilding in Washington, DC, this course introduces engineering students to the concept and skills they will need in order to use technology expertise in service of conflict-affected communities. This course provides students with an introduction to the theory and practice of conflict analysis, strategic peacebuilding and negotiation.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Performing Arts

Courses

PRFA 100 Community Arts Performance Practicum 0-1 Credits

Provides practical experience as a participant in a Department of Performing Arts community arts initiative. Includes involvement with off campus activities with community members under faculty supervision and direction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA I199 Independent Study in Performing Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA I299 Independent Study in Performing Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA I399 Independent Study in Performing Arts 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA I499 Independent Study in Performing Arts 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA T180 Special Topics in Performing Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA T280 Special Topics in Performing Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA T380 Special Topics in Performing Arts 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PRFA T480 Special Topics in Performing Arts 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Philosophy

Courses

PHIL 105 Critical Reasoning 3.0 Credits

Introduces and develops the skills involved in reasoning effectively about experience, and being able to distinguish strong arguments from weak ones.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 110 Introduction to Philosophy 3.0 Credits

This course introduces the aims and some of the various methods, traditions and styles of Philosophy, including reading and discussion of some primary philosophical texts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 111 Symbolic Logic I 3.0 Credits

An introduction to the fundamental concepts of symbolic logic: argument, validity, soundness, provability, completeness, consistency, decidability, entailment, logical equivalence, logical truth, logical contradiction. Covers truth-functional connectives, rules of formation and translation, and rules of inference. Proof techniques studied include natural deduction, truth-tables, and/or truth-trees.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 121 Symbolic Logic II 3.0 Credits

Concentrates on syntax and semantics of quantification. Formation principles include A, E, I, and O statements (and square of opposition), domain of discourse, quantifier scope, multiple quantification, relations, and identity. Proof mechanics covered include natural deduction, instantiation, semantic tableaux, and possible-world counterexamples.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHIL 111 [Min Grade: D]

PHIL 151 Ethical Reasoning 3.0 Credits

This course will introduce the basic concepts and principles of ethical reasoning as applied to the widest variety of practical circumstances and contexts. Students will learn how to think about what ethics is, the nature of obligations and rights, how to recognize ethical problems, what it means to respond to them reasonably and how to think about their own and others' ethical perspectives and values.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 201 Non-Western Philosophies 3.0 Credits

This variable topics course introduces one or more traditions and styles of philosophy that have not directly arisen from Classical Greco-Roman Antiquity. The class may involve reading and discussion of texts from various genres.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL 210 Philosophy of Sport 3.0 Credits

Studies theories about philosophical issues arising in sport, in areas including its personal, social, aesthetic, and political dimensions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 211 Metaphysics: Philosophy of Reality 3.0 Credits

Studies theories about the nature of reality and philosophical issues such as the nature of time, mind, personal identity, and free will.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 212 Ancient Philosophy 3.0 Credits

Studies central works that have shaped Western Philosophy and culture from the Ancient Greek era and its legacy.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL 214 Modern Philosophy 3.0 Credits

Studies central works that have shaped Western Philosophy and culture from the Renaissance through the late Nineteenth Century.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL 215 Contemporary Philosophy 3.0 Credits

Studies central works that have had important impacts upon Western Philosophy and culture from the Twentieth Century through the present.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL 216 Philosophy of Time 3.0 Credits

In this course we will study philosophical problems surrounding the nature of time. We will consider questions like, "Does the present exist?"; "Does time have a direction?"; "Are events pre-determined?"; "Is time travel possible?"; etc. Students will read and discuss treatments of these issues in philosophy, literature, and film.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 218 Philosophy of Mathematics 3.0 Credits

This course introduces the student to a critical analysis of the fundamental concepts, principles, and assumptions of mathematics. Included will be a consideration of the reality of mathematical "objects" (numbers, sets, functions), the nature of mathematical knowledge, the relationship between logic and mathematics, and other topics which may include the discussion of mathematical concepts of continuity and infinity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 221 Epistemology: Philosophy of Knowledge 3.0 Credits

Studies theories about knowledge that bear upon philosophical issues concerned with the nature and status of knowledge claims as expressed in concepts like belief, truth, and justification.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 231 Aesthetics: Philosophy of Art 3.0 Credits

Studies theories about art and the nature of beauty that bear on philosophical issues concerned with artistic production, performance, and perception, such as arise in activities like painting, sculpture, film literature, music, and dance.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 241 Social & Political Philosophy 3.0 Credits

Studies theories about human social and political life that bear on philosophical issues such as the nature and scope of justice, the legitimacy of states, and the relationship between democracy, civil rights, and civil disobedience.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 251 Ethics 3.0 Credits

Studies theories about human conduct which bear upon the rightness and wrongness of actions, and the goodness and badness of ends, including the nature, scope, purposes, and varieties of moral and ethical theories.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 255 Philosophy of Sex & Love 3.0 Credits

This course investigates sexual activity and desire, and the morality of sexual behavior. It also examines various types of love and their links with sexuality. Figures studied include Plato, Aristotle, Augustine, Aquinas, Kant, Kierkegaard, Freud and Foucault. Topics include marriage, prostitution, pornography, homosexuality, perversion, rape, intentionality, irreplaceability, unconditionality, reciprocity, and exclusivity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 291 Judaism and Christianity: Two Religions or One? 3.0 Credits

The relation between Christianity and Judaism is one of the most misunderstood in the history of thought. Christianity is often considered to be diametrically opposed to Judaism, to be a rejection of the Judaic worldview. Indeed, prominent thinkers in the history of Christianity, such as Martin Luther, have reinforced this position. Yet Christianity was originally a development within Judaism, a sect, so to speak, of Judaism. The earliest Christians were Jewish followers of a Jewish leader and conceived of themselves as faithful Jews. So how did the two religions come to be viewed as opposed? Do elements of Judaism remain as part of the foundation of the new faith of Christianity? Where do the two faiths converge and where do they diverge? This course endeavors to answer these important questions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 301 Business Ethics 3.0 Credits

Study of such moral issues as truth-telling, puffery, and lying in business communications; employer-employee relations; obligations to customers; obligations to foreign populations; and government contracts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 305 Ethics and the Media 3.0 Credits

Ethical analysis of current laws and legislation aimed at regulating speech in the context of mass communications (radio, television and film).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 311 Ethics and Information Technology 3.0 Credits

Ethical analyses of current laws and pending legislation aimed at regulating computer use as well as Internet practices and content.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 315 Engineering Ethics 3.0 Credits

Provides critical reflection on the nature of engineering and technology and on the ethical obligations and responsibilities unique to the engineering profession. Topics include the social responsibilities of engineering, the nature of professionalism, professional autonomy, whistleblowing, conflicts of interest, organizational (dis)obedience, the ethics of risk assessment, and the place and purpose of engineering codes of ethics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is BUSN or major is ECON or classification is Freshman

PHIL 317 Ethics and Design Professions 3.0 Credits

Examines ethical theories and their application to architecture; the ethics of architectural space and place; the logic of ethical reasoning applied to the practice of architecture; professional ethics and the social responsibility of architects; the ethics of safety and risk in the production of architectural structures; sustainable environmental architectural design.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ARCH or major is INTR.

PHIL 321 Biomedical Ethics 3.0 Credits

Studies moral issues related to health and disease, patients' rights and professional responsibilities, informed consent, abortion, euthanasia, and biomedical research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 323 Organizational Ethics 3.0 Credits

This course focuses on the application of ethical theories and principles to organizational systems and decision-making. Emphasis will be placed on how ethical principles affect and are applied to organizational policy-making, leadership behavior, systems of communication, technology use, and other systems of organization.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 325 Ethics in Sports Management 3.0 Credits

An introduction to various ethical issues in sports and sports management, such as leadership and coaching; gender and racial equity in sports; fair play and cheating; violence and competition; commercialization of sports; the relation of sports to cultural value systems; ethics of technology and sports performance.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 330 Criminal Justice Ethics 3.0 Credits

Studies ethical issues in the policies and practices of criminal justice, and theories that bear upon issues such as the relationship of law to justice, the definition of crime, the use of deception and coercion in law enforcement, and the purposes and varieties of criminal punishment.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 335 Global Ethical Issues 3.0 Credits

Offers an introduction to the ethical tensions of our age, globally construed. May address such issues as terrorism, genocide, religious exclusivism, nuclear proliferation, the regulation of the Internet, as well as culturally competing notions of right and wrong, and good and bad.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 340 Environmental Ethics 3.0 Credits

This course examines ethical questions about human relations with the nonhuman world. These questions will be informed by assessing sustainable practices, indigenous ways of life, environmental movements, and such issues as biodiversity loss and global climate change.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHIL 341 Environmental Philosophy 3.0 Credits

Studies ecological issues from a philosophical standpoint stressing the implications of scientific and technological developments as they affect people's lives and choices.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 351 Philosophy of Technology 3.0 Credits

Studies technology from a philosophical standpoint stressing its role in shaping human existence and values, considering issues such as the control and distribution of information, housing and city planning, automation, and the uses of technology in medicine.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 355 Philosophy of Medicine 3.0 Credits

Examines the ideas of medicine, disease, and health from a philosophical perspective. Examines such concepts as gender, mental-illness, mind-body unity, aging and physical perfection as derived from both Eastern and Western traditions. Current health policy alternative treatment practices are also discussed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 361 Philosophy of Science 3.0 Credits

Studies natural scientific theory-construction and investigative methods from a philosophical standpoint, considering issues such as the nature and scope of experimental method, and the history and justification of theory change.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 381 [WI] Philosophy in Literature 3.0 Credits

Studies philosophical issues such as the concept of the self, the nature and course of evil, the nature and scope of free will, and ideals in living as they appear in significant works of literature.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 385 Philosophy of Law 3.0 Credits

This course addresses philosophical issues in the law. Topics include the meaning of "law," the nature and logic of legal (in contrast to moral) concepts and principles, and competing conceptions of law (Natural Law, Positivism, Realism, Rights-Based, etc.). Authors may include Plato, Mill, Rawls, Hart, Dworkin and others.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 391 Philosophy of Religion 3.0 Credits

Studies various aspects of religious belief and experience from a philosophical standpoint, considering issues such as the definition and existence of God, the nature and course of evil, and the relationship between faith and reason in a religious life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHIL 481 [WI] Seminar in a Philosophical School 3.0 Credits

Development of doctrines, theories, arguments and problems associated with one or more philosophical schools (or movements). Schools (or movements) may include Pythagoreanism, Platonism, Epicureanism, or recently, Positivism, Pragmatism, and Existentialism.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PHIL 121 [Min Grade: D] or PHIL 210 [Min Grade: D] or PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D] or PHIL 216 [Min Grade: D] or PHIL 218 [Min Grade: D] or PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D] or PHIL 255 [Min Grade: D] or PHIL T280 [Min Grade: D] or PHIL 291 [Min Grade: D] or PHIL 301 [Min Grade: D] or PHIL 305 [Min Grade: D] or PHIL 311 [Min Grade: D] or PHIL 315 [Min Grade: D] or PHIL 317 [Min Grade: D] or PHIL 321 [Min Grade: D] or PHIL 323 [Min Grade: D] or PHIL 325 [Min Grade: D] or PHIL 330 [Min Grade: D] or PHIL 335 [Min Grade: D] or PHIL 340 [Min Grade: D] or PHIL 341 [Min Grade: D] or PHIL 351 [Min Grade: D] or PHIL 355 [Min Grade: D] or PHIL 361 [Min Grade: D] or PHIL T380 [Min Grade: D] or PHIL 381 [Min Grade: D] or PHIL 385 [Min Grade: D] or PHIL 391 [Min Grade: D] or PHIL T480 [Min Grade: D] or PHIL 201 [Min Grade: D]) and (PHIL 102 [Min Grade: D] or PHIL 105 [Min Grade: D] or PHIL 110 [Min Grade: D] or PHIL 111 [Min Grade: D] or PHIL 151 [Min Grade: D] or PHIL 101 [Min Grade: D])

PHIL 485 [WI] Seminar in a Major Philosopher 3.0 Credits

Study of the works of a major philosopher such as Plato, Aristotle, Descartes, Locke, Hume, Kant, etc.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PHIL 121 [Min Grade: D] or PHIL 210 [Min Grade: D] or PHIL 211 [Min Grade: D] or PHIL 212 [Min Grade: D] or PHIL 214 [Min Grade: D] or PHIL 215 [Min Grade: D] or PHIL 216 [Min Grade: D] or PHIL 218 [Min Grade: D] or PHIL 221 [Min Grade: D] or PHIL 231 [Min Grade: D] or PHIL 241 [Min Grade: D] or PHIL 251 [Min Grade: D] or PHIL 255 [Min Grade: D] or PHIL T280 [Min Grade: D] or PHIL 291 [Min Grade: D] or PHIL 301 [Min Grade: D] or PHIL 305 [Min Grade: D] or PHIL 311 [Min Grade: D] or PHIL 315 [Min Grade: D] or PHIL 317 [Min Grade: D] or PHIL 321 [Min Grade: D] or PHIL 323 [Min Grade: D] or PHIL 325 [Min Grade: D] or PHIL 330 [Min Grade: D] or PHIL 335 [Min Grade: D] or PHIL 340 [Min Grade: D] or PHIL 341 [Min Grade: D] or PHIL 351 [Min Grade: D] or PHIL 355 [Min Grade: D] or PHIL 361 [Min Grade: D] or PHIL T380 [Min Grade: D] or PHIL 385 [Min Grade: D] or PHIL 391 [Min Grade: D] or PHIL T480 [Min Grade: D] or PHIL 381 [Min Grade: D] or PHIL 201 [Min Grade: D]) and (PHIL 101 [Min Grade: D] or PHIL 102 [Min Grade: D] or PHIL 105 [Min Grade: D] or PHIL 110 [Min Grade: D] or PHIL 111 [Min Grade: D] or PHIL 151 [Min Grade: D])

PHIL 497 [WI] Senior Essay I: Research & Thesis Development 3.0 Credits

Individual supervision. Selection of research topic for the senior argumentative essay; collection and analysis of hard-copy and electronic research material; construction of bibliography. Initial thesis formulation and drafting of argument sketch.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHIL and classification is Senior.

PHIL 498 [WI] Senior Essay II: Argument Construction 3.0 Credits

Supervised construction of the main and supporting arguments of the senior essay involving drafting and re-drafting of the prose statement.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHIL and classification is Senior.

Prerequisites: PHIL 497 [Min Grade: D]

PHIL 499 [WI] Senior Essay III: Defense 3.0 Credits

Individual Supervision. Defense of the senior essay thesis before the philosophy faculty and fellow senior philosophy majors. Written replies to main criticisms as determined by the faculty supervisor. Final submission of senior essay.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHIL and classification is Senior.

Prerequisites: PHIL 498 [Min Grade: D]

PHIL I199 Independent Study in PHIL 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL I299 Independent Study in PHIL 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL I399 Independent Study in PHIL 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL I499 Independent Study in PHIL 1.0-12.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL T180 Special Topics in Philosophy 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL T280 Special Topics in Philosophy 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL T380 Special Topics in Philosophy 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHIL T480 Special Topics in Philosophy 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Philosophy, Politics and Economics

Courses

PPE 101 Introduction to Philosophy, Politics and Economics 3.0 Credits

This course introduces the interdisciplinary major Philosophy, Politics and Economics in two ways: it examines ways of thinking, speaking and researching in each of the three component disciplines, and it applies these overlapping approaches to a set of complex real-world problems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PPE 450 Senior Seminar in Philosophy, Politics and Economics 4.0 Credits

In this capstone seminar course students will use the tools of philosophy, political science, and economics to construct arguments in evaluating and criticizing proposals, methods, and explanations in the three fields, drawing upon each as appropriate. Topics for each term will be chosen by the instructor and may include proposals or instances of public policy, economics, or politics, or particular perspectives, theories, or methods drawn from any of the three fields.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: PPE 101 [Min Grade: C]

PPE I299 Independent Study in Philosophy, Politics and Economics 3.0-4.0 Credits

Independent research directed by a faculty member.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PPE I399 Independent Study in Philosophy, Politics and Economics 3.0-4.0 Credits

Independent research directed by a faculty member.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PPE I499 Independent Study in Philosophy, Politics and Economics 3.0-4.0 Credits

Independent research directed by a faculty member.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PPE T280 Special Topics in Philosophy, Politics and Economics 3.0-4.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PPE T380 Special Topics in Philosophy, Politics and Economics 3.0-4.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PPE T480 Special Topics in Philosophy, Politics and Economics 3.0-4.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Photography

Courses

PHTO 110 Photography 3.0 Credits

Lecture-laboratory course in black and white photography. With a combination of lectures, assignments and group critiques, students learn to see photographically through an exploration of the basic tools, techniques and aesthetics of photography. For PHTO Majors, a manual 35mm film camera is required. For PHTO Minors & non-majors a digital point and shoot camera or DSLR, 16 megapixels or greater is required. Cameras that are capable of shooting in RAW format are strongly recommended.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PHTO 120 Film Photography I 3.0 Credits

A lecture-laboratory course in black-and-white photography. This class works to develop visual literacy and a comprehensive understanding of the camera and darkroom.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO.

PHTO 140 Digital Photography I 4.0 Credits

The objective of this course is to give you an introduction to the technical skills necessary to use computers, equipment, and software as a means of visually communicating your photographic ideas.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 110 [Min Grade: D]

PHTO 141 Digital Photographic Post Production 3.0 Credits

This course is an introduction to the manipulation and output of files using Photoshop and Lightroom. Skills acquired include working with RAW files, density, contrast and color correction, basic retouching, compositing of image, type and color elements along with special effects and output via inkjet printer. A digital point and shoot camera or DSLR, 16 megapixels or greater is required that is capable of shooting in RAW file format.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PHTO 210 Intermediate Photography 3.0 Credits

Continues the aesthetic and technical investigations of black and white photography begun in PHTO 110 through a mix of lectures, slide discussions, analytical and creative projects, and group critiques. For PHTO Majors, a manual 35mm film camera is required. For PHTO Minors & non-majors a digital point and shoot camera or DSLR, 16 megapixels or higher is required. Cameras that are capable of shooting in RAW format are strongly recommended.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 110 [Min Grade: D]

PHTO 220 Film Photography II 3.0 Credits

Continues the aesthetic and technical investigations of black and white film photography begun in PHTO 120 through a mix of lectures, slide discussions, analytical and creative projects, and group critiques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 120 [Min Grade: D]

PHTO 224 Studio Lighting Techniques 3.0 Credits

This course introduces studio photography practices with a focus on creating a portfolio. Continues utilization of the digital camera. Examines augmenting available light, and artificial lighting techniques. Provides basic approaches to studio photography and how to apply them outside the studio with available materials.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 110 [Min Grade: D] or PHTO 141 [Min Grade: D]

PHTO 225 Looking at Photographs 3.0 Credits

Millions of photographic images are produced every day. How do we sort through all those images and make sense of them? This course investigates the many ways photographs inform culture, as well as the means with which culture influences the images we create and absorb every day. We examine common themes and techniques that are used in all aspects of contemporary photography and investigate their origins. The course challenges and sharpens each student's ability to read photographs, greatly enhancing their visual literacy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PHTO 230 Color Photography I 3.0 Credits

This course will introduce students to the foundations of color photography. It is a lecture-laboratory course that combines the visual, technical, and communicative properties of color photography with comprehensive color digital workflow experience. Students will begin to master the techniques of properly color balancing their prints and develop a sense of how to use color. It is important to grasp the foundations of color photography, but it is equally important to understand the aesthetic implications that using color entails.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 210 [Min Grade: D]

PHTO 233 Large Format Photography 4.0 Credits

Provides a thorough exploration of large-format camera techniques and large-format film exposure/development techniques including the zone system. Introduces the aesthetic of the large-format black-and-white photograph and expands the student's vision of the potential of the photographic image.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 220 [Min Grade: D]

PHTO 234 Studio Photography 4.0 Credits

Introduces professional studio photography practices. Continues utilization of the digital camera. Examines artificial lighting techniques and provides context for exploration of the studio as a creative photographic environment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 110 [Min Grade: D] and PHTO 210 [Min Grade: D]

PHTO 236 Photojournalism 3.0 Credits

Approaches the subject of photojournalism through lectures on its history and current practices and through application. Considers the documentary genre of photography in general.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 210 [Min Grade: D] or PHTO 240 [Min Grade: D] or PHTO 140 [Min Grade: D]

PHTO 240 Digital Photography II 3.0 Credits

Explores the digital image within the context of photographic practice. Examines current capabilities and future potentials in image capture, manipulation, output, and dissemination. Projects include utilization of image-manipulation programs, direct digital cameras, and hybrid film/digital approaches. Addresses aesthetic, conceptual, and professional issues.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 210 [Min Grade: D] and PHTO 141 [Min Grade: D]

PHTO 253 Fine Black & White Printing 3.0 Credits

Explores the aesthetic of the fine black-and-white print, including issues of print scale, tonality, surface quality, toning, and archival techniques. Uses zone-system analysis to optimize the relationship of the negative and the print.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 220 [Min Grade: D]

PHTO 275 [WI] History of Photography I 3.0 Credits

Provides an overview of the history of photography from 1839 to approximately 1930, including technological developments, aesthetic trends, theoretical and philosophical understandings, and effects on society and culture at large.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PHTO 276 [WI] History of Photography II 3.0 Credits

Provides an overview of the history of photography from approximately 1930 to the present, including technological developments, aesthetic trends, theoretical and philosophical understandings, and effects on society and culture at large.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 275 [Min Grade: D]

PHTO 291 Internship 0.5-12.0 Credits

Incorporates a nonpaying internship in the field of photography for academic credit. An initial informational sheet on the internship and a final paper on the experience are required. May be repeated for credit. Department permission required.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is PHTO.

PHTO 334 Advanced Studio Photography 4.0 Credits

An advanced studio photography class that will teach the student the workflow associated with high-end digital studio capture. The class will also cover various advanced studio lighting techniques. The development of a personal portfolio of work produced in the studio will be required by all students.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO.

Prerequisites: PHTO 234 [Min Grade: D]

PHTO 335 Portraiture 3.0 Credits

This course is devoted to the development of a single project. The course will deal in depth with issues of format, lighting and composition. The course will address ethical and legal matters in photographic portraiture. An overview of the history of photographic portrait will be covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 230 [Min Grade: D] and PHTO 233 [Min Grade: D] and PHTO 236 [Min Grade: D] and PHTO 253 [Min Grade: D]

PHTO 340 Digital Photography III 4.0 Credits

This class will build on intermediate Photoshop skills while exploring the new field of building a photographic image by using more than one frame or multiple elements. Students will be expected to produce a body of work using the skills learned. Large format printing will be stressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Junior or Senior.

Prerequisites: PHTO 141 [Min Grade: D] and PHTO 240 [Min Grade: D]

PHTO 361 Advanced Photography 4.0 Credits

Extends study and experimentation in studio, color, and historical photography. Examines non-silver and non-traditional photographic technologies.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO.

Prerequisites: PHTO 233 [Min Grade: D] and PHTO 253 [Min Grade: D]

PHTO 392 Junior Project in Photography 3.0 Credits

Integrates the technical and conceptual understandings that the student has acquired in photography through development of a personally defined photographic project. Students will meet in weekly seminars to plan, discuss, and critique in-progress work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Junior.

Prerequisites: PHTO 234 [Min Grade: D] and PHTO 233 [Min Grade: D] and PHTO 236 [Min Grade: D]

PHTO 451 Photography and Business 3.0 Credits

Seminar course with invited professionals from the photographic and business fields. Helps prospective photographers understand legal aspects of photography, freelance business practices, and potential employment possibilities and expectations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 233 [Min Grade: D] and PHTO 234 [Min Grade: D] and PHTO 240 [Min Grade: D]

PHTO 452 [WI] History of Contemporary Photography 3.0 Credits

The course will focus on aesthetic and conceptual development in contemporary photographic practice. Through lectures, field trips and in-class discussions, students will learn concepts and visual trends employed in photography since 1970. Topics covered include 19th and 20th century influences, multi-cultural interpretation of genres, new approaches to representation of self.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 275 [Min Grade: D] and PHTO 276 [Min Grade: D]

PHTO 453 Photography Production 3.0 Credits

The objective of this course is to introduce prospective photographers to production practices. Topics covered will include the varied roles of a photographer/director, production elements, treatment writing, roles of production crews, interpreting layouts and concepts, and approaches to production in contemporary times.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Senior.

Prerequisites: PHTO 451 [Min Grade: D]

PHTO 455 Landscape Photography 3.0 Credits

This class is designed to explore the rich tradition and history of the landscape photograph and how to visually translate the contemporary landscape.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is PHTO and classification is Junior or Senior.

Prerequisites: PHTO 233 [Min Grade: D]

PHTO 456 Fashion Photography 3.0 Credits

The objective of this course is for students to become familiar with both the aesthetics and techniques involved in the production of fashion photographs. In addition, the history of fashion photography will be covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Junior or Senior.

Prerequisites: PHTO 234 [Min Grade: D] and PHTO 334 [Min Grade: D]

PHTO 457 Palladium Printing 3.0 Credits

This class explores the technical and aesthetic aspects of the 19th century, hand-coated palladium and platinum printing processes. Students will use large format negatives to produce a body of work. This course will include hand-coating techniques, paper and chemistry options.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Junior or Senior.

Prerequisites: PHTO 233 [Min Grade: D] and PHTO 361 [Min Grade: D]

PHTO 458 Print and Web Portfolio Development 3.0 Credits

This course is designed to prepare students to enter the commercial market. Topics covered will include the definition and marketing of personal visual style, identity and cohesion, and contemporary self-promotion practices.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Senior.

Prerequisites: PHTO 451 [Min Grade: D] and PHTO 453 [Min Grade: D]

PHTO 459 Marketing for Photographers 3.0 Credits

The objective of this course is to give students practical skills about marketing, design, and production of materials you will need as a photographer. Discussions and demonstrations will show you how to use print, web, and other technologies to promote your photography.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Junior or Senior.

Prerequisites: PHTO 451 [Min Grade: D]

PHTO 492 Senior Thesis in Photography I 3.0 Credits

Integrates the technical and conceptual understandings that the student has acquired in photography through development of a personally defined photographic project. Students will meet in weekly seminars to plan, discuss, and critique in-progress work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 392 [Min Grade: D]

PHTO 493 Senior Thesis in Photography II 3.0 Credits

Integrates the technical and conceptual understandings that the student has acquired in photography through development of a personally defined photographic project. Students will meet in weekly seminars to plan, discuss, and critique in-progress work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 492 [Min Grade: D]

PHTO 495 Senior Thesis in Photography III 3.0 Credits

Integrates the technical and conceptual understandings that the student has acquired in photography through development of a personally defined photographic project. Students will meet in weekly seminars to plan, discuss, and critique in-progress work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PHTO and classification is Senior.

Prerequisites: PHTO 492 [Min Grade: D] and PHTO 493 [Min Grade: D]

PHTO 496 Exhibition 3.0 Credits

This course is devoted to the final development of your senior thesis project. We will be preparing your work for the final senior thesis exhibition. This will include the final selection of work, sequencing, printing and framing of the work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PHTO 493 [Min Grade: D]

PHTO I199 Independent Study in Photography 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO I299 Independent Study in Photography 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO I399 Independent Study in Photography 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO I499 Independent Study in Photography 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO T180 Special Topics in Photography 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO T280 Special Topics in Photography 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO T380 Special Topics in Photography 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PHTO T480 Special Topics in Photography 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Physics

Courses

PHYS 100 Preparation for Engineering Studies 4.0 Credits

This is a basic mathematics foundational course to prepare the students for the beginning sequence of Engineering Physics. Topics include: simultaneous equations, fundamentals of plane and solid geometry, use of trigonometric functions and vectors and translational kinematics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 080

PHYS 101 Fundamentals of Physics I 4.0 Credits

First of a three-course physics sequence introducing mechanics to engineering and science majors. Topics include: Translational kinematics of particles in one and two dimensions. Inertial and non-inertial frames, Newton's laws of motion, force, energy and momentum. Concepts of conservation of energy and momentum. Rotational kinematics and dynamics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (APPH50 P or PHYS 100 [Min Grade: D] or APC 070) and (MATH 121 [Min Grade: C-] or MATH 117 [Min Grade: C-])

Corequisite: EXAM 080

PHYS 102 Fundamentals of Physics II 4.0 Credits

Second of a three-course physics sequence introducing electricity and magnetism to engineering and science majors. Topics include: Electrostatics, Coulomb's law, electric field and flux, and Gauss's law. Electric potential and potential energy and capacitors. Charges in motion, voltage and current measurements. Direct current circuit analysis using Ohm's law and Kirchhoff's rules. Sources of magnetic fields, concepts of magnetic flux and electromagnetic induction.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 101 [Min Grade: D]

Corequisite: EXAM 080

PHYS 105 Computational Physics I 3.0 Credits

Introduces computational physics. Covers analytical and numerical solutions of equations governing the behavior of physical systems. Includes the use of C/C++ and Python programming methods to solve selected problems. Introduces UNIX, X-windows, programming languages, and visualization and data analysis tools for problems in computational physics. Introduces elementary programming concepts as needed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 113 [Min Grade: D] or PHYS 101 [Min Grade: D]) and (CS 171 [Min Grade: D] or CS 143 [Min Grade: D] or ENGR 131 [Min Grade: D])

PHYS 107 Acoustics 3.0 Credits

Covers the theory describing sound, behavior and sound waves, resonance and harmonics, frequency analysis, electronic production of sound, sound perception by the human ear, sound recording and reproduction, and room acoustics. Emphasis will be placed on understanding how sound operates in the physical world and how our ears respond to it.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 113 Contemporary Physics I 5.0 Credits

Part I in an introductory physics sequence for majors. This course combines the traditional lecture/lab format with real-time numerical simulations designed by the students. Topics include: the fundamental forces, Newton's laws, the atomic nature of matter, work and energy, light, friction, and atomic nuclei.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: MATH 121

PHYS 114 Contemporary Physics II 5.0 Credits

Part II in an introductory sequence for majors. This course combines the traditional lecture/lab format with real-time numerical simulations designed by the students. Topics include: angular momentum, entropy, gas dynamics, electric fields, electricity and matter, and electric potential.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 121 [Min Grade: D] (Can be taken Concurrently) and PHYS 113 [Min Grade: D]

PHYS 115 Contemporary Physics III 5.0 Credits

Part III in an introductory sequence for majors. This course combines the traditional lecture/lab format with real-time numerical simulation designed by the students. Topics include: magnetic fields, electronics, radiation, waves and particles, and an introduction to semiconductor devices.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: D] (Can be taken Concurrently) and PHYS 114 [Min Grade: D]

PHYS 128 Introduction to Experimental Physics 3.0 Credits

This course will give students an introduction to all aspects of experimental physics, including experiment theory, laboratory techniques, data analysis, scientific writing, literature research, and presentations. Students are required to perform experiments in physics, such as the Millikan oil-drop experiment, the photoelectric effect measurement, the Michelson interferometer experiment, and radioactivity and spectroscopy measurements. Students are also required to write detailed laboratory reports and give an oral presentation. Students should anticipate a significant amount of writing in this course.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 113 [Min Grade: D] (Can be taken Concurrently)

PHYS 131 Survey of the Universe 3.0 Credits

Provides an overview of modern astronomy, including the scientific method; telescopes; stars and star clusters; stellar evolution; galaxies and the large-scale structure of the universe; and the Big Bang. May also include periodic visits to the university observatory.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 151 Applied Physics 3.0 Credits

Non-calculus-based introductory physics for business majors. Covers basic mechanics and simple harmonic motion, followed by an introduction to more advanced topics such as relativity, electromagnetism, and quantum phenomena.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 152 Introductory Physics I 4.0 Credits

First part of a three-course algebra-based sequence providing a comprehensive introduction to Physics. Covers basic mechanics, including motion in 1, 2, and 3 Newton's laws, gravitation, energy, momentum, rotational motion and elastic properties of materials. Includes labs to enrich class material. High school physics not required.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: EXAM 081

PHYS 153 Introductory Physics II 4.0 Credits

Second part of a three-course algebra-based sequence providing a comprehensive introduction to Physics. Covers fluids, vibrations, waves, sound, heat and thermodynamics, geometrical optics and optical instrumentation. Includes labs to enrich class material.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 152 [Min Grade: D] or PHYS 101 [Min Grade: D]

Corequisite: EXAM 081

PHYS 154 Introductory Physics III 4.0 Credits

Third part of a three-course algebra-based sequence providing a comprehensive introduction to Physics. Covers fundamentals of electricity and magnetism, including charges, fields, potential, circuits, magnetic induction, electromagnetic waves, special relativity, and physical optics. Includes labs to enrich class material.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 101 [Min Grade: D] or PHYS 152 [Min Grade: D]

Corequisite: EXAM 081

PHYS 160 Introduction to Scientific Computing 3.0 Credits

Basic introduction to scientific problem solving and numerical modeling of physical system using Excel and Maple.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 170 Electricity and Motion 3.0 Credits

With an interactive lecture format and an inquiry-based student-centered recitation, "Electricity and Motion" will give a conceptual introduction to topics in physics such as motion, forces, electricity, and magnetism. Students will complete an interdisciplinary, real-world project that will relate their specific major to an area of physics. Students will also be able to solve one-step algebra problems and conceptually describe topics in physics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 171 Computational Lab for Electricity and Motion 1.0 Credit

Students will experiment with computational methods as they relate to physics topics such as motion, forces, electricity, and magnetism using tools such as Excel, Python, code.org, and Blockscad.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: PHYS 170

PHYS 172 Experimental Lab for Electricity and Motion 1.0 Credit

Students will experiment with real world materials as they relate to physics topics such as motion, forces, electricity, and magnetism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: PHYS 170

PHYS 175 Light and Sound 3.0 Credits

With an interactive lecture format and an inquiry-based student-centered recitation, this course will give a conceptual introduction to topics in physics such as waves, sound, light, and color. Students will complete an interdisciplinary, real-world project that will relate their specific major to an area of physics. Students will also be able to solve one-step algebra problems and conceptually describe topics in physics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 176 Computational Lab for Light and Sound 1.0 Credit

Students will experiment with computational methods as they relate to physics topics such as waves, sound, light, and color using tools such as Excel, Python, code.org, and Blockscad.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: PHYS 175

PHYS 177 Experimental Lab for Light and Sound 1.0 Credit

Students will experiment with real world materials as they relate to physics topics such as waves, sound, light, and color.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Corequisite: PHYS 175

PHYS 181 Astronomy 3.0 Credits

Provides an overview of modern astronomy, including the scientific method; telescopes; stars and star clusters; stellar evolution; galaxies and the large-scale structure of the universe; and the Big Bang. May also include periodic visits to the university observatory.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHYS 182 Applied Physics I 3.0 Credits

Covers vectors; statics, kinematics, and classical dynamics, including Newton's laws, torque, projectile motion, and circular motion; work; power and energy; impulse and momentum; and rotation, in a non-calculus-based course. Fall.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 183 [Min Grade: D] or MATH 101 [Min Grade: D] or MATH 102 [Min Grade: D] or MATH 173 [Min Grade: D]

PHYS 183 Applied Physics II 3.0 Credits

Covers fluids; elasticity; vibration, including simple harmonic motion; sound waves and acoustics; thermodynamics of temperature; heat; thermal-expansion; phase change; and heat transfer, in a non-calculus-based course. Winter.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 182 [Min Grade: D]

PHYS 184 Applied Physics III 3.0 Credits

Covers light and illumination, electrostatics, potential, direct-current electrical circuits, magnetic fields, induction, generators, motors, and AC circuits, in a non-calculus-based course. Spring.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 183 [Min Grade: D]

PHYS 185 Fundamentals of Physics Lecture I 3.0 Credits

First of a three course sequence teaching fundamental physics to engineering and science majors. Topics include: description of motion, inertial and non-inertial frames, special relativity, Newton's Laws, translational and rotational equilibrium, one- and two-dimensional motion, fundamental forces, inverse square laws, Gauss' Law, Bohr's quantization, rotational dynamics, potential energy, black holes, determinism and chaos.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 121 [Min Grade: D]

PHYS 186 Physics I-A 1.0 Credit

A companion course for PHYS 185. Students will perform experiments related to Mechanics. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 185 [Min Grade: D] (Can be taken Concurrently)

PHYS 188 Physics II-A 1.0 Credit

A companion course for PHYS 189. Students will perform experiments related to Electricity and Magnetism. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 189 [Min Grade: D] (Can be taken Concurrently)

PHYS 189 Fundamentals of Physics Lecture II 3.0 Credits

Second of a four course sequence teaching fundamental physics to engineering and science majors. Topics include: electrostatics, capacitors, charges in motion, insulators, semiconductors, voltage and current measurements, magnetism, electromagnetic induction, magnetic materials, quantum dots, magnetic resonance phenomenon.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 185 [Min Grade: D]

PHYS 201 Fundamentals of Physics III 4.0 Credits

Third of the three-course physics sequence introducing waves, relativity, and quantum mechanics to engineering and science majors. Topics include: Maxwell's equations, electromagnetic waves, interference and diffraction of electromagnetic waves. Introduction to special theory of relativity. De Broglie's wave-particle duality hypothesis, Compton scattering, Heisenberg uncertainty principle, and Schrodinger's equation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 102 [Min Grade: D] and MATH 122 [Min Grade: D]

Corequisite: EXAM 081

PHYS 217 Thermodynamics 4.0 Credits

Covers macro-thermodynamics: temperature, pressure, work, heat, equations of state, the first and second laws of thermodynamics and their applications, heat engines and refrigerators, thermodynamics potentials, Maxwell relations, theory of phase changes, kinetic theory and transport phenomena.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: MATH 200 [Min Grade: D] (Can be taken Concurrently) or (PHYS 114 [Min Grade: D] or PHYS 201 [Min Grade: D])

PHYS 226 Instrumentation for Scientists I 3.0 Credits

Introduces measurement concepts, including a systems approach to analog and digital measurement, amplification and feedback, electrical data domains, measurements of varying analog signals, time domain measurements and conversions, and A/D and D/A conversions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHYS 227 Instrumentation for Scientists II 3.0 Credits

Covers optimization of scientific measurements, including systems analysis, signal/noise, control of frequency response, modulation and demodulation, relation of sampling parameters to signal characteristics, and signal-to-noise ratio enhancement.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 226 [Min Grade: D]

PHYS 231 Introductory Astrophysics 3.0 Credits

An introductory astrophysics course aimed at science majors. Topics include a treatment of orbits, Kepler's laws, celestial coordinates, light, blackbodies, optics, stellar structure and evolution, galactic formation, and large scale evolution and structure of the universe.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PHYS 101 [Min Grade: D] or PHYS 113 [Min Grade: D]) and MATH 121 [Min Grade: D]

PHYS 232 Observational Astrophysics 3.0 Credits

Covers photometric and spectroscopic properties of stars, galaxies, and quasars and fundamental astrophysics of these objects. The course contains a significant lab component, which includes training in methods of observation, using the Joseph Lynch Observatory on campus to obtain astronomical measurements, and analysis of data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 113 [Min Grade: D] and MATH 121 [Min Grade: D]

PHYS 233 Introduction to Relativity 3.0 Credits

This course covers foundational concepts in Einstein's Special Theory of Relativity, including the unification of space-time, transformations between inertial frames, relativity of simultaneity, length contraction and time dilation, and transformation between energy and momentum. Introductory concepts in General Relativity will be discussed, including space curvature and weak gravitational fields.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 113 [Min Grade: D] or PHYS 101 [Min Grade: D]) and MATH 122 [Min Grade: D]

PHYS 262 Introduction to Biophysics 3.0 Credits

This is an introductory course to the wide field of Biophysics. The intended audience is undergraduate physics majors. However, the level and approach is also accessible to undergraduates from other concentrations, including Chemistry and Biology. Students will learn the basic principles behind cells, thermodynamics and statistical mechanics applied to cellular environments, forces affecting conformation of biological molecules, protein and nucleic acid biophysics, membrane biophysics, and basic physics principles behind nerve impulses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 115 [Min Grade: D] or PHYS 201 [Min Grade: D])

PHYS 280 Fundamentals of Physics Lecture III 3.0 Credits

Third of a three course sequence teaching fundamental physics to engineering and science majors. Topics include: oscillations, EM waves, interference, diffraction, wave-particle duality, energy-matter equivalence, uncertainty relations, Schrodinger's equation, Hydrogen atom, laser, and nuclear physics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 102 [Min Grade: D] or PHYS 189 [Min Grade: D]

PHYS 282 Fundamentals of Physics Laboratory III 1.0 Credit

A companion course for PHYS 280. Students will perform experiments related to Thermodynamics and modern physics. Some or all pre-requisites may be taken as either a pre-requisite or co-requisite. Please see the department for more information.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 280 [Min Grade: D] (Can be taken Concurrently)

PHYS 305 Computational Physics II 3.0 Credits

Covers the application of computational techniques to problems in physics, including numerical solution of differential equations, computation and display of particle trajectories in arbitrary potentials, introduction to non-linear dynamics, random numbers and Monte-Carlo methods, and numerical implementation of selected methods in mathematical physics. Emphasizes hands-on experience in problem-solving, using both Maple and C.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 105 [Min Grade: D]

PHYS 311 Classical Mechanics I 4.0 Credits

An intermediate treatment of classical mechanics and dynamics. Topics will include central forces, oscillatory motion, Lagrangian and Hamiltonian mechanics, phase space, and collisions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PHYS 113 [Min Grade: D] or PHYS 101 [Min Grade: D]) and MATH 200 [Min Grade: D]

PHYS 312 Classical Mechanics II 4.0 Credits

Covers motion of system of particles, center of mass and conservation of linear momentum, description of collisions, Rutherford scattering, dynamics of rigid bodies, coordinate systems, the restricted three-body problem, generalized coordinates, Lagrange's equations and Hamilton's equations, and rotation of frame.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 311 [Min Grade: D]

PHYS 317 Statistical Mechanics 3.0 Credits

Covers distribution molecular velocities, transport phenomena, Maxwell-Boltzmann statistics, and quantum statistics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PHYS 217 [Min Grade: D] or CHEM 253 [Min Grade: D] or ENGR 210 [Min Grade: D]) and MATH 200 [Min Grade: D]

PHYS 321 Electromagnetic Fields I 4.0 Credits

Covers fields due to specified charge distributions, Gauss' law, multipole expansion of the fields, Laplace's equation, method of images, dielectrics, and energy of an electrostatic field.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 115 [Min Grade: D] or PHYS 102 [Min Grade: D]

PHYS 322 Electromagnetic Fields II 4.0 Credits

Covers electric current, continuity equation, electromotive forces, magnetic fields, electromagnetic induction, magnetic properties of matter, Maxwell's equations, radiation, and radiation by moving charges.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 321 [Min Grade: D]

PHYS 324 Topics in Mathematical Physics 3.0 Credits

This course presents the mathematical background needed for Thermodynamics, Classical Mechanics, Electricity & Magnetism, and Quantum Mechanics using the theory of linear vector spaces and the standard tools of elementary mathematical physics. Emphasis will be placed on the use of analytic and numerical programming techniques, using Maple, FORTRAN and C.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: MATH 122 [Min Grade: D]

PHYS 325 Computational Physics III 3.0 Credits

This is the third course in the Computational Physics sequence. It presents basic scientific programming techniques and problem-solving strategies, as applied to problems in electromagnetic theory and quantum mechanics. This hands-on focuses primarily on the solution of partial differential equations in physics, Monte-Carlo methods, and matrix methods, and includes solutions of Laplace's, Poisson's and Maxwell's equations, fields due to moving charges, Fast Fourier Transforms, and solutions of the time-independent and time-dependent Schrodinger equation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 105 [Min Grade: D]

PHYS 326 Quantum Mechanics I 4.0 Credits

Explores the classical foundations of quantum mechanics, the Schrodinger equation, solutions of one-dimensional problems, and the one-dimensional harmonic oscillator.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 311 [Min Grade: D] and MATH 210 [Min Grade: D]

PHYS 327 Quantum Mechanics II 4.0 Credits

Covers the three-dimensional Schrodinger equation, angular momentum, matrix mechanics, the hydrogen atom, and perturbation theory.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 326 [Min Grade: D]

PHYS 328 [WI] Advanced Laboratory 3.0 Credits

Requires students to perform advanced laboratory experiments in the various fields of physics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 223 [Min Grade: D] or PHYS 128 [Min Grade: D]

PHYS 330 Introduction to Nuclear Physics 2.0 Credits

Provides an overview of nuclear physics; including nuclear structure; nuclear stability; radioactivity and nuclear decay; nuclear forces and interactions; fission and fusion; and the interaction of particles with matter. A small amount of quantum mechanics will be included.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (PHYS 115 [Min Grade: D] or PHYS 201 [Min Grade: D]) and (MATH 210 [Min Grade: D] or ENGR 232 [Min Grade: D])

PHYS 405 Advanced Computational Physics 3.0 Credits

Covers the application of computational techniques to one or more research topics of current interest, including grid-based solutions of partial differential equations in one and two dimensions and particle methods in fluid mechanics. Introduces high-performance computation and massively parallel computing platforms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: PHYS 305 [Min Grade: C]

PHYS 408 Physics Seminar 1.0 Credit

Requires participation in weekly departmental colloquium.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 3 credits

Restrictions: Can enroll if major is PHYS and classification is Senior.

PHYS 428 Quantum Mechanics III 4.0 Credits

Advanced topics in quantum mechanics including spin, addition of angular momentum, scattering theory, relativistic quantum mechanics, atoms and molecules, and radiation from atoms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 327 [Min Grade: D]

PHYS 431 Galactic Astrophysics 3.0 Credits

This course presents an introduction to the processes responsible for the formation, structure, evolution, and present-day appearance of the Milky Way and other galaxies. Using the Milky Way Galaxy as a guide, we will develop analytical and numerical tools to help us understand of the properties of these magnificent objects, near and far. Topics will include stars, stellar formation, and stellar evolution, galactic structure and dynamics, and galaxy formation and evolution.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 311 [Min Grade: D]

PHYS 432 Cosmology 3.0 Credits

Covers cosmological models, age and distance scales in the universe, the hot big bang, primordial nucleosynthesis, inflation, baryonic and non-baryonic matter, galaxy formation and evolution, dynamics of structure formation, statistics of cosmological density fields, and cosmic background fluctuations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 311 [Min Grade: D]

PHYS 433 General Relativity 3.0 Credits

Covers particle and field dynamics in general relativity, tensor calculus, and develops and solves Einstein's field equations. Particular solutions considered will include black holes, gravitational waves, and cosmological solutions to general relativity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 321 [Min Grade: C-] or PHYS 233 [Min Grade: C-]

PHYS 440 Big Data Physics 3.0 Credits

This course provides the framework for physics students at all levels to begin interacting with large data sets in physics. Data analysis will be done using Python tools, including standard libraries for machine learning. Practical application of classification and regression techniques for both unsupervised and supervised data are emphasized, in addition to dimensionality reduction techniques and time-domain analysis. An introduction to statistical methods, Bayesian inference, and Markov-chain Monte Carlo methods provide a foundation for application of machine learning tools.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 115 [Min Grade: D] or CS 171 [Min Grade: D]

PHYS 452 Solid State Physics 3.0 Credits

Atomic basis of the physical properties of materials, including crystalline and non-crystalline solids. Detailed introductory treatment of the structural, vibrational, and electronic properties of solid and their inter-relationships. Overview of other materials, properties, and scientific basis of technological applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 317 [Min Grade: D] and PHYS 326 [Min Grade: D]

PHYS 453 Nanoscience 3.0 Credits

Scientific basis of nanoscale materials and systems including discussions of low-dimensional structures and their physical properties, the self-assembly of nanostructures, applications in various fields of science and technology, and techniques for fabrication and characterization on the nanoscale.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 321 [Min Grade: D], PHYS 326 [Min Grade: D] (Can be taken Concurrently) and PHYS 311 [Min Grade: D] and PHYS 217 [Min Grade: D]

PHYS 461 Biophysics 3.0 Credits

A one course introduction to biological physics. Topics may include: structure of biomolecules, protein stability, electron transfer, protein folding, protein substrates, allostery, and self-assembly. No biological background is presumed.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 3 credits

Prerequisites: PHYS 317 [Min Grade: D]

PHYS 462 Computational Biophysics 3.0 Credits

This course involves mathematical applications of biological simulations. Using classical and statistical mechanics, we will cover topics including atomic scale simulations, statistical sampling and models of molecular cellular systems and living processes.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 105 [Min Grade: D] and PHYS 217 [Min Grade: D] and MATH 210 [Min Grade: D]

Corequisite: PHYS 321

PHYS 476 Particle Physics 3.0 Credits

This course will provide an introduction to the physics of fundamental particles. Topics including the fundamental forces, quarks and leptons, Feynman diagrams, symmetries and conservation laws, relativistic kinematics, bound states, and experimental methods.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: PHYS 327 [Min Grade: D]

PHYS 479 The Standard Model 3.0 Credits

This class will focus on classical fields in general, as well as the relationship between classical and quantum fields. It will include discussions of special relativity, group theory, and simple Lie groups, as well as the theoretical development of electromagnetism, the weak, and strong forces. The course will develop electroweak unification in particular, and unified theories in general. It will conclude with a discussion of Grand Unified Theories.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PHYS 327 [Min Grade: C-] or CHEM 355 [Min Grade: C-] or MATE 351 [Min Grade: C-]

PHYS 485 Research 0.0-3.0 Credits

Covers research problems in physics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PHYS 491 Senior Research I 3.0 Credits

A three-term sequence devoted to theoretical or experimental activities in a specific area of physics or atmospheric science to be chosen in consultation with a faculty adviser. Requires students to learn to identify interesting problems, develop a plan of attack, and carry the project to completion. Requires written and oral report at the end of the third term.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

PHYS 492 Senior Research II 3.0 Credits

Continues PHYS 491.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 491 [Min Grade: D]

PHYS 493 [WI] Senior Research III 3.0 Credits

Continues PHYS 492.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PHYS 492 [Min Grade: D]

PHYS I199 Independent Study in PHYS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS I299 Independent Study in PHYS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS I399 Independent Study in PHYS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS I499 Independent Study in PHYS 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS T180 Special Topics in Physics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS T280 Special Topics in Physics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS T380 Special Topics in Physics 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PHYS T480 Special Topics in Physics 0.0-12.0 Credits

Covers selected topics in physics. May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Physics - Environmental Science

Courses

PHEV 145 Weather I: Climate and Global Change 4.0 Credits

Introduction to the Earth's atmosphere and climate system including the structure and interaction of the components of this system. Students learn basic meteorological ideas and concepts. Special topics include weather satellite and Doppler radar imagery, daily weather discussions, the greenhouse effect and ozone depletion.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PHEV 146 Weather II: Analysis and Forecasting 4.0 Credits

Course covers real problems of weather analysis and forecasting. Components focus on surface and upper-air weather maps, westerlies and the jet stream, mid-latitude cyclones, thunderstorms, tornadoes and hurricanes. Special topics include weather instruments and observations, atmospheric optics and climate analyses.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Political Science

Courses

PSCI 100 Introduction to Political Science 4.0 Credits

Studies the political process, which determines who gets what, when, and how in society.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 110 American Government 4.0 Credits

Introduces the elements of the American political system.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 120 History of Political Thought 4.0 Credits

Introduces the Western tradition of political thought, examining a selection of works by major political thinkers. Draws on primary sources, with a textual and conceptual emphasis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 131 [WI] Research Design for Political Science 4.0 Credits

Introduction to basic principles of political science research design. Examines the process of formulating research questions in political science, developing theories with testable implications, and hypothesis testing. Students produce a research proposal including research question, literature review, and research design.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 140 Comparative Politics I 4.0 Credits

Examines methods used to compare state political systems with respect to world order values in varying geographic and cultural settings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 150 International Politics 4.0 Credits

Analyzes nation-states in their external relations, including the interaction of the great powers with each other and with emerging areas.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 210 American Political Development 4.0 Credits

Focusing on long-term processes, the course examines state formation, institution-building, institutional competition, and policy-making in the American context. The course provides historical and political background that makes sense of vital present-day issues like national security, racial and ethnic politics, and health care policy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 110 [Min Grade: D]

PSCI 220 Constitutional Law I 4.0 Credits

Introduction to Constitutional law and the federal courts. Examines the emergence of judicial review, the judiciary's role in the system of check and balances, and the powers and limitations on each branch of government.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 110 [Min Grade: D]

PSCI 223 Comparative Political Thought 4.0 Credits

Provides an introduction to comparative political theory by studying non-canonical texts originating both within Europe and the United States and outside those areas, generally in colonized or formerly colonized countries. Specific theories include those of DuBois, Fanon, and Mariategui.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 120 [Min Grade: D]

PSCI 229 Theories of Justice 4.0 Credits

Examines the nature and realization of justice over time, with special attention to the ways that justice has been conceptualized and re-conceptualized over time.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 231 Qualitative and Mixed-Methods Research in Political Science 4.0 Credits

Considers the theoretical and methodological challenges and opportunities associated with qualitative and multi-method research designs. Includes issues of causation, explanation, and inference, as well as practical considerations of specific research designs and methods. The qualitative research designs considered include "small-n" historical case studies and process tracing. Specific techniques include focus groups, structured and semi-structured interviews, oral histories, archival research, participant observation, ethnographic investigations, action research, and the use of memoir and journalistic sources as data.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 232 Quantitative Research Methods in Political Science 4.0 Credits

This course provides students with concepts, principles and tools of quantitative research methodology for political science. Core concepts include quantitative measurement of political topics, survey research, and linear regression analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 240 Comparative Politics II 4.0 Credits

Uses the tools of comparative politics to examine key political issues across democratic and non-democratic countries.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSCI 140 [Min Grade: D]

PSCI 250 American Foreign Policy 4.0 Credits

Examines current issues in American foreign policy, including the assumptions underlying policy goals, the means of achieving them, and the decision-making machinery.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 150 [Min Grade: D]

PSCI 252 Global Governance 4.0 Credits

Introduces students to the theory and practice of international organizations. Focuses on three broad questions: Do international organizations matter? How do they matter? Should they matter? Course begins with an overview of major theoretical perspectives and continues with an examination of the United Nations system and its role in security, development, human rights, global health and environmental politics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 150 [Min Grade: D] or PSCI 140 [Min Grade: D]

PSCI 255 International Political Economy 4.0 Credits

The overarching theme of this course is the process of globalization, the factors leading to a single world economy tied together by technology, trade, and investment, and the factors keeping up independent economic zones and nations in economic competition and sometimes in open political opposition.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 260 [WI] Power in Protest: Social Movements in Comparative Perspective 4.0 Credits

This course considers theoretical approaches to comparative social movements by closely examining evidence about specific movements. Questions include: When and why do people mobilize to make demands against their states and societies? What contextual conditions enable such mobilization, and under what conditions does mobilization decline? Finally, do movements actually matter for bringing about change? This course is designed to gain leverage on these questions by surveying an eclectic literature from international relations and comparative politics.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 140 [Min Grade: D] or PSCI 150 [Min Grade: D]

PSCI 284 Environmental Politics 4.0 Credits

Examines environmental politics, focusing on the United States. Solving environmental problems is not simply a question of using available science and technology; rather, proposals to combat environmental degradation confront political context that may or may not favor the aims of environmental policy. Understanding politics is therefore indispensable for effective environmental problem-solving.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 289 Technology and Politics 4.0 Credits

How do technologies shape politics, and how do human interests produce particular kinds of technologies? This course will examine the life of many different kinds of technologies through the lens of human use, institutional practice, economic interests, policy, and social movements. Case studies will include the data rescue movement, smartphones and surveillance culture, Hurricane Harvey and infrastructure, inclusive/barrier-free design, and the ethics of human enhancement, among other topics. A core part of the course will be learning and developing skill in social science research through fun micro-assignments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 305 Social Development: A Global Approach 4.0 Credits

This course is a general introduction to issues posed by the notions of development and progress of societies. Issues to be discussed include indices of social development, economic growth, and health progress, and their significance in relation to general views on social development and human progress. The concept of standard of living, the human development index, the demographic transition and the gender and political aspects of development will be also discussed. As a general introduction to the issues implied by the relationships between economic progress, population growth, health, and politics, as major concepts involved in the notion of social development, the course has links with demography, sociology, history of political thought, economics, anthropology, and the health sciences.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 310 Civilians in Armed Conflict 4.0 Credits

What happens to civilians in times of war? What are the responsibilities of militaries and rebel groups to people under their control -- and do they meet them? Who counts as a "civilian," anyway? This course considers these questions and more. We examine the definition and causes of armed conflict, before turning to key issues such as civilian coping strategies during armed conflict, common patterns of violence against civilians, legal and policy remedies for human rights violations, and the politics of human rights advocacy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 313 State & Local Government 4.0 Credits

Examines major political, social, and economic problems of state, local, and metropolitan governments.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 320 The United States Congress 4.0 Credits

An overview of politics and policy-making in the US Congress. Topics include: How are laws really made? What determines who is elected to Congress, and who leads once members are in place? How much does money matter in Congressional politics? How effective is Congress at passing legislation, and how effective is the legislation that eventually passes?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSCI 110 [Min Grade: D]

PSCI 321 The United States Presidency 4.0 Credits

This course is designed to introduce the student to the concepts, principles, and history of the United States Presidency. Emphasis will be directed toward the concepts in the social sciences and political science in particular. In addition to lectures, there will also be a number of scholarly and general publication readings, films, and slide presentations for the course. A variety of exercises to enhance the course experience will be employed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 324 Feminist Political Theories 4.0 Credits

While the last three decades (at least) could be characterized as fundamentally challenging for feminist thought and practice, more than ever, feminist praxis is needed to critique and oppose systematic oppression, and build new structures, relations, and practices that can create a more justice, equitable world -- all the while critically examining the shifting terrains of power. This course will examine a selection of themes and topics in feminist theory and research, including violence against women, black feminist thought, transnational feminism, trans rights, and heterosexism, among others. Language, borders, economic inequity, and racism are key levers of power that we will explore in-depth.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 330 Public Opinion & Propaganda 4.0 Credits

Examines public opinion and propaganda from a variety of perspectives, including the process of opinion formation and change and its role in the development of public policy and methods of measurement and analysis of public opinion.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 334 Politics of Environment and Health 4.0 Credits

Examines political aspects of environmental health issues. Students will examine how "environment" and "health" are defined by different stakeholders. How, according to these political actors, is health impacted by environment, and how are environmental factors addressed in healthcare? How do scientists study human exposure in everyday environments? What institutions are responsible for regulating hazardous materials? How is community health impacted by pollution and what actions do communities take to protect health? Using historical and contemporary case studies, students will engage with these questions at different scales of analysis, learning about the politics of knowledge, social movements, the medical establishment, and the ethics of health in late industrialism.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 335 Political Communication 4.0 Credits

Introduces an investigation of the relationship between politics and communication, with the goal of developing an understanding of political communication's role in election campaigns, news coverage, political debates, political advertising, and "normal" portrayals of the political system through media and interpersonal communication.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 336 Political Economy of Climate Change 3.0 Credits

It is increasingly accepted that climate change is one of the major threats for human society. Without going into the depths of geoscience and historical climatology, this 3-credit course briefly surveys the evidence of climate change and anthropogenic global warming, as a prelude to analyzing the economic aspects of greenhouse gases emissions, the politics of controversies about climate change, and the proposals to deal with it.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 338 Cities and Climate Change 3.0 Credits

In this course we will survey the known and emerging impacts of climate change on cities. We will learn key concepts and paradigms that are used by urban climate change experts. We will examine case studies that highlight the interdisciplinary and cross-sectoral approaches used to address urban climate change. These include local and regional policies, nongovernmental and governmental research, and experiments at the intersection of health, ecology, and infrastructure.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 351 The United Nations in World Politics 4.0 Credits

This class is an introduction to the study of international organizations in world politics, focusing on the United Nations (UN). We will study a major theoretical problem: how international organizations attempt to govern a planet made up of self-interested, sovereign states. We also consider the practical issues that confront the UN and other international organizations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 352 Ethics and International Relations 4.0 Credits

Are ethics relevant in world politics, or are power and survival the only concerns? This course considers the main moral issues facing the international community. Topics include the "just war" tradition, human rights, humanitarian intervention, and what rich countries owe the poor.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 353 International Human Rights 4.0 Credits

This course examines the origin of the international human rights movement after World War II, and discusses key issues confronting the international community today. These include genocide, political repression, the rights of women, and religious and cultural minorities. It also considers the moral basis of the rights ideal.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 361 The Politics of LGBT Movements and Rights 4.0 Credits

In many countries, the subject of LGBT (lesbian, gay, bisexual, and trans) rights has entered the political discourse with unprecedented speed and suddenness. This course is designed to gain leverage on the processes that explain this rapid global expansion of LGBT rights by surveying an eclectic literature on comparative and transnational LGBT politics. Specially, we will ask: What factors have facilitated the mobilization of LGBT people? How and why have public opinion and laws towards LGBT people changed differently across various countries? To answer these questions, we will take an in-depth empirical look at movements representing LGBT people and their successes/losses—as well as those of their opposition—across time and place, from the late 1800s to present day and across the globe.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 363 Constitutional Law II 4.0 Credits

Examines protections for civil liberties afforded by the First Amendment of the Constitution, specifically those related to speech, the press, religion, and assembly.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 364 Constitutional Law III 4.0 Credits

Examines Constitutional civil rights claims arising under the Fourteenth Amendment equal protection and due process guarantees. Focuses on claims concerning discrimination on the basis of race, gender, and sexual orientation, as well as those asserted under an individual right to privacy in matters of reproductive rights, sexual conduct, and end of life decisions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 366 Supreme Court and American Politics 4.0 Credits

This course focuses on the workings of the modern Supreme Court: theories of judicial interpretation; internal decision-making processes; the interplay of law and politics on the Court's personnel, agenda, and rulings; and the role of interest groups in shaping the Court's jurisprudence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 369 The Politics of Food 4.0 Credits

This course examines how politics shapes our diet. Though cultural and personal preferences influence what we eat, our food choices unfold in the context of public policies such as agricultural subsidies, trade agreements, and food safety regulations, etc. The first part of the course describes and analyzes the US food system, with a focus on regulatory policies and interest group politics. The second part of the course examines the ideas and practices of food-based social movements that seek to create a food system that is less harmful to human and international health and more socially just than the existing system.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 371 Science, Technology, & Public Policy 4.0 Credits

Examines the political effects of technological change, including public policy efforts to affect the impact of scientific development. Covers topics including atomic energy, electronic communications, and weapons development.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 372 City in United States Political Development 4.0 Credits

Course examines the role of the American city in the larger project of state-building. Topics covered include the changing functions of cities over American history; the role of cities in national political coalitions; and the construction of ethnic, racial, and class identities as a process or urbanization.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 373 Animal Politics 4.0 Credits

This course examines the politics of human-animal interactions. Human relationships with animals vary by time and place: the same species might be a pet at one time, a food at another, and somewhere else, a model organism for experimental research. Understanding those relationships, and why they change, can help elucidate what it means, ethically, politically, and biologically, to be human. Topics in this course include animal rights and experimentation, the livestock industry, animal intelligence, and environmental legislation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSCI 374 Politics of Sport 4.0 Credits

The material in this course comes from a variety of disciplines and schools of thought with political science serving as an overarching framework. Issues covered include ethnicity, gender, race, nationalism, globalism, economics, and class.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 375 Politics of Immigration 4.0 Credits

This course is designed to introduce the student to the issues associated with immigration from both a US and international as well as a historical and contemporary perspective. Emphasis will be focused on the theory, public policy and philosophical issues that are associated with this area of inquiry.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 376 Running for Political Office 4.0 Credits

This course is designed to introduce the students to both the theory and practice of running for political office. Emphasis will be placed upon both the theoretical and applied aspects of political campaigns. The course will use a combination of readings, a text, films, lectures, and guest speakers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSCI 492 Political Science Thesis I 4.0 Credits

Students develop and begin an in-depth research project under the supervision of a political scientist. Course is restricted to seniors with a minimum 3.30 GPA. Can be continued as PSCI 493.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSCI and classification is Senior.

PSCI 493 Political Science Thesis II 4.0 Credits

Students complete an in-depth research project under the supervision of a political scientist.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSCI and classification is Senior.

Prerequisites: PSCI 492 [Min Grade: D]

PSCI I199 Independent Study in PSCI 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI I299 Independent Study in PSCI 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI I399 Independent Study in PSCI 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI I499 Independent Study in PSCI 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI T180 Special Topics in Political Science 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI T280 Special Topics II 0.5-12.0 Credits

Special topics in political science at the intermediate level. See department for details of current offerings.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI T380 Special Topics III 0.5-12.0 Credits

Special topics in political science at the intermediate/advanced level. See department for details of current offerings.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSCI T480 Special Topics IV 0.5-12.0 Credits

Special topics in political science at the advanced level. See department for details of current offerings.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Product Design

Courses

PROD 101 History and Analysis of Product Design 3.0 Credits

This class studies the chronological context of the development of the product design profession, relating it to the social, cultural and economic events that helped shape our modern day society. Studies are focuses on major industrial designers and innovations. This course has both a project and written analysis paper component.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 205 Applied Making I 3.0 Credits

This course introduces the development of rapid study models and mid-fidelity prototypes related to product design. Students, through a series of exercises, build study models of products to professional standards of accuracy and finish, with an emphasis on rapid development. Aspects of workshop practice and safety are emphasized.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: WEST 107 [Min Grade: C]

Corequisite: PROD 211

PROD 211 Form Studio 4.0 Credits

This course is the basic introduction to the study of form and abstract visual relationships. It explores the issues concerning the organization of multiple elements of a 3-dimensional composition and form as it relates to the natural world. Its emphasis is on the abstract, rather than the literal, to remove stereotypical object identification.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: WEST 107 [Min Grade: C]

PROD 212 Intro to Product Design 4.0 Credits

This course introduces students to basic product design techniques. It combines lectures, demonstrations, discussions, and problem-solving exercises exploring product design as a creative process in the production of simple objects. Students develop a command of product development, skills in modeling and communication of their novel solutions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PROD 101 [Min Grade: C] and (PROD 211 [Min Grade: C] or PROD 220 [Min Grade: C])

PROD 215 Design Thinking in Product Design 4.0 Credits

This course is an integrated lecture/lab introducing principles and theories of product design, systematic design process, problem-solving, decision making and design as authorship. The course uses design research methods, and topical design issues to explore and experience design thinking.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 220 Product Design Form Studio 4.0 Credits

This course uses principles of visual design in the organization of physical elements and analysis of form. Building on abstract relationships, natural inspiration, and the study of visual reference, students develop a sensitivity to form language, semantics, materials, and aesthetics of 3D objects of design. They learn to synthesize this abstract language into functional objects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: WEST 107 [Min Grade: D]

PROD 225 Computer Aided Imaging in Product Design 3.0 Credits

This is an applied computer class in which students pursue the development of design projects using current product design photo-realistic rendering software for object design and three-dimensional modeling of products applicable to rapid prototyping.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 265 [Min Grade: D]

PROD 230 Product Design Process Studio 4.0 Credits

In this course students are presented complex design issues in mass-produced objects. Students develop an understanding of the product development process focusing on the designers skills and technical knowledge to formulate appropriate design solutions. Students practice collaboration of ideas with engineers, marketing, users and shareholders.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: (PROD 210 [Min Grade: C] or PROD 212 [Min Grade: C]) and (PROD 220 [Min Grade: C] or PROD 211 [Min Grade: C])

PROD 235 Applied Design Visualization 3.0 Credits

This course will provide students with schemas and strategies for using visualization as a thinking tool, as well as persuasive techniques for communicating design intent. It will put into practice the essential techniques that product designers use to think and communicate visually.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 240 Smart Product Design 4.0 Credits

To explore ideas around tangible interaction, this course will introduce the smart product development process and combine basic microcontroller programming with digital application development to conceptualize responsive products, environments, and/or materials. Students will design and prototype functional devices that operate using embedded technologies that enhance user experience.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: WEST 107 [Min Grade: D]

PROD 245 Seminar Professional Landscape 3.0 Credits

In this course students explore current trends in the product design profession today. Students will research and present insights into important design issues, trends, and criticism in contemporary product design. Through extensive readings and discussions, students develop an understanding of the relationship of product design to society and culture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 230 [Min Grade: C]

PROD 255 Applied Materials in Product Design 3.0 Credits

The course emphasizes the practical relationship between product design and the manufacturing industry and the technical considerations that influence the choice of material and process for small batch and mass production.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 235 [Min Grade: C] and MATE 120 [Min Grade: D] and MATE 121 [Min Grade: D]

PROD 265 Introduction to CAD Product Design 3.0 Credits

Introduces the creation and manipulation of three-dimensional digital models and the resultant two-dimensional drawings using computer techniques.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: WEST 107 [Min Grade: D]

PROD 275 Visual Communication for Product Design 3.0 Credits

This course explores the various types of visual communication and presentation fundamentals applying the layout and composition type, color, images, and graphic assets used in product and visual presentation applications.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 305 Soft Goods for Product Design 3.0 Credits

This course combines studio and lecture to introduce students to a variety of soft material structures and soft fabrication methods, and guides them towards purposeful use and innovative applications. Through hands-on prompted experimentation, materials research, materials presentations, instructive editing, and group critique, students will explore the unique role of soft goods in contemporary design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 325 Speaker Making 3.0 Credits

This course will focus on the art and design of building quality speakers. Students will be expected to design and build either a bluetooth speaker or a set of bookshelf speakers. Students will learn how to select drivers, crossovers as well as learn how to calculate the right size enclosure to get the optimum sound out of your speakers. Students will be expected to make a well-crafted and good sounding set of speakers as a final assignment.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 340 Interdisciplinary Product Design Studio 4.0 Credits

Through a focused design project, students of various backgrounds and departments collaborate on complex design issues as they seek to create an appropriate and novel solution to the assigned design problem. Bringing both the PROD majors and PROD minors together, students work as teams through the product development cycle.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PROD 230 [Min Grade: C] and PROD 235 [Min Grade: C] and PROD 255 [Min Grade: C]

PROD 345 Applied Human Centered Design 3.0 Credits

This course explores the physical, psychological, perceptual, and behavioral characteristics of humans. Through a series of lectures and projects, this information is applied to the field of product design to develop safe and effective products.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: PSY 101 [Min Grade: D] and PROD 340 [Min Grade: C]

PROD 405 Experimental Design 3.0 Credits

This course is a study into the experimentation and rapid three-dimensional visualization and manipulation of material, form, and function of designed objects no larger than the human body. Students will apply iterative hands-on design process to work through guided assignments to create self-directed project ideas for a variety of contexts. Students will deconstruct preconceived notions of everyday materials, objects, and functions—resolving ideas through technical problem-solving, analog and digital manufacturing, and various CAD software and digital tools.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 102 [Min Grade: D] and (DSMR 100 [Min Grade: D] or WEST 100 [Min Grade: D])

PROD 425 Applied Design Research 3.0 Credits

This course covers diverse theories and methods for conducting product design research. Emphasis is given to understanding quantitative and qualitative research methods and the role the designer in synthesizing and applying research as a critical part of the design process. This course combines writing and short projects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: COM 220 [Min Grade: D] and PROD 345 [Min Grade: C]

PROD 455 Design for Manufacturing 3.0 Credits

In Design for Manufacturing, students will have the opportunity to translate a conceptualized idea and design into a portfolio ready, high fidelity prototype. Using methods of contemporary production, each student will undergo the process of designing a product and developing presentable drawings that will be used to fabricate their parts for final assembly. Within this course, there will be an emphasis on computer aided systems that augment conceptual exploration and rapid manufacturing techniques. Vocabulary will be developed via an understanding of and engagement with tooling capabilities, CAD modeling, critical dialogue and investigating the relationship between design and fabrication.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

PROD 460 Research Synthesis Studio 4.0 Credits

In this first of two senior studios, students apply their skills to initiate research on an opportunity of their selection. Under supervision, students demonstrate control of applied design research and synthesis. This course focuses on the information gathering, study, and analysis that product designers do to inspire and inform themselves.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 340 [Min Grade: C] and PROD 345 [Min Grade: C]

PROD 470 Create Build Studio 4.0 Credits

In this second of two studios, students apply their skills to develop a solution based on the research conducted in the previous studio. Under supervision, students will demonstrate control of the product design process in the production of a novel and appropriate user-focused solution.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 460 [Min Grade: C] and PROD 425 [Min Grade: C]

PROD 475 Professional Practice in Product Design 3.0 Credits

This course provides information about career planning and job seeking, including the development of cover letters, resumes, online and physical portfolios and the interview process. Practicing design professionals serve as guest speakers and conduct mock interviews to address topics relevant to the practice of product design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 460 [Min Grade: C]

PROD 480 Exhibition Studio 4.0 Credits

This final studio is a culmination of the educational experience in the production of a senior exhibition highlighting the students' accomplishments. Under supervision, students work together to demonstrate control of all aspects of the design process and visual communication in the production of a graduation exhibition.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PROD.

Prerequisites: PROD 470 [Min Grade: C]

PROD I199 Independent Study in Product Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PROD I299 Independent Study in Product Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PROD I399 Independent Study in Product Design 3.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

PROD I499 Independent Study in Product Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PROD T180 Special Topics in Product Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PROD T280 Special Topics in Product Design 0.0-4.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PROD T380 Special Topics in Product Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

PROD T480 Special Topics in Product Design 0.5-4.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 6 times for 28 credits

Restrictions: Can enroll if major is PROD.

Professional Studies

Courses

PRST 211 Computer Applications for Professionals 3.0 Credits

Through lecture-demonstrations, hands-on labs, independent study assignments, and case study analysis, students are challenged to use critical-thinking, data analysis and problem-solving techniques to develop cost-efficient and effective solutions to realistic professional problems using computer-based business application software. Students should possess a basic level of computer proficiency before taking this course.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

PRST 303 Interpersonal Skills for Virtual Teams 3.0 Credits

This course will introduce students to the dynamics of virtual teamwork and will allow students to experience first-hand the opportunities and challenges associated with operating in a virtual environment.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PRST 330 Career & Professional Development 3.0 Credits

This course explores the literature of careers including preparation, organizational entry, orientation, nontraditional careers, and early, mid, and later career issues. The course provides students with opportunities for assessment of interests and capabilities, initiation and implementation of a personal development plan (PDP), and feedback on personal and career development.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PRST 331 Workforce Diversity and Inclusion 3.0 Credits

In this course, students will begin with a foundational look at diversity and inclusion in the workforce, examine their own perceptions, and examine companies with varying degrees of success in fostering D&I- and consumer trust-in order to learn from successes and failures. This course will take a practical approach, asking students to analyze scenarios drawn from real life to identify best practices and skills needed to demonstrate teamwork capabilities in today's workforce.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

PRST 440 Policy Analysis 3.0 Credits

The course analyzes the entire process of policy agenda-setting, initiation, decision-making, implementation, evaluation and assessment. Students will be equipped with tools to analyze and understand the entire process of policy formation in any public or private enterprise. The skills developed in this course can be used in many professional fields.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

PRST 450 Creative Leadership for Professionals 3.0 Credits

This course presents leadership as a collaborative focus for transforming change. Topics include the leadership crisis, differences between leadership and management, how leaders create and change culture, and ways in which leaders build creative, enduring organizations. In addition, the course is designed to help students develop their own leadership potential.

College/Department: GC-3690

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

PRST I199 Independent Study in Professional Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

PRST I299 Independent Study in Professional Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

PRST I399 Independent Study in Professional Studies 0.5-6.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated 11 times for 6 credits

PRST I499 Independent Study in Professional Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

PRST T180 Special Topics in PRST 1.0-4.0 Credit

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated 11 times for 12 credits

PRST T280 Special Topics in PRST 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

PRST T380 Special Topics in PRST 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

PRST T480 Special Topics in PRST 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: GC-3690

Repeat Status: Can be repeated multiple times for credit

Project Management

Courses

PROJ 401 Introduction to Project Management 4.0 Credits

This course provides an introduction the discipline of project management. Students will acquire the foundation for understanding successful initiation, planning, execution, monitoring, control, and closure of projects. The course highlights applications of project management in public and private sectors.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

PROJ 402 Essentials of Project Planning & Scheduling 4.0 Credits

This course will prepare students to apply relevant concepts in project planning, scheduling and control. Project scheduling methods are covered including: bar (Gantt) charts, network diagrams, critical path method, three-point estimates, critical chain concepts, resource allocation, resource leveling, and earned value management.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ 403 Essentials of Project Leadership and Teamwork 4.0 Credits

This course examines the organizational environment required for building and maintaining successful project teams. Students learn how project managers use human resources effectively through good oversight, wise leadership, and meaningful communications. In addition to learning about key theories of leadership and teamwork, the course provides practical insights. Students are challenged to examine their own traits, behaviors, aptitudes, and attitudes for the purposes of improving project leadership and teamwork.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ 410 Essentials of Project Quality Management 3.0 Credits

This course will examine basic quality concepts, tools, and techniques, and explore the sub-processes of quality management: quality planning, quality assurance, and quality control as they relate to project management.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ 415 Essentials of Project Estimation & Cost Management 3.0 Credits

This course will provide an overview of basic project financial and economic principles involved in managing projects. It is intended to familiarize project team members and managers with relevant methods, tools, and techniques in project cost estimation, budgeting, cost forecasting, and cost control.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ 420 Essentials of Project Risk Assessment & Management 3.0 Credits

This course will examine the major risk factors throughout various phases of the project life cycle. It considers the overall project planning process, describes key concepts of project risk planning, highlights relevant tools and techniques for risk identification, explores the use of risk assessment methods, and emphasizes risk and opportunity response strategies.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ 430 Essentials of Managing Multiple Projects 3.0 Credits

This course will examine the management principles, tools, and techniques required to manage multiple projects. Emphasis is placed on functions of the project management office (PMO) and practices of project and program portfolio management.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ 435 Essentials of International Project Management 3.0 Credits

This course will examine the adaptation of project management principles and methods when operating in an international environment. It investigates cultural, legal, ethical, and financial factors in the context of managing international projects.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: PROJ 301 [Min Grade: C] or PROJ 401 [Min Grade: C]

PROJ I199 Independent Study in Project Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ I299 Independent Study in Project Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ I399 Independent Study in Project Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ I499 Independent Study in Project Management 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ T180 Special Topics in PROJ 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ T280 Special Topics in PROJ 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ T380 Special Topics in PROJ 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

PROJ T480 Special Topics in PROJ 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Psychology

Courses

PSY 101 General Psychology I 3.0 Credits

Reviews the fundamental principles, concepts, and methods of psychology, with emphasis on the concepts of motivation, learning, and perception, and their psychological foundations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSY 111 Foundations of Psychological Science for Majors I 3.0 Credits

This course is part one of a two-part sequence general psychology course designed specifically for psychology majors only. In this course, we will explore the scientific approach to the study of psychology with an overview of the fundamental principles of psychology across a variety of sub-disciplines. This course includes a laboratory component where students explore psychological research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSY.

PSY 112 Foundations of Psychological Science for Majors II 3.0 Credits

This course is part two of a two-part sequence general psychology course for psychology majors only. In this course, we will focus on the application of scientific principles of psychology to human behavior. This course includes a laboratory component to enhance the scientific approach to research in psychology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSY.

Prerequisites: PSY 111 [Min Grade: D]

PSY 120 Developmental Psychology 3.0 Credits

In this course, we will cover developmental concepts from birth to death. Students will explore the biological, cognitive, psychological, and social development of human beings throughout the lifespan focusing on the individual and across groups. Topics covered will include historical/theoretical perspectives as well as an emphasis on the latest research in human development.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSY 140 Approaches to Personality 3.0 Credits

Discusses the major concepts of Freud, neo-Freudians, behaviorists, humanists, trait theorists, and others. Emphasizes understanding of self and others for psychotherapy and research. Fall.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSY 150 Introduction to Social Psychology 3.0 Credits

In this course, we will review the theoretical perspectives and research findings that form the basis of our understanding of how and why humans feel, think, and behave in social situations. It examines both historic and contemporary themes from multiple perspectives that focus on the ways in which culture, race, gender, ethnicity and other categories of human experience are shaped by social behavior and interaction.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSY 210 Evolutionary Psychology 3.0 Credits

In this course, we will examine the scientific study of human nature, based on understanding the psychological adaptations that our ancestors evolved in prehistory to cope with the challenges of survival and reproduction. We will cover the principles of genetics and evolution as applied to the brain and behavior of living beings, from plants and unicellular organisms to the primates (including humans).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 212 Physiological Psychology 3.0 Credits

In this course, we will examine the field of physiological psychology and the basic biological processes underlying our behavior and emotions. Students will gain an understanding of the neural foundations of behavior, including the study of nerve activity and brain function.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 213 Sensation and Perception 3.0 Credits

This course examines the structure and function of the senses, including vision, hearing, touch, temperature, pain, olfaction, gustation, time, and kinesthesia. It considers the interaction of the senses and their role in determining behavior.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 222 Psychological Problems of Modern Youth 3.0 Credits

Examines psychological problem areas frequently encountered by young adults in today's society, including identity crisis, family conflict, the new sexuality, drugs, and the search for intimacy.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSY 225 Child Psychopathology 3.0 Credits

In this course, we will focus on the symptoms, etiology, and primary methods of treating common psychological disorders and problems of children and adolescents. The course will focus on diagnosis; assessment; specific therapeutic treatments; ethical issues; and gender, cultural, and developmental differences in symptoms, diagnosis, and response to treatment.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]) and PSY 240 [Min Grade: D]

PSY 240 [WI] Abnormal Psychology 3.0 Credits

In this course, the scientific study of mental illnesses will be reviewed. There will be a focus on the way our society defines, explains, and handles behavior perceived as deviant and "normal."

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 242 Psychology of Disability 3.0 Credits

In this course, we will examine the psychological and social consequences of physical disability for the disabled person and his or her family and overall social network. There is an emphasis on disabilities of the sensory and nervous systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 243 International Comparative Forensic Psychology, Criminal Justice, and Law 3.0 Credits

This course will provide a cross-cultural comparison of criminal forensic psychology in Argentina and the United States. This course will emphasize similarities and differences between the criminal and juvenile justice systems in Argentina and the United States. In addition, we will discuss the treatment of psycho-legal issues in both countries, such as competence to stand trial, criminal responsibility, police interrogations, legal procedures, and the role of mental illness in psycho-legal issues. Professional and ethical similarities and difference will be reviewed. This course will emphasize the integration between research and practice in these two countries.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSY 244 Cross-Cultural Psychology 3.0 Credits

This course focuses on comparing specific human conditions (e.g., health and mental health), roles (e.g. gender), and psychological processes (e.g. cognition, emotion, perception) across cultures in order to ascertain similarities and differences among cultures around the globe. This course has an interdisciplinary focus.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 245 [WI] Sports Psychology 3.0 Credits

In this course, we will cover sports psychology, which is the science of understanding, modifying, and predicting athletic performance or sports participation. We will examine how individuals behave in sports and the practical application of that knowledge to performance enhancement strategies. Students in this course will investigate human behavior patterns in sports and exercise settings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 250 [WI] Industrial Psychology 3.0 Credits

This course covers theories, experiments, and problem-solving efforts of behavioral scientists in industrial settings. Students will build on their interest in interpersonal relations, management, leadership, personnel, and applied psychology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 252 Death and Dying 3.0 Credits

In this course, we will explore death and dying from various perspectives, including the philosophical, psychological, sociocultural, and personal. Topics include attitudes, beliefs, and meanings of death and dying, the experience of death, end-of-life decisions, suicide and types of death, euthanasia and biomedical issues, bereavement, cultural norms, and dealing with the death of a loved one.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 254 Psychology of Sexual Behavior 3.0 Credits

In this course, we will cover the psychology of the individual coping with the sexual aspects of life. Students will examine the broad range of human sexual expression focusing on topics such as the development of sexual behavior, historical and contemporary views on the psychology of sex, the role of sexuality in day-to-day interactions among individuals and other relevant topics on human sexuality.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 264 Statistical Methods in Psychology I 3.0 Credits

This course explores data analysis and the usage of statistical software in psychological research. Topics will cover basic elementary techniques of data entry, manipulation, and analysis. This includes an emphasis on basic descriptive statistics, sampling and probability, and hypothesis testing. This is part 1 of a two-part sequence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 265 Statistical Methods in Psychology II 3.0 Credits

This course is part 2 of a two-part sequence. In this course, we will cover more advanced statistical techniques and build on the usage of statistical software in psychological research. This includes regression, correlation, analysis of variance (ANOVA), and various non-parametric tests.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]) and PSY 264 [Min Grade: D]

PSY 270 Psychology of Hate 3.0 Credits

Hate is a multi-faceted concept, used in many contexts. Thus, as such trying to create a definition for the concept of hate is not without difficulty. In this course we will focus on hate between/among individuals, groups, and populations. We will try to understand how hate develops, what developmental, social, and clinical factors give rise to hate. We will examine prevalent hate groups and how they recruit. And, we will examine ways that we might be able to combat hate, both in broad terms, but even more so at the micro levels.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

PSY 280 Psychological Research 3.0 Credits

Students will be introduced to the issues, techniques, and methodologies associated with conducting psychological research. Topics include the logic of research in psychology; how to study various psychological phenomena; ethical issues; design, analysis, and interpretation of psychological research. Through the course, students will gain skill in writing research reports in the style used by research psychologists.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 264 [Min Grade: D] and PSY 265 [Min Grade: D]

PSY 285 Writing in Psychology 3.0 Credits

This course will build on students existing knowledge of psychology while helping them better evaluate and create various types of written documents commonly used to communicate information in the field of psychology (e.g., research articles, literature reviews, position papers). Emphasis is placed on a skills-based approach to acquiring knowledge of how to communicate information and applying that knowledge in various contexts.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: PSY 101 [Min Grade: C] or PSY 112 [Min Grade: C]

PSY 290 History and Systems of Psychology 3.0 Credits

Examines the historical foundations of modern psychology, with emphasis on the growth, contributions, and decline of major systems and theories.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 310 Drugs & Human Behavior 3.0 Credits

Covers the fundamentals of drug effects on the nervous system and behavior, with emphasis on abused substances and drugs used in the treatment of behavioral disorders.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D])

PSY 312 Cognitive Neuroscience 3.0 Credits

In this course, we will explore how cognitive neuroscience is the bridge between cognitive psychology and neuroscience, i.e., how the “hardware” of our brains produces the “software” of thought. This course will introduce the neural basis of core cognitive processes such as perception, attention, memory, language, and executive functions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 320 [WI] Educational Psychology 3.0 Credits

Covers role and relevance of psychology in the teacher-learner relationship, with independent application of research techniques in an individual field study.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 325 Psychology of Learning 3.0 Credits

In this course, we will introduce students to the basic principles of the science of learning and memory. It will cover both historic approaches to learning e.g., classical (Pavlov) and instrumental (Skinner) conditioning as well as modern theories and ongoing debates in learning and memory. We will give special attention to clinical applications and what is known about the neural substrates of learning and memory.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 330 Cognitive Psychology 3.0 Credits

Covers human thought processes, including perception and pattern recognition, learning and memory, language, problem-solving, and decision-making.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D] or IDM 211 [Min Grade: D]

PSY 333 Multicultural Issues in Psychology 3.0 Credits

In this course, students will review theoretical perspectives in relation to multicultural issues in psychology. This course aims to develop students' multicultural competence (i.e., knowledge, awareness, and skills) to prepare them to live and work with individuals from diverse socio-cultural backgrounds. Topics covered will include ability, age, ethnicity/race, gender, nationality, religion, sexual orientation, socioeconomic status, and other forms of diversity in American society.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

PSY 335 Pediatric Psychology 3.0 Credits

In this course, we will examine the psychosocial and medical issues during the period of infancy, childhood, and adolescence including relevant biological, cognitive, social, emotional, and cultural aspects. The purpose of this course is to facilitate learning and professional development through exposure to concepts specific to the field of pediatric psychology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 336 Psychology of Language 3.0 Credits

This course is a survey of the theories and methodologies in the psychology of language. It covers topics such as language acquisition, comprehension, and production, as well as the relation between language and thought and the question of the uniqueness of language in the animal kingdom.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 342 Counseling Psychology 3.0 Credits

Covers theory and practice of establishing helping relationships. Includes role-playing, analyzing, and observations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 345 Narrative Psychology 3.0 Credits

This course explores the historic contributions to the narrative tradition in psychology and its current research and theoretical concerns. We will discuss contributions to the construction of meaning from bioethics and medical humanities, qualitative research, the neuroscience of memory, literary theory, and social, cognitive, and developmental psychology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 352 Psychology of Sustainability 3.0 Credits

In this course, we will examine the multidisciplinary study of the interrelationship between human behavior and the natural, built, and social environments. We will address how psychological theory and research is applicable to promoting a sustainable future and explore psychological aspects of the reciprocal relationship between humans and the rest of the natural world.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 355 Health Psychology 3.0 Credits

Health Psychology is designed to: concentrate on the application of psychological theories and variables to compromising and health enhancing behaviors; demonstrate the psychological management of chronic illness; and the role of psychologists written medical and health settings. For example, it focuses on the effects of stress on the body, the mind-body connection, and how psychology can affect physical well-being.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 356 Women's Health Psychology 3.0 Credits

Explores the major psychological and behavioral factors influencing health and illness among women. Topics, such as lifecycle challenges (PMS and reproductive health), chronic diseases, and new directions in health promotion are addressed.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 357 The Psychology of Eating Disorders and Obesity 3.0 Credits

In this course, we will cover the determinants of eating behavior and body weight as well as psychological treatments for them. We will review the factors influencing weight regulation as well as the causes, consequences, and treatments for anorexia, bulimia nervosa, binge eating disorder, and obesity.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 360 [WI] Experimental Psychology 3.0 Credits

This course examines the study of the basic scientific fundamentals of the experiment with emphasis upon the critical thinking this method represents in establishing psychological principles. A final experiment is required of all students in this course.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 265 [Min Grade: D]

PSY 368 Psychology - Inequity & Injustice 3.0 Credits

In this course we examine underlying values and beliefs of the field and place them in the context such as inequity, social justice, power relations, and what type of knowledge counts, to arrive at a more critical understanding of the practices and theories in psychology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 370 Forensic Psychology 3.0 Credits

This course examines the psychological processes involved in the legal system. The material covered will delve into the growing field of psychological study and its application in the legal field.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 371 Law and Psychology 3.0 Credits

In this course, we will review specific information regarding to law and psychology. This includes exploring relevant research approaches and applications to the field. Important topics of focus include the criminal offending; the process between arrest, trial, and incarceration; eyewitness identification; psychological evaluations and other majors areas related to the intersection of law and psychology.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 111 [Min Grade: D]

PSY 380 Psychological Testing and Assessment 3.0 Credits

Enables the student to gain an understanding of the proper uses and applications of psychological evaluation by focusing on psychometric properties and reviewing selected tests and evaluation procedures commonly employed by psychologists in research and clinical practice.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 280 [Min Grade: D] and PSY 360 [Min Grade: D]

PSY 410 Neuropsychology 3.0 Credits

Provides a study of the relationship between human brain function and behavior. Examines basic anatomy of the brain and focuses on principles of human neuropsychological functioning. Studies cortical and "higher cognitive functioning" in depth through a focus on both normal and brain-injured individuals.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 412 Methods in Human Neuroscience 3.0 Credits

This course is designed to explain the methods used to study the relationship between human cognitive and emotional states and human physiological functions. By learning about these methods students will gain a better understanding of how the human nervous system works and about how they can study human thoughts by measuring the workings of the human central and peripheral nervous systems.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (PSY 101 [Min Grade: C] or PSY 212 [Min Grade: C]) and (PSY 360 [Min Grade: C] or BMES 315 [Min Grade: C]) and (BMES 310 [Min Grade: C] or PSY 264 [Min Grade: C] and PSY 265 [Min Grade: C])

PSY 427 Behavioral Neuroeconomics 3.0 Credits

This course examines the convergence of neuroscience, psychology, sociology, and economics and how it is used to investigate and explain the effects of psychological factors on decisions and their deviations from the rational. This course will draw heavily on recent evidence from brain-imaging techniques, especially as they explain and expand on the models of early behavior economists.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 330 [Min Grade: D] or ECON 301 [Min Grade: D]

PSY 450 Autism Spectrum Disorders 3.0 Credits

In this course, we will introduce students to research and issues involving individuals with autism spectrum disorders. Topics include societal perceptions of the disorder, epidemiology, advocacy, assessment and evaluation, adult issues, and legal issues. This course includes an overview of common interventions geared towards individuals on the spectrum.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: (PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]) and PSY 120 [Min Grade: C]

PSY 455 Psychology of Suicide and Non-Suicidal Self-Injury 3.0 Credits

This course focuses on the psychology of suicide and non-suicidal self-injury (NSSI). Topics will include assessment issues, risk and vulnerability factors, differences between suicide and NSSI, suicide across the life span, theories of suicide, prevention and treatment strategies, and special topics (e.g., suicide "by cop," euthanasia).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 111 [Min Grade: D]

PSY 463 Memory 3.0 Credits

In this course, we will review what we know about how memory and forgetting work. We will also study the ways in which memory is fallible and modifiable. We will review findings from behavior and cognitive psychology, cognitive neuroscience, and neuropsychology in order to try to understand how we remember and how we forget.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: PSY 101 [Min Grade: D] or PSY 112 [Min Grade: D]

PSY 490 [WI] Psychology Senior Thesis I 4.0 Credits

An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member. The students conduct these projects over the course of three terms in which they take PSY 490, 491, and 492.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSY and classification is Senior.

PSY 491 [WI] Psychology Senior Thesis II 4.0 Credits

An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member. The students conduct these projects over the course of three terms in which they take PSY 490, 491, and 492.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSY and classification is Senior.

Prerequisites: PSY 490 [Min Grade: D]

PSY 492 [WI] Psychology Senior Thesis III 4.0 Credits

An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member. The students conduct these projects over the course of three terms in which they take PSY 490, 491, and 492.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is PSY and classification is Senior.

Prerequisites: PSY 491 [Min Grade: D]

PSY I199 Independent Study in PSY 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY I299 Independent Study in PSY 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY I399 Independent Study in PSY 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY I499 Independent Study in PSY 1.0-3.0 Credit

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY T180 Special Topics in Psychology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY T280 Special Topics in Psychology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY T380 Special Topics in Psychology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

PSY T480 Special Topics in Psychology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Public Health

Courses

PBHL 101 Public Health 101 3.0 Credits

Introduction to Public Health is a broad overview class designed to give an introduction to the core tenets of Public Health. Basic concepts covered in the class are the basic definitions and concepts related to public health. Specific areas that will be further explored in the class include, what it means to be healthy, what is public health, what are social determinants of health, what is disease prevention and health promotion and what are health inequalities among others.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 210 Biostatistics I 4.0 Credits

Biostatistics gives us the tools to turn data into scientific knowledge that can improve human health. In this course, students will gain skills in foundational biostatistical methods including probability, hypothesis testing and parameter estimation, analysis of categorical data, parametric and non-parametric tests for means and proportions, and analysis of variance (ANOVA), emphasizing appropriate application of methods based on study design and data characteristics. Students will use the open-source statistical software R.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 211 Biostatistics II 3.0 Credits

Biostatistics gives us the tools to turn data into scientific knowledge that can improve human health. In this course, students will expand their skills in foundational biostatistical methods, including simple and multiple linear regression, analysis of confounding and interaction, logistic regression, and descriptive analysis for survival data. Students will use the open-source statistical software R.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 210 [Min Grade: C] or STAT 201 [Min Grade: C] or MATH 310 [Min Grade: C]

PBHL 215 Introduction to Clinical Research 3.0 Credits

This course introduces the methodologic principles of clinical research which are foundational to assessing the safety and efficacy of clinical interventions and to making evidence-based clinical decisions. The course will start with framing a clinical research question, followed by presenting the methods of clinical research, common sources of error, and an epidemiologic approach to critical appraisal. Topics include searching the literature, study design, reliability and validity of clinical tools, questionnaire design, interpreting results of clinical studies, and identifying and controlling for confounding and bias in research studies. The course includes a special focus on the ethical, operational, and methodological aspects of clinical trials, which are critical to the practice of medicine.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 210 [Min Grade: C] or STAT 201 [Min Grade: C] or MATH 310 [Min Grade: C] or PBHL 301 [Min Grade: C] or HSCI 345 [Min Grade: C]

PBHL 301 Epidemiology in Public Health 3.0 Credits

This is an introductory course designed to teach undergraduate students the basic principles and concepts of epidemiology. The course highlights the approaches used in the field of epidemiology to study disease in populations, incorporating concepts of disease causation and control.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 302 Introduction to the History of Public Health 3.0 Credits

This course considers the origins of contemporary public health by examining major currents in the history of public health in the United States from Colonial times to the present, with an emphasis on the 20th century.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 303 Overview of Issues in Global Health 3.0 Credits

This introductory course will cover the major issues and considerations involved in global health. It is a survey course that is designed to familiarize students with the major topics in the global health. The goal of the course is to provide students with an overview of concepts such as the determinants of health, the measurements of health status and global burden of the disease.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 304 Introduction to Health & Human Rights 3.0 Credits

This introductory course highlights the intrinsic link between one's health and his/her fundamental human rights. When such rights (access to medical care, housing, food, standard of living) are violated, this can lead to adverse health outcomes.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 305 Women and Children: Health & Society 3.0 Credits

This course is designed to give students a broad overview of pertinent issues surrounding the health and well being of mothers and children. The course emphasizes the inter-relationship among women's health, reproductive health and child health.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 306 Introduction to Community Health 3.0 Credits

This three credit course will provide the foundation for studying the root causes affecting community health in the United States, as well as broad efforts to improve world health. This course is designed to enhance oral and written communications on public health issues, advocacy, and public policy, while enhancing content, process skills, and other essential competencies.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: D]

PBHL 307 Injury Prevention and Control 3.0 Credits

Unintentional injury is the leading cause of death for people in the United States between the ages of 1 and 44. Homicide and suicide are the second and third leading cause of death for people aged 15-34. The cost of medically treated injuries is estimated at over \$100 billion annually. This course examines injury as one of the core public health problems in the United States. Causes such as motor vehicles, opioids, interpersonal and self-inflicted violence, and work are some of the topics examined, including their physical and psychological outcomes. The subsequent costs and burdens to the healthcare system are explored. Policy and behavioral interventions are addressed. Where possible, extensions to international settings are made.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 308 The U.S. Public Health System 3.0 Credits

This course will provide students with an understanding of the organizational components of the public health system in the United States. Among the topics covered are the roles of different levels of government in the financing, delivery, and regulation of public health services and the complementary private, non-profit components of the public health system. The course addresses several current, critical public health policy issues and how different political and economic interests and actors interact in shaping public policy on these issues.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 309 Public Health Ethics 3.0 Credits

This course will explore the emergence of the public health field, its philosophical, historical, and political development, its relationship to the field of human rights and its future. Emphasis will be placed on developing a mastery of the current literature on the subject and on formulating novel approaches in public health ethics. This course is demanding in both reading and writing; students should be prepared to engage in serious dialogue each week in class.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 310 Burden of Disease 3.0 Credits

This course will cover selected topics of the burden of disease with critical review of the current public health literature. Students will have the opportunity to learn the basic concepts and methods of exploring risk factors and assessing the burden of disease at regional, national and global levels, through class lectures, group exercise and individual projects.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 301 [Min Grade: C]

PBHL 311 Public Health Biology 3.0 Credits

This course is designed to introduce students to the biologic basics of the causes, natural history, and prevention of diseases of public health importance. An integrated perspective will be used to demonstrate the connection between exposures and cellular effects, disease processes in individuals, and population impacts. Coverage will include infectious disease transmission and prevention; cancer biology regarding etiology, prevention, and treatment; nutritional influences in obesity, diabetes and heart disease.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: (BIO 107 [Min Grade: C] or BIO 122 [Min Grade: C] or BIO 131 [Min Grade: C]) and PBHL 101 [Min Grade: C]

PBHL 313 The Social Determinants of Health and Well-Being 3.0 Credits

The goal of this course is to introduce students to the patterning of health and well-being among social groups within and between societies, and how a social science approach can improve our understanding of health and illness at a population level, and identify possible public health strategies for reducing health disparities.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 314 Environmental and Occupational Health 3.0 Credits

The goal of this course is to provide students with basic knowledge of EOH as it applies to the practice of public health from individual, community and political perspectives. Students will also gain skills needed to understand and conduct scientific research related to EOH. Students will be expected to critically analyze EOH issues and explore appropriate responses.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 315 Public Health Leadership 3.0 Credits

This course provides students with an introduction to the environment and organizations in public health leadership. This course introduces leadership skills to lead changes in public health organizations. The cases and lectures throughout the course have been designed to develop leadership approaches for public health agencies.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 316 Drugs, Society, and Public Health 3.0 Credits

This course will examine problems associated with drug use through the prism of public health. The first half of the course will be devoted to understanding biological, psychological, social, and cultural aspects of key licit and illicit substances. The second half will focus on relevant public health aspects of drug use, including preventions, intervention, treatment, and policy. Intersecting issues include homelessness, HIV/AIDS, mental health & violence. Students will be exposed to key books and peer-reviewed articles that address these issues from a range of theoretical & analytical approaches.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 317 The World's Water 3.0 Credits

Water is essential for life. Worldwide, 25% of people lack safely managed drinking water services and nearly 50% lack safely managed sanitation services. Safe and sufficient water, sanitation and hygiene services (WASH) are key for health and human rights. WASH services are a critical component of responses to infectious disease epidemics and ensuring infection prevention in healthcare facilities. Contaminated drinking water, inadequate water supply, or poor sanitation and hygiene all contribute to disease burden and decreased quality of life, particularly among the most vulnerable populations. This course will discuss a wide variety of topics related to WASH around the globe and the U.S. and will explore how WASH problems are compounded by emerging infectious diseases, climate change and rapid urbanization.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 318 Violence and Trauma in Public Health 3.0 Credits

This course will focus on the public health policy and practice aspects of trauma violence and adversity. The course will begin by laying a foundation of trauma theory and then will examine the impact of emerging knowledge on individuals, communities and systems. The course will examine trauma informed models, which have been applied to individuals, communities and systems and will analyze the policy and practice implications of these models as well as the translation from research to practice.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 319 Nature Prescription: Trees, Green Space, and Your Health 3.0 Credits

Trees and green spaces distinctly shape the character of cities, and there is increasing evidence that vegetated landscapes also affect the health of urban residents. We will explore the relationship between vegetated landscapes and human health outcomes - from improved mental health and outdoor recreation, to benefits from 'ecosystem services' provided by trees and other vegetation. The environmental and biological mechanistic pathways leading to health effects will be delineated. Risk-benefit tradeoffs will also be considered. Also discussed will be the types of health impact data that may be useful to planners and policy makers to support decisions for installation of new parks or other urban vegetation, and a field assessment to estimate such impacts will be conducted.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 321 Disease Outbreak Investigations 3.0 Credits

The emergence of new pathogens and drug resistance, as well as increased transmission opportunities caused by globalization has led to a rising prevalence of new infectious diseases as well as reemergence of older diseases. This course will focus on the surveillance, identification, control, and prevention of selected infectious diseases of Public Health importance both globally and within the U.S. Specific areas that will be addressed include the causative agents, the routes of transmission, the host responses, environmental factors, unique risk factors, outbreak investigations, surveillance and strategies for control and prevention. We will incorporate the history of communicable disease control efforts where relevant and discuss the role of increased globalization in the spread of infectious diseases.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 333 Health Inequality 3.0 Credits

This course addresses questions related to health inequities—the systematic and avoidable differences in the health of social groups (e.g., racial, ethnic, gender, socioeconomic, sexual orientation) in a society. This multidisciplinary course integrates knowledge from the fields of public health, biology, medicine, sociology, psychology, political science, and history to provide students with a cohesive understanding of the magnitude of health disparities in societies, the processes through which they are produced, and methods for analyzing disparities.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 101 [Min Grade: C]

PBHL 335 Applied Quantitative Research Methods 3.0 Credits

How can we tell if the water we drink is making us sick? What's the best way to estimate the prevalence of a new infectious disease? How do we know when an intervention is effective in reducing mortality? New and challenging data analysis problems require skills in quantitative research and computing. This course uses data from fields including environmental health and infectious disease to build research skills in exploratory data analysis, data visualization, statistical modeling and analysis, and scientific communication. The statistical software R is used. Students will develop skills in data visualization, multivariable regression modeling, generalized linear models, model diagnostics, and critical interpretation of results. Students will use these skills in a final data analysis project and report.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 210 [Min Grade: C] or STAT 201 [Min Grade: C]

PBHL 340 Advanced Biostatistical Analysis 3.0 Credits

This course will build skills in data analysis using the statistical software R. Topics include data visualization, writing functions in R, and the application of statistical methods including multiple regression, generalized linear models, non-parametric regression, and basic survival analysis.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 211 [Min Grade: C] or STAT 202 [Min Grade: C] or MATH 411 [Min Grade: C] or HSCI 350 [Min Grade: C] or INFO 332 [Min Grade: C]

PBHL 350 Introduction to Urban Health 3.0 Credits

It is estimated that by 2050, 66% of the world's population will live in urban areas. Promoting population health and health equity is a key challenge, but also a key opportunity for cities and broader urban areas that surround them. This course is designed to provide an overview of urban health including theory, methodology, and empirical evidence. The course will explore urban health strategies, including programs and policies aimed at impacting the social determinants of health, and how these strategies affect health outcomes of populations in urban settings.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 362 Global Air Pollution and Health 3.0 Credits

Global air pollution is an important determinant of human health, causing millions of deaths worldwide each year. This course will examine how air pollutants are emitted into or form in the atmosphere, how people are exposed to air pollutants, and how these pollutants contribute to the burden of death, disease and disability in human populations. The course will provide an understanding of the properties of air pollutants, relevant atmospheric chemistry and physical processes, and how pollutants are measured. Students will consider inequities in the impact of air pollutants on human populations across the globe. Students will learn about national programs and policies for the control of air pollutants, and about the international agencies working to solve air pollution as a global health problem.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 400 Introduction to Statistical Inference 4.0 Credits

This course will introduce the theoretical framework of commonly used statistical methods, making connections between probability theory and providing context to understand when statistical methods can be used appropriately. Topics include exponential family probability distributions, conditional distributions and independence, expectations and transformations, point and interval estimation, maximum likelihood estimation, hypothesis testing and likelihood ratio tests.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: MATH 122 [Min Grade: C] and (PBHL 210 [Min Grade: C] or STAT 201 [Min Grade: C] or MATH 310 [Min Grade: C])

PBHL 401 Introduction to Public Health 0.0 Credits

The purpose of this course is to provide a broad introduction to public health, as well as an understanding about how specialized health research contribute to achieving the goals of public health.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated 2 times for 0 credits

PBHL 411 Food Security, Human Rights and Public Health 3.0 Credits

This course examines the field of public health nutrition through the lens of international human rights and social and political contexts in the United States. Not only is this course scholarly and informative, but it engages students' personal experiences with food and family, invited guest speakers, a field trip, and debates on critical policy issues in nutrition and public health in the United States.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 422 Health and Human Rights Research Methods 3.0 Credits

This seminar focuses on the application of human rights norms and tools to public health and particular challenges within public health. Building upon human rights frameworks, we will discuss current debates about the usefulness of a "human rights approach" to health, the methods and ethics of health-related human rights research, and case studies of human rights investigations and advocacy. The case studies are intended to examine how human rights abuses, including violations of economic and social rights and civil and political rights, can be understood as determinants of health.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 304 [Min Grade: C-]

PBHL 453 Longitudinal Data Analysis 3.0 Credits

Longitudinal data measure characteristics on the experimental units repeatedly over time. It is an essential design to study temporal change and to establish causal relationships. The analysis of longitudinal data requires sophisticated methodologies due to the correlation introduced by repeated measurements. This course covers modern statistical techniques for longitudinal data from an applied perspective.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 210 [Min Grade: C] and PBHL 455 [Min Grade: C]

PBHL 455 Introduction to Statistical Computing 3.0 Credits

Research projects often involve the management and manipulation of complicated sets of data. This course is designed to introduce the student to practical issues in the management and analysis of health and pharmaceutical data using the SAS programming language. Data from a variety of public health and biomedical applications will be used throughout the course to illustrate the principles of data management and analysis for addressing biomedical and health-related hypotheses.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 457 Adapting to a Hotter Climate: Protecting Health of Vulnerable Populations 3.0 Credits

This course provides an overview of the public health impacts of a changing global climate and strategies to prevent or reduce these impacts. How will societies cope with projected worsening of heat waves, extreme storms, and air pollution, shifts in vector-borne diseases, and displacement of populations sea-level rise? The course will survey the direct and indirect impacts of climate change on human health. Emphasis will be on changes in environmental conditions, stressors placed on human populations, and the strategies that societies will have to develop to reduce impacts on vulnerable populations.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 458 Crisis and Risk Communication in Public Health 3.0 Credits

Students will learn to create effective risk communication messages that are both theoretically grounded and based upon key lessons learned from the field of public health preparedness. Using a case study approach, and with an emphasis on developing skills including message design and evaluation, this course aims to give students an applied experience that will serve as a foundation for a career in public health or health communication.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 459 Survival Data Analysis 3.0 Credits

This course covers the basic techniques of survival analysis. These approaches are useful in analyzing cohort data, which are common in health studies, when the main interest outcome is the onset of event and time to event is known. The response is often referred to as failure time, survival time, or event time, and this course will introduce students to methods necessary for analyzing this type of data.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Prerequisites: PBHL 211 [Min Grade: C]

PBHL 495 Health Data Analytics Capstone 3.0 Credits

The senior capstone is a culminating experience for the health data analytics major. In this course, students will integrate the skills from their undergraduate coursework in a data analysis project motivated by scientific questions.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

PBHL 497 Capstone Experience I 2.0 Credits

The senior capstone is a progressive 3-quarter experience with cross cutting competencies for graduating public health major seniors to provide them with an individualized learning experience of breadth and depth. Students will work with faculty members to design a project that will fulfill both their public health interests as well as the broader capstone objectives. Students will participate in in-class learning with other public health majors to acquire foundational concepts, which they can apply to their individualized project.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: PBHL 301 [Min Grade: C-] and PBHL 302 [Min Grade: C-] and PBHL 303 [Min Grade: C-] and PBHL 304 [Min Grade: C-] and PBHL 308 [Min Grade: C-] and PBHL 314 [Min Grade: C-]

PBHL 498 [WI] Capstone Experience II 3.0 Credits

The senior capstone is a progressive 3-quarter experience with cross cutting competencies for graduating public health major seniors to provide them with an individualized learning experience of breadth and depth. Students will work with faculty members to design a project that will fulfill both their public health interests as well as the broader capstone objectives. Students will participate in in-class learning with other public health majors to acquire foundational concepts, which they can apply to their individualized project.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ECPH and classification is Senior.

Prerequisites: PBHL 301 [Min Grade: C-] and PBHL 302 [Min Grade: C-] and PBHL 303 [Min Grade: C-] and PBHL 304 [Min Grade: C-] and PBHL 308 [Min Grade: C-] and PBHL 314 [Min Grade: C-]

PBHL 499 [WI] Capstone Experience III 3.0 Credits

The senior capstone is a progressive 3-quarter experience with cross cutting competencies for graduating public health major seniors to provide them with an individualized learning experience of breadth and depth. Students will work with faculty members to design a project that will fulfill both their public health interests as well as the broader capstone objectives. Students will participate in in-class learning with other public health majors to acquire foundational concepts, which they can apply to their individualized project.

College/Department: Dornsife School of Public Health

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is ECPH and classification is Senior.

Prerequisites: PBHL 301 [Min Grade: C-] and PBHL 302 [Min Grade: C-] and PBHL 303 [Min Grade: C-] and PBHL 304 [Min Grade: C-] and PBHL 308 [Min Grade: C-] and PBHL 314 [Min Grade: C-]

PBHL I199 Independent Study in PBHL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL I299 Independent Study in PBHL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL I399 Independent Study in PBHL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL I499 Independent Study in PBHL 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL T180 Special Topics in Public Health 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL T280 Special Topics in Public Health 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL T380 Special Topics in Public Health 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

PBHL T480 Special Topics in Public Health 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Dornsife School of Public Health

Repeat Status: Can be repeated multiple times for credit

Real Estate

Courses

REAL 310 Introduction to Real Estate 3.0 Credits

This course provides the foundation for understanding the Real Estate business with a survey of development, land use, planning, property rights, leases, deeds, contracts, mortgages, time value of money and insurance.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: ACCT 115 [Min Grade: D] or ACCT 110 [Min Grade: D]

REAL 320 Real Estate Law - Principle & Practice 3.0 Credits

This course will explore the unique legal requirements of the real estate business including property rights, involuntary transfers, easements, private restrictions, public restrictions, zoning and land development laws.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

REAL 330 Facilities Management 3.0 Credits

This course will explore fundamental issues, principles, and practices of facilities management to develop and maintain built environments that are productive, safe, comfortable, sustainable, and maximize the return on fixed assets and resources.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

REAL 470 Real Estate Investments - Market & Feasibility Analysis 3.0 Credits

This course will introduce and explore the market analysis and feasibility methods in framing and supporting investment decision making for real estate projects.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

REAL 471 Advanced Real Estate in Investment & Analysis 3.0 Credits

This course will explore the market analysis and feasibility methods in framing and supporting investment decision making for real estate projects. Detailed market analysis strategies will be employed and case studies will be analyzed to deepen the students's knowledge and judgement for investment decision making.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: REAL 470 [Min Grade: D]

REAL 472 Advanced Market Research & Analysis 3.0 Credits

This course will explore the market research methods used to understand and dissect geographical and demographical real estate markets. Detailed market research strategies will be employed and case studies will be analyzed to deepen the student's knowledge of market research techniques and resources.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: REAL 470 [Min Grade: D]

REAL 473 Sales & Marketing of Real Estate 3.0 Credits

This course will explore the strategies for successful marketing of real property bases on market research and development strategies.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

REAL 474 Real Estate Economics in Urban Markets 3.0 Credits

This course will offer a unique and detailed perspective on urban real estate development and the special sub-markets in which they exist. Attention will be given to the characteristics of the particular economic factors relevant in urban real estate markets.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

REAL 476 Real Estate Valuation & Analysis 3.0 Credits

This course will introduce the concepts of real estate valuation, appraisals, and the relationship of these to financing and cash requirements.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

REAL I199 Independent Study in Real Estate 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL I299 Independent Study in Real Estate 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL I399 Independent Study in Real Estate 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL I499 Independent Study in Real Estate 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL T180 Special Topics in REAL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL T280 Special Topics in REAL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL T380 Special Topics in REAL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

REAL T480 Special Topics in REAL 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Engineering

Repeat Status: Can be repeated multiple times for credit

Real Estate Management & Development

Courses

REMD 110 Introduction to Real Estate Management 4.0 Credits

Introduces real estate management and its evolution into a multi-billion dollar professional industry. Real estate management topics include career opportunities, operations, finance, marketing, risk management, landlord-tenant laws, and Fair Housing Act. Examines the competencies necessary for operating and managing real estate investment properties, including detailed examination of leadership, operational policies, contract management, and financial aspects of multifamily, office, and industrial properties.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

REMD 320 Sustainability in the Built Environment 4.0 Credits

Integration of sustainable practices in the built environment, including energy and environmental resource efficiencies, are examined and evaluated in the planning, design, development, renovation, construction, and management of real estate investment assets. The impact of resiliency on real estate, community development, and city planning is also examined.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: REMD 110 [Min Grade: C]

REMD 340 Urban Finance and Environmental Planning 4.0 Credits

This course has a quantitative focus and covers topics at the intersection of urban finance, city planning, and urban environmental policy. Students interested in careers as developers, planners, elected officials, regulators, and members of nonprofit advocacy groups will learn how to design and evaluate policies that affect the real estate sector of urban economies.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: C]

REMD 375 Real Estate Finance 4.0 Credits

Surveys all methods of financing real estate. Topics covered include funding sources, interest rates; cost of funds; taxation; capitalization rates; mortgages; secondary mortgage markets; governmental financial agencies; leverage and property valuation; and real estate in a portfolio context. Decision-making models, pro-forma analysis, lease valuation, and feasibility analysis for various types of properties are employed.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: FIN 301 [Min Grade: C]

REMD 410 Real Estate Investment and Asset Management 4.0 Credits

Examines the fundamentals of finance as it applies to real estate investment and asset management. Identifies the skills necessary to maximize the value of real estate assets through effective operations and financial management practices. Topics include detailed study and analysis of ownership objectives of real estate investors and financial reporting, including acquisitions, dispositions, and new development. Provides tools and decision-making models to manage asset performance, including revenue maximization, property valuation, operating budgets, pro formas, net operating income, cash flow, internal rate of return, and return on investment.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

Prerequisites: REMD 375 [Min Grade: C]

REMD 491 Senior Capstone in Real Estate Management & Development 4.0 Credits

This course aims to equip students with a working knowledge of the primary strategies used in developing a management plan, including an as-is property analysis, as-is market analysis, financial analysis, and alternative scenarios. Experiential learning occurs throughout the course via strategic in-depth research and analysis of an income-producing property. The course culminates with developing a management plan for a pre-selected income-producing property. Students will work with faculty to design a plan to fulfill their management interests and the broader capstone objectives.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is REMD and classification is Senior.

Prerequisites: REMD 110 [Min Grade: C] and REMD 375 [Min Grade: C] and FIN 301 [Min Grade: C]

REMD I199 Independent Study in REMD 0.0-12.0 Credits

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD I299 Independent Study in REMD 0.0-12.0 Credits

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD I399 Independent Study in REMD 0.0-12.0 Credits

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD I499 Independent Study in REMD 0.0-12.0 Credits

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD T180 Special Topics in Real Estate Management & Development 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD T280 Special Topics in Real Estate Management & Development 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD T380 Special Topics in Real Estate Management & Development 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

REMD T480 Special Topics in Real Estate Management & Development 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Religious Studies

Courses

RELS T280 Special Topics in Religious Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study. May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 108 credits

RELS T380 Special Topics in Religious Studies 1.0-12.0 Credit

Topics decided upon by faculty will vary within the area of study. May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 108 credits

Retail Leadership

Courses

RETL I199 Independent Study in RETL 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL I299 Independent Study in Retail Leadership 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL I399 Independent Study in Retail Leadership 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL I499 Independent Study in Retail Leadership 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL T180 Special Topics in Retail Leadership 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL T280 Special Topics in Retail Leadership 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL T380 Special Topics in Retail Leadership 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

RETL T480 Special Topics in Retail Leadership 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Science, Technology and Society

Courses

SCTS 101 Introduction to Science, Technology, and Society 3.0 Credits

Participants in this course will explore how science and technology studies (STS) scholars analyze the social dimensions of technology and science. This course is an introduction to how political, social, and economic factors shape the development of scientific concepts, medical practices, and technological designs and vice versa. We will also discuss the political effects of scientific knowledge and specific technologies, exploring the costs and benefits of current techno-scientific arrangements.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SCTS 200 Addiction & Society 4.0 Credits

In this course, we will consider addiction through a science and technology studies (STS) lens. Such an approach investigates the social, political and economic factors that lead to the politicization of addiction, and also the strategies that government and nongovernment entities use to address the problem of addiction. We will pay particular attention to how the politics of addiction intersects with questions of race, class, and gender. Various iterations of this course will cover the same key concepts and frameworks, but the choice of case studies of different substances may vary. Topics to be covered could include, for example, opioid addiction, internet addiction, tobacco and cigarettes, and/or alcohol policy and cultures of recovery.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SCTS 202 Innovation and Social Justice 4.0 Credits

In this course, we will draw on literature from the field of science and technology studies (STS) to examine how technologies and social justice intersect, and the role of technological innovation in fostering a more just society. We will examine structures of injustice and how technology can reinforce, worsen, or mitigate them. We will look at the impacts of concrete design choices—and design processes—on various indicators of social justice. And we will learn from examples of self-conscious attempts by innovators to create technology with social justice aims in mind.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SCTS 205 Artificial Intelligence and Society 4.0 Credits

This course will examine artificial intelligence (AI) and related digital worlds from a Science and Technology Studies (STS) perspective. This course will examine the origins of AI as well as the social orders and cultural practices involved in recent developments. It will explore its potential effects on society, the human psyche and the medical engineering of the body. Finally, the ethical and political implications of AI will be examined. Specific topics discussed will include: virtual words; the uploading of brains into computers; golems, monsters and posthumans; dreams of immortality; smartness and intelligence; bots and online contagion; machine learning, its impact and limits.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SCTS 207 Medicine and Society 4.0 Credits

This seminar draws on literature in science and technology studies (STS) to explore the social dimensions of medicine, health and illness. In this seminar, we will explore how definitions and experiences of health and illness are shaped by technology use, cultural contexts, institutional practices, health care policies, and inequalities. We will examine social trends in medical technology and science as well as how illness categories are created, negotiated, and resisted. Participants in this course will gain the ability to assess the changing role of science and technology in medicine as well as think critically about the social dimensions of the experience of health and illness.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SCTS 208 Energy and Society 4.0 Credits

In this course, the tools of Science and Technology Studies (STS) to explore the role of energy in society will be used. The survey will include an analysis of energy infrastructures in relation to environmental justice; energy policy in relation to the housing crisis; and energy technologies in relation to efforts to mitigate and adapt to climate change. A core part of this course will be development of a portfolio, through in-class micro-assignments. Each weekly class will be divided into discussion of the assigned readings, project-based learning, group work, and media analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SCTS I199 Independent Study in Science, Technology and Society 0.0-12.0 Credits

Students will work under the supervision of a faculty member approved by the SCTS program. The subject matter will cover a specific research area in SCTS, or an area of academic study not offered in an existing course in the College of Arts and Sciences, Center for Science, Technology, & Society Program. Only students with sufficient background work will be accepted by the faculty member for independent work.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

**SCTS I299 Independent Study in Science, Technology and Society
0.0-12.0 Credits**

Students will work under the supervision of a faculty member approved by the SCTS program. The subject matter will cover a specific research area in SCTS, or an area of academic study not offered in an existing course in the College of Arts and Sciences, Center for Science, Technology, & Society Program. Only students with sufficient background work will be accepted by the faculty member for independent work.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

**SCTS I399 Independent Study in Science, Technology and Society
0.0-12.0 Credits**

Students will work under the supervision of a faculty member approved by the SCTS program. The subject matter will cover a specific research area in SCTS, or an area of academic study not offered in an existing course in the College of Arts and Sciences, Center for Science, Technology, & Society Program. Only students with sufficient background work will be accepted by the faculty member for independent work.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

**SCTS I499 Independent Study in Science, Technology and Society
0.0-12.0 Credits**

Students will work under the supervision of a faculty member approved by the SCTS program. The subject matter will cover a specific research area in SCTS, or an area of academic study not offered in an existing course in the College of Arts and Sciences, Center for Science, Technology, & Society Program. Only students with sufficient background work will be accepted by the faculty member for independent work.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

**SCTS T280 Special Topics in Science, Technology and Society
3.0-4.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

**SCTS T380 Special Topics in Science, Technology and Society
3.0-4.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

**SCTS T480 Special Topics in Science, Technology and Society
3.0-4.0 Credits**

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Screenwriting & Playwriting

Courses

SCRP 150 Entertainment Storytelling Fundamentals 3.0 Credits

This course introduces students to the core building blocks of “story” from the perspective of the entertainment industry, where stories are produced for mediums other than literary: film, television, the stage, graphic novels, or video games. Through readings, lectures, discussions and screenings, the class delves into the unique considerations of stories created or adapted for production as visual entertainment artifacts. Analytic examinations of core story-telling differences between various mediums will also be highlighted, to give students insight in later production and studies courses in their chosen medium of expression.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

SCRP 220 Playwriting I 3.0 Credits

Introduces the basic tenets of playwriting and applies their use towards the writing of a 10-minute play.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

SCRP 225 Playwriting II 3.0 Credits

Builds on the writing tenets learned in Playwriting I. Requires students to write a one-act play.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCRIP 220 [Min Grade: D]

SCRP 230 Page to Stage 3.0 Credits

Students will write a short play and then go through the rewrite process while working with a director and student actors. The final scenes will be performed in front of an audience.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: SCRIP 225 [Min Grade: C]

SCRP 241 Writing TV Comedy 3.0 Credits

Teaches the essentials of situation comedy writing for TV. Students will be expected to conceive and write their own thirty-minute pilot script plus a ‘bible’ for their show.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCRIP 270 [Min Grade: D]

SCRP 242 Writing TV Drama 3.0 Credits

Teaches the essentials of writing the one-hour television drama. Students will be expected to conceive and write their own thirty-minute pilot script plus a ‘bible’ for their show.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCRIP 270 [Min Grade: D]

SCRP 250 Creating Stand-up Comedy 3.0 Credits

Deals with the conception, writing and performance of a stand-up comedy routine. Includes exploration of creating a comic persona, structuring an act, construction of jokes, and aspects relating to performance. "Final exam" will be given before a live audience at a public venue.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

SCRP 255 Masterworks 1.0 Credit

This one-credit course will explore a single film -- of the professor's choosing -- in depth. Our approach is to watch the film intensely in order to understand its status as a critically lauded signature film, appreciate its aesthetic accomplishment, gain insight into the director's cinematic style and preoccupations, and, by extension, deepen our understanding of how classic cinema works.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 3 credits

Prerequisites: FMST 101 [Min Grade: D]

SCRP 260 Writing Comics 3.0 Credits

This course will introduce the student to the history, theory, language and disciplines of writing the American comic book and graphic novel. Students will learn about comic script-writing formats, the collaborative relationship between writer and artist, and techniques to strengthen both their writing and critiquing abilities.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: C]

SCRP 270 [WI] Screenwriting I 3.0 Credits

Workshop course that covers the fundamentals of writing scripts for film and television.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 101 [Min Grade: D] or ENGL 105 [Min Grade: D] or ENGL 111 [Min Grade: D]

SCRP 275 [WI] Screenwriting II 3.0 Credits

Workshop course that builds on the fundamentals of screenwriting learned in Screenwriting I. Each student develops and completes a short dramatic screenplay.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SCR 270 [Min Grade: D]

SCRP 280 [WI] Writing the Short Film 3.0 Credits

This course will focus on creating scripts for films under thirty minutes in length.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: D]

SCRP 281 Writing Episodic Shorts 3.0 Credits

Writing Episodic Shorts is a course targeted primarily at Film & Television Majors with sophomore standing and above. This course will focus on creating scripts for web series under thirty minutes in length. The goal for the ten weeks is to have students develop short scripts that serve as first-draft scripts for production classes within the FMTV curriculum.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: D]

SCRP 290 Game: Universe & Story 3.0 Credits

A non-technical course which examines the differences between film & TV works vs. games and interactive fiction forms, and the creative changes inherent in translating one to the other. Emphasis given to the creation of a vibrant, seductive, logically consistent game world. Course culminates in the design of a game based on an existing work of fiction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: C]

SCRP 295 Future of Narrative Games 3.0 Credits

Encourages students to use their knowledge of the current state of the art in gaming, and their technical and writing interests and expertise, to imagine games that go beyond those currently available. Of particular interest are ways to create branching narratives that deliver the story satisfaction and character development expected from traditional media.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: C]

SCRP 310 Literature for Screenwriters 3.0 Credits

This course provides exposure to literary traditions from the classics to pop culture, analyzing how the selected books have affected the film industry, both in terms of direct adaptations and by influencing generations of filmmakers and screenwriters.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SCR 270 [Min Grade: D]

SCRP 320 Game Development Study 3.0 Credits

This course is a close examination of a single video game studio each term. The course will look at all their current products as well as their company history to reach an understanding of their success story. Special attention will be given to the ways the company frequently differs from other video game companies and companies of similar size. Students will experience these concepts in a hands-on approach by playing through a variety of games, supported with critical classroom discussions.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: D]

SCRP 350 TV Writers' Room 3.0 Credits

Students will write episodes of an ongoing TV comedy series produced at Drexel. Following the network primetime model and working in collaboration, students will work under budget, production and deadline constraints similar to those in the real world.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: SCR 270 [Min Grade: C]

SCRP 353 TV Drama Practicum 3.0 Credits

Students will write episodes of an ongoing TV drama series to be produced at Drexel. Following the network primetime model and working in collaboration, students will work under budget, production and deadline constraints similar to those in the real world.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: SCR 270 [Min Grade: C]

SCRP 360 An Evening With... 3.0 Credits

Students are given the opportunity to interact with show business creative professionals, including writers, actors, directors, animators, editors and others. Guests will present their work and then discuss it in a free-form Q&A session.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

SCRP 370 Screenplay Story Development 3.0 Credits

This course provides a thorough understanding of methods used to develop story ideas from initial concept to complete screen story, including pitching, structuring, and creating treatments. Students pitch and develop several stories which can then be used to create full-length scripts in advanced workshops.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 270 [Min Grade: D]

SCRP 377 Game Writing Workshop I 3.0 Credits

This course embeds Screenwriting students on a team developing a computer game from concept to design document and through production. Screenwriting majors will be expected to contribute heavily to the narrative, character and other non-technical aspects of game creation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 290 [Min Grade: C] and SCR 295 [Min Grade: C]

SCRP 378 Game Writing Workshop II 3.0 Credits

This course embeds Screenwriting students on a team developing a computer game from concept to design document and through production. Screenwriting majors will be expected to contribute heavily to the narrative, character and other non-technical aspects of game creation.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 377 [Min Grade: C]

SCRP 380 Screenwriting Workshop I 3.0 Credits

The first of a two-course sequence in which students write a feature film script, telefilm, or television pilot.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SCR 275 [Min Grade: D] or SCR 370 [Min Grade: D]

SCRP 381 Screenwriting Workshop II 3.0 Credits

The second of a two-course sequence in which students write a feature film script, telefilm, or television pilot.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SCR 380 [Min Grade: D]

SCRP 382 Playwriting Workshop I 3.0 Credits

The first of a two-course sequence in which students write a 90-minute, two-act play.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SCR 225 [Min Grade: D]

SCRP 383 Playwriting Workshop II 3.0 Credits

The second of a two-course sequence in which students write a 90-minute, two-act play.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: SCR 382 [Min Grade: D]

SCRP 384 Comic/Graphic Novel Writing Workshop I 3.0 Credits

This two-term workshop will lead you through the process of developing and writing at least one draft of the script for either several issues of an original comic or a complete graphic novel. The finished script will be expected to conform to professional standards in everything from length to plot structure to formatting. You will be expected to utilize skills taught in the prerequisite course, SCR 260 (Comic Book Writing), as well as narrative skills learned in SCR 270 (Screenwriting I), including, but not limited to, thinking visually, establishing characters through behavior, writing effective dialogue, the basics of story structure, and related topics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 260 [Min Grade: C]

SCRP 385 Comic/Graphic Novel Writing Workshop II 3.0 Credits

This two-term workshop will lead you through the process of developing and writing at least one draft of the script for either several issues of an original comic or a complete graphic novel. The finished script will be expected to conform to professional standards in everything from length to plot structure to formatting. You will be expected to utilize skills taught in the prerequisite course, SCR 260 (Comic Book Writing), as well as narrative skills learned in SCR 270 (Screenwriting I), including, but not limited to, thinking visually, establishing characters through behavior, writing effective dialogue, the basics of story structure, and related topics.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 384 [Min Grade: C]

SCRP 495 Senior Project in Dramatic Writing I 3.0 Credits

The first of a three-course sequence in which students write a feature film script, telefilm, full-length stage play, television pilot, at least two spec episodes of an existing one-hour TV drama or four of an existing TV comedy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 381 [Min Grade: D] or SCR 383 [Min Grade: D]

SCRP 496 Senior Project in Dramatic Writing II 3.0 Credits

The second of a three-course sequence in which students write a feature film script, telefilm, television pilot, at least two spec episodes of an existing one-hour TV drama or four of an existing TV comedy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCR 495 [Min Grade: D]

SCRIP 497 Senior Project in Dramatic Writing III 3.0 Credits

The third of a three-course sequence in which students write a feature film script, telefilm, full-length stage play, television pilot, at least two spec episodes of an existing one-hour TV drama or four of an existing TV comedy.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: SCRIP 496 [Min Grade: D]

SCRIP I199 Independent Study in Screenwriting & Playwriting**0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP I299 Independent Study in Screenwriting & Playwriting**0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP I399 Independent Study in Screenwriting & Playwriting**0.5-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP I499 Independent Study in Screenwriting & Playwriting**0.0-12.0 Credits**

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP T180 Special Topics in Screenwriting & Playwriting 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP T280 Special Topics in Screenwriting & Playwriting 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP T380 Special Topics in Screenwriting & Playwriting 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

SCRIP T480 Special Topics in Screenwriting & Playwriting 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Sociology

Courses

SOC 101 Introduction to Sociology 3.0 Credits

Introduction to what sociology is and what it studies. Topics will include socialization, group dynamics, gender roles, structural inequality, race and ethnic group relations, stratification, deviance, and population studies. Special attention will be paid to core social institutions (e.g. family, education, religion, political and economic systems) as well as theories and methods that guide sociological investigation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 115 Social Problems 4.0 Credits

Provides a sociological analysis into the causes and possible cures for a variety of social problems. Focuses on topics such as unemployment, crime, poverty, corporate concentration of wealth and power, racism, immigration, health care, and environmental degradation.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 207 Medicine and Society 4.0 Credits

This seminar draws on literature in sociology and science and technology studies (STS) to explore the social dimensions of medicine, health and illness. In this seminar, we will explore how definitions, experiences, and treatments of health and illness are shaped by cultural contexts, inequalities, institutional practices, and health care policies. We will examine social trends in medical knowledge and practice as well as how illness categories are created, negotiated, and resisted. As a participant in this course, you will gain the ability to assess changes in the social organization of medicine as well as think critically about the role that different kinds of expertise play in medical knowledge.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 210 Race, Ethnicity and Social Inequality 4.0 Credits

Examines cultural diversity, racial and ethnic identity; racism, discrimination and prejudice, as well as minority-majority group relations both globally and at home. Special attention will be paid to the history and present status of various major racial and ethnic groups in the United States including African Americans, Latinos, Asian Americans as well as "white" ethnicities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 215 Sociology of Work 4.0 Credits

Examines the transformation of work in 21st century America. Focuses on problems of the "post industrial" workforce: big service sector, shrinking real wages, huge growth in temporary and part-time jobs. Special attention to global factors affecting the career path of recent college graduates.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 220 Wealth and Power 4.0 Credits

Examines the extent of differences in wealth and political power in modern society and looks at the origins and implications of those differences.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 221 Sociology of the Family 4.0 Credits

Examines structure and functions of the family and the roles, relationships, problems, and opportunities of family living from a variety of perspectives. Uses lectures, field experiences, and discussion.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 222 Sex and Society 4.0 Credits

This course examines how sexualities are socially produced and re-produced. Topics of study include gender and sexuality; changing social meanings of variant sexual orientations and practices; the effect of birth-control technologies, sexually transmitted infections and sexual violence on sexual norms; the commodification of sex and the social control of sex.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 230 Gender and Society 4.0 Credits

Explores the status and roles of modern women and men, with emphasis on changes in family relationships, career options, and lifestyle alternatives.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 235 Sociology of Health and Illness 4.0 Credits

Examines the history, economics, and politics of our health-care system and the effects of technology on the quality of health care.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 238 Sociology of Health Professions 4.0 Credits

During this course, we will explore the health professions from a sociological perspective. We will apply major sociological theories about the formation of professions, the socialization of its members, and the dynamics of change in the professions to medical doctors, nurses, and the allied health professions. We will also examine the implications for policy based on this research.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 240 Urban Sociology 4.0 Credits

Provides an overview of the contemporary process of urban change and of key problems and policy issues. Concentrates on five concerns: the evolution of urban economics; life and culture in the city today; race, ethnicity, gender, and class of urban populations; urban politics and social forces; and new directions in urban development.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 241 Research Design: Qualitative Methods 4.0 Credits

This class will provide an in-depth exploration of sociological research design and qualitative methods. Participants will grapple with issues of sampling, validity, human subjects ethics, recruitment, generalizability, and extendibility. Students will learn how to design interview guides and conduct research interviews. Introductory information on focus groups, fieldwork, action research, and archival research will be presented. Students will also learn how to use NVivo, a software package, to analyze interview data, including mixed-methods applications.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 242 Research Design: Quantitative Methods 4.0 Credits

This course provides an introduction to the quantitative methods, techniques and statistical analysis of social science data. The first part of the course broadly covers methodology, including research design, measurement, sampling, and ethical considerations in research. The second part of the course provides a practical, "hands-on" experience with data management, organization, and analysis of social science data, as well as the appropriate interpretation, communication, and presentation of statistical results. Topics include: frequency distributions, cross-tabulations, T-Tests, correlation and bivariate regression, inferences, and hypothesis/significance testing. Statistical software, such as SPSS or R Open-Source, are used for the analysis of data from a variety of social science datasets. While no strong.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 244 Sociology of the Environment 4.0 Credits

This course examines environmental problems through a sociological lens, and focuses on the ways that social practices, social structures and economic and political systems drive environmental change, degradation and preservation. We will explore the following questions: Why do humans keep re-creating environmental problems that threaten human and ecosystem survival even with the development of advanced technologies? What are the social barriers that stand in the way of solving the environmental problems of the twenty-first century? What has kept environmental movements from enjoying more success?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 261 Sex and The City 4.0 Credits

This course examines the relationship between urban spaces and sexuality. The course focuses on three themes: the role of sexual and gender minorities in the city; sexual commerce like prostitution and sex work; and the social construction of city problems as sexual and family issues. Urbanization allowed the creation of new urban environments allowing alternative stigmatized sexualities to flourish, while simultaneously revealing sexual inequalities through stigmatization, policing, and divestment. Course topics include: how urban spaces enabled the formation of gay cultures and the role of sexual minorities in gentrification; sex work, sex businesses, and policing; and the social construction of "urban family decline" and questioning "inner-city" single motherhood as a social problem.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 268 Sociology of Sport 4.0 Credits

The course examines the cultural and social aspects of sport. Students will be introduced to sport as a ubiquitous institution in American society as well as the essential characteristics and functions of sport from both a sociological and historic perspective.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 271 Sociology of Aging 4.0 Credits

Introduces the multidisciplinary scientific study of the causes and consequences of aging, its history, methods of research, major theoretical approaches, and empirical findings.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 278 Global Climate Change and Society 3.0 Credits

This course provides an overview of theoretical and empirical work on the social dimensions of global climate change. It focuses on large-scale social institutions and organizational forms as driving forces of climate change in an unequal world, and how these driving forces condition societal solutions to the climate crisis. It will cover topics that are national, international, and global in scope. Attention is also given to the intersection between climate change and other major social issues.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 281 Gentrification and Neighborhood Change 4.0 Credits

This course examines the rise, fall, and change of urban neighborhoods. Students will be introduced to key debates surrounding processes such as neighborhood disinvestment/decline, urban renewal, and gentrification. Course content will focus on the consequences of neighborhood change for urban communities. Students will learn to weigh the positive and negative, and the real and perceived consequences of gentrification, as well as evaluate urban policies for managing neighborhood change.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SOC 101 [Min Grade: D] or SOC 115 [Min Grade: D]

SOC 313 Sociology of Global Health 4.0 Credits

This course introduces students to a sociological perspective for understanding global health, healing, and medicine from individual experiences in local circumstances to practices that affect communities and societies throughout the world. It situates health and health care within cultural, social, historical, economic and political circumstances and addresses these topics in settings that are primarily outside the United States.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 318 Social Networks and Health 4.0 Credits

This course introduces social network analysis to undergraduate students, emphasizing its theoretical, substantive, and methodological foundations. It shows how social networks (types, manner, size and strength, and other dimensions of interpersonal connections) affect a wide array of health outcomes including, illness (flu, STDs, depression), access to and utilization of health information and resources. Students will acquire a sufficient grasp of both the classical and the contemporary network literatures to enable them to pursue independent advanced study in social network analysis.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 320 Sociology of Deviance 4.0 Credits

Examines theories of deviance and social control, focusing on their attribution of causation and the implications for control at both the individual and societal levels. Includes study of the social construction and maintenance of deviant identities and forms of deviance such as mental disorders, alcohol use, and crime.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 330 Development and Underdevelopment in the Global South 4.0 Credits

Focuses on the ways in which the international economy affects the class structure, politics, and development of developing nations. Focuses particularly on multinational corporations and on the successes and failures of import-substitution and export-oriented industrialization programs.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 335 Sociology of Education 3.0 Credits

Provides a general introduction to the sociology of education through the study of social, political, and cultural forces operating on public education in the United States and Britain. Examines theories, methods, and case studies to explore issues of identity formation, inequality, and class reproduction in an attempt to understand the role of schooling in contemporary life.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 339 Sociology of the Countryside 4.0 Credits

This course examines the environmental and social role of rural communities. While cities seem to dominate modern social life, a significant proportion of the world's population live and work in rural regions. In this course we will compare and contrast between rural and urban varieties of environmental concern and activism around regional environmental problems, like heatwaves or clean energy needs. We will learn why economies reliant on natural resource extraction, agriculture, nature-based tourism, and small businesses are particularly vulnerable to environmental and economic shocks. Finally, we will explore how rural communities across the world are increasing planned resilience to issues like globalization and climate change.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 340 Globalization 4.0 Credits

This course investigates the causal factors for the emergence of what is known as globalization, global economy, global village, etc. It covers the effects of global changes on national political systems, on ecology and on local cultures. The role of the US and reactions to the new world order will also be considered.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 342 Global Environmental Movements 4.0 Credits

This course focuses on key collective actors and institutions that are involved in conflicts around environmental regulations, land and water rights, food sovereignty, and climate change. This course will emphasize how significant environmental concern differs across contexts. We will explore cases of indigenous movements, contrast environmental advocacy in the Global South and North, and the creation of U.S. environmental policies, including historical and cultural processes of change involving social movements, environmental advocacy organizations, foundations and the media.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 346 Environmental Justice 4.0 Credits

Focuses on the political economy of environmental injustice and the impact of social movements addressing it; impact of chemical pollutants on human health; and the scientific and legal issues surrounding the study and regulation of pollutants.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 348 Plastics in Society 4.0 Credits

This course examines the issues caused by the proliferation of plastics in society, using a social science approach. We will begin by reading research revealing how plastic waste and pollution harm ecosystems and nonhuman species and pose risks to human health. Then we will discuss marketing practices that led to the embedding of plastics in our everyday lives, and get an overview of global commodity chains for trade in plastics. Finally, we will evaluate the effectiveness of U.S. and global public policies to deal with plastic waste such as recycling, extended producer takeback, bans of problematic plastic products such as microbeads and single-use plastic bags, and import bans on foreign plastic waste instituted by a growing number of nations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 349 Sociology of Disasters 4.0 Credits

Focuses on social aspects of disasters, such as: collective behaviors (panic, crime, improvisation); warning, evacuation and perception of risk; social responses to natural and technical disasters; scientific uncertainties and technical disasters; social produced age, gender, racial/ethnic and social class vulnerabilities to disaster; terrorism-caused disasters; and disaster preparedness and prevention.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 355 [WI] Classical Social Theory 4.0 Credits

Critically examines the ideas of the classical sociological theorists (e.g., Marx, DuBois, Durkheim, and Weber).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 356 [WI] Contemporary Social Theory 4.0 Credits

Covers a broad range of theories that guide contemporary sociological thought.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SOC 355 [Min Grade: D] or SOC 260 [Min Grade: D]

SOC 370 Practicum in Applied and Community Sociology 4.0 Credits

This course is central to the newly adopted emphasis of the sociology major on participatory research. These courses are intended as the practicum and supervised project-oriented research work for community organizations and agencies.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 405 Medicine, Technology and Science 3.0 Credits

This seminar focuses on the social dimensions of medicine, health and illness. In this seminar, we will explore how definitions and experiences of health and illness are shaped by technology use, cultural contexts, institutional practices, health care policies, and inequalities. We will examine social trends in medical technology and science as well as how illness categories are created, negotiated, and resisted. Participants in this course will gain the ability to assess the changing role of science and technology in medicine as well as think critically about the sociological dimensions of the experience of health and illness.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 406 Housing and Homelessness 4.0 Credits

This course examines how housing shapes individual, family, and neighborhood dynamics. Students will be introduced to housing policy in the United States, and will gain an in-depth understanding of homelessness and unstable housing. Other course topics include the meaning of home; the significance of homeownership in the United States; residential segregation; gated neighborhoods; and housing in transnational contexts. Students will learn how to think critically about the role of housing in enduring forms of race, class, and gender-based inequalities and to assess current policy for improving access to stable housing in Philadelphia.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SOC 410 Imagining Multiple Democracies 4.0 Credits

This course will explore the multitude of democratic theories and democracies in practice that have developed during the last several decades. There have been profound changes to our conceptions of 'democracy' during the past 40 years driven by social movements around the globe seeking to change their societies. What kind of society do we imagine when we talk about 'democracy'? We will examine fundamental questions and dilemmas surrounding contemporary democratic culture and we will explore in depth several contemporary democratic movements including feminist, identity based, religiously based, radical, environmentalist, anti-globalization and media activism movements.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

SOC 420 Love, Rage & Debt: The Debt Society 4.0 Credits

This course will explore the sociological implications of debt, on a personal, local, national and international level. Using our own debt as an ethnographic point of departure, we will collectively analyze personal debt, and through this analysis, link our debt to national debt, to historic debt, to reparations, to dispossession, to austerity, both historic and current, to the International Monetary Fund, the World Bank, and to alternative strategies to ameliorate debt, such as Jubilee or debt strikes. We will consider our emotional relationships and political commitments to debt, on both a personal level as well as the societal level. Consideration will focus on how gender, race, nationality, and class intersect with debt, and we will use feminist and critical race theories lenses to frame our discussions.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SOC 356 [Min Grade: C]

SOC 430 Politics of Life 4.0 Credits

This course will explore the sociological implications of advancements that have been made in genetic engineering, biotechnologies and other areas of biomedical research. Starting with earlier examples of "power over life" from the 18th and 19th centuries, it will explore themes, dilemmas and complications embedded in the scientific control over life. Topics to be explored include biopower and biocapital, eugenics, race and class, stewardship and bioengineering, new reproductive technologies and reproductive choice, among much, much more. Consideration to feminist, queer and critical race theories will frame much of class discussion.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 444 Social Movements 4.0 Credits

Focuses on movements for social change through the lens of sociological theory and research. Topics include the rise of social movements; the dynamics of mobilization, organization, commitment and collective identity; movement opponents and targets; violent and terrorist social movements; the role of governments and political elites in repressing or facilitating movement activity; and how movements change society.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SOC 450 Capstone in Sociology 4.0 Credits

This seminar is intended for students majoring or minoring in sociology. Students will reflect on their experiences as a sociology student, connect these with issues in the discipline, and consider how they plan to use their sociological skills and imagination after college.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Pre-Junior or Sophomore

Prerequisites: SOC 101 [Min Grade: C] and (SOC 115 [Min Grade: C] or SOC 210 [Min Grade: C] or SOC 215 [Min Grade: C] or SOC 220 [Min Grade: C] or SOC 221 [Min Grade: C] or SOC 222 [Min Grade: C] or SOC 230 [Min Grade: C] or SOC 235 [Min Grade: C] or SOC 240 [Min Grade: C] or SOC 241 [Min Grade: C] or SOC 242 [Min Grade: C] or SOC 268 [Min Grade: C] or SOC 271 [Min Grade: C] or SOC 313 [Min Grade: C] or SOC 320 [Min Grade: C] or SOC 330 [Min Grade: C] or SOC 335 [Min Grade: C] or SOC 340 [Min Grade: C] or SOC 345 [Min Grade: C] or SOC 346 [Min Grade: C] or SOC 349 [Min Grade: C] or SOC 355 [Min Grade: C] or SOC 356 [Min Grade: C] or SOC 370 [Min Grade: C] or SOC 410 [Min Grade: C] or SOC 420 [Min Grade: C] or SOC 430 [Min Grade: C] or SOC 444 [Min Grade: C])

SOC 490 Sociology Research Seminar I: Research Design 4.0 Credits

An in-depth exploration of selected topics. Projects are selected by students in consultation with a faculty member.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Junior or Senior.

Prerequisites: SOC 241 [Min Grade: D] and SOC 242 [Min Grade: D]

SOC 491 Sociology Research Seminar II: Data Acquisition and Analysis 4.0 Credits

Continuation of SOC 490.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

Prerequisites: SOC 490 [Min Grade: D]

SOC 492 Sociology Research Seminar III: Practicum in Sociological Research 4.0 Credits

Continuation of SOC 491.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SOC 491 [Min Grade: D]

SOC I199 Independent Study in SOC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC I299 Independent Study in SOC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC I399 Independent Study in SOC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC I499 Independent Study in SOC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC T180 Special Topics in Sociology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC T280 Special Topics in Sociology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC T380 Special Topics in Sociology 0.0-12.0 Credits

This course will explore current issues and debates in Sociology. It will be conducted as a seminar. The topic will vary each term.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SOC T480 Special Topics in Sociology 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Software Engineering

Courses

SE 181 Introduction to Software Engineering and Development 3.0 Credits

Introduces advanced software development fundamentals including memory management, typing and scoping, datastores, software testing, and security, as well as user-centric design and user experience.

This course will be taught using a specified programming language of instruction.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: C]

SE 201 Introduction to Software Engineering and Development 3.0 Credits

Introduces advanced software development fundamentals including memory management, typing and scoping, datastores and software testing. This course will be taught using a specified programming language of instruction.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: C]

SE 210 Software Specification and Design I 3.0 Credits

Study of the principles, practices, and techniques used to gather system requirements and document them in a requirements specification.

Includes techniques for requirements discovery such as user interviews and prototyping. Introduces approaches for organizing and expressing software requirements in a requirements specification.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 172 [Min Grade: C]

SE 211 Software Specification and Design II 3.0 Credits

Continues study of requirements with increasing emphasis on converting requirements into a software system design. Presents alternate approaches, techniques for evaluating specifications, specification and design tools, and use of specifications to develop system-level tests.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: SE 210 [Min Grade: C]

SE 310 Software Architecture I 3.0 Credits

Study of the principles and practices of object-oriented design with an emphasis on object relationships, loose coupling, and design patterns.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 265 [Min Grade: C] and CS 260 [Min Grade: C] and (SE 181 [Min Grade: C] or SE 201 [Min Grade: C])

SE 311 Software Architecture II 3.0 Credits

Continues discussion of software architecture with a focus on micro-level architecture including patterns, frameworks, and component-based software engineering, and commercial off-the-shelf software.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: SE 310 [Min Grade: C]

SE 320 Software Verification and Validation 3.0 Credits

Presents theory and practice of software testing. Covers structural testing including such topics as path testing, dataflow testing, logic based testing, syntax testing, program slicing, mutation testing, fault injection, program perturbation, and testing tools. Discusses techniques for test construction and test suite evaluation, and validation against requirements and design models. Also covers methods of inspection and review at various phases of the software lifecycle.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C] and (SE 181 [Min Grade: C] or SE 201 [Min Grade: C])

SE 410 Software Evolution 3.0 Credits

Covers issues related to change in software systems. Addresses principles and techniques of corrective software maintenance, software enhancements, and software product family. Introduces students to issues of change in large software systems including configuration control, change and product management.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C]

SE 420 Open Source Software Engineering 3.0 Credits

Explores tools, techniques, process, and culture of free and open source software (FOSS) projects. Addresses open source project evaluation, business models, and FOSS as a source of software engineering innovation. Includes student participation in an existing humanitarian FOSS project. Introduces concepts of computing for social good.

College/Department: College of Computing and Informatics

Repeat Status: Not repeatable for credit

Prerequisites: CS 260 [Min Grade: C]

SE I199 Independent Study in SE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

SE I299 Independent Study in SE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

SE I399 Independent Study in SE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

SE I499 Independent Study in SE 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

SE T280 Special Topics in Software Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

SE T480 Special Topics in Software Engineering 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Computing and Informatics

Repeat Status: Can be repeated multiple times for credit

Spanish

Courses

SPAN 101 Spanish I 4.0 Credits

Introductory Spanish. Includes listening, speaking, reading, and writing. Offered all terms.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

SPAN 102 Spanish II 4.0 Credits

Continues SPAN 101.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SPAN 101 [Min Grade: D] or APWSP 161

SPAN 103 Spanish III 4.0 Credits

Continues SPAN 102.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SPAN 102 [Min Grade: D] or APWSP 251

SPAN 113 Spanish for Healthcare Professionals I 4.0 Credits

Spanish 113 is a course designed for students at the novice-mid/high level in Spanish (equivalent to our existing SPAN 103). Students will review grammatical structures needed to interact with patients such as asking questions, giving commands, and reporting in present and past tense. There will be a strong focus on developing oral as well as listening skills.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SPAN 102 [Min Grade: D]

SPAN 201 Spanish IV 4.0 Credits

Intermediate Spanish. Includes grammar review, listening, speaking, and reading. Recommended for students who wish to attain oral competence.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SPAN 103 [Min Grade: D] or APWSP 331 or SPAN 113 [Min Grade: D]

SPAN 202 Spanish V 4.0 Credits

Continues SPAN 201.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SPAN 201 [Min Grade: D] or SPAN 211 [Min Grade: D] or APWSP 391

SPAN 211 Spanish for Healthcare Professionals II 4.0 Credits

Spanish 211 is the second course in the sequence of Spanish for Health Professionals, equivalent in level of competency to our existing SPAN 201. It is designed for students with low-intermediate level of Spanish to develop the medical vocabulary, linguistics and cultural skills necessary to provide medical care to Spanish-speaking patients. Each class will be a combination of formal preparation, focused on grammatical structures and key vocabulary, and "hands on" oral practice set around the realistic dialogues that model typical conversations in doctor-patient relations.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (SPAN 103 [Min Grade: D] or SPAN 113 [Min Grade: D])

SPAN 212 Spanish for Healthcare Professionals III 4.0 Credits

SPAN 212 continues 211 and provides linguistic as well as cultural knowledge in the medical field at the intermediate mid/high level in Spanish, at a level equivalent to our regular 202. Besides reviewing and practicing medical terminology in Spanish and grammatical structures commonly used in healthcare settings, students learn about different Spanish speaking groups' cultural practices and norms with regards to health.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (SPAN 201 [Min Grade: D] or SPAN 211 [Min Grade: D])

SPAN 310 [WI] Advanced Writing and Speaking 4.0 Credits

This course provides advanced practice in written and oral communication including journalistic, professional, and creative writing. Examines contemporary cultural contexts through media and news. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: SPAN 202 [Min Grade: D] or SPAN 212 [Min Grade: D] or APWSP 461

SPAN 320 Introduction to Language for the Professions 4.0 Credits

This course provides an introduction to communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 330 Introduction to Identities and Communities 4.0 Credits

This course provides an introduction to the analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 27 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 340 Introduction to Power and Resistance 4.0 Credits

This course provides an introduction to the analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 350 Introduction to Language, Media, and Society 4.0 Credits

This course provides an introduction to the role of language and media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 410 [WI] Advanced Grammar and Translation 4.0 Credits

This course provides advanced grammar instruction and fosters translation and communication skills within a contemporary cultural context. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 420 Advanced Studies in Language for the Professions 4.0 Credits

Spanish 420 provides advanced communication skills in areas such as contemporary business, health, and law in a culturally sensitive fashion. The content of SPAN 420 may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 430 Advanced Studies in Identities and Communities 4.0 Credits

This course provides an advanced analysis of individual and collective identities, including issues of gender, sexual orientation, race, ethnicity, class, nationality, and religion. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 440 Advanced Studies in Power and Resistance 4.0 Credits

This course provides an advanced analysis of power relations and issues of (in)equality rooted in contemporary political and socio-economic systems. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN 450 Advanced Studies in Language, Media, and Society 4.0 Credits

This course provides an advanced analysis of the role of language and media in society, including sociolinguistics, gender, media studies, and communication. The content of this course may change every term it is offered and is repeatable for credit. Taught in Spanish.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 8 times for 36 credits

Prerequisites: SPAN 310 [Min Grade: D]

SPAN I199 Independent Study in SPAN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN I299 Independent Study in SPAN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN I399 Independent Study in SPAN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN I499 Independent Study in SPAN 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN T180 Special Topics in Spanish 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN T280 Special Topics in Spanish 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN T380 Special Topics in Spanish 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

SPAN T480 Special Topics in Spanish 0.5-12.0 Credits

Recommended for Spanish minors and for students with proficiency status. Students should anticipate a significant amount of writing in this course.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Special Education

Courses

EDEX 101 Neurodiverse College and Career Seminar 1.5 Credit

This course imparts to the student knowledge of social, academic and workplace skills by providing instruction on improvisational social techniques and daily living practices to assist students in adapting to college life and the workforce. Each week a different topic will be introduced, and social participation will be incorporated into each topic.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 102 Neurodiverse College and Career Seminar II 1.5 Credit

This course is a continuation of EDEX 101 and continues to impart to the student knowledge of social and academic skills by providing instruction on improvisational social techniques, daily living practices, and learning strategies to assist students in adapting to life in college. Each week a different topic will be introduced, and social participation will be incorporated into each topic.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 103 Neurodiverse College and Career Seminar III 1.5 Credit

This course imparts to the student knowledge of social and academic skills by providing instruction on improvisational social techniques and daily living practices to assist students in adapting to life in college. Each week a different topic will be introduced, and social participation will be incorporated into each topic.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 142 Special Education Foundations: Referral and Assessment 3.0 Credits

This course is an introduction to special education with specific emphasis placed on the history of special education, legal and ethical means of assessment, translating data into the Multi-Disciplinary Evaluation (MDE) and Individualized Education Program (IEP) processes and critical legal issues related to special education.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 336 Special Education Law and Processes 3.0 Credits

This course focuses on special education processes available for students with disabilities in grades PK-12. Specifically, this course provides an overview of child find, evaluation and education and IEP/IFSP development, implementation and monitoring concepts; as mandated by IDEA and Section 504 of the Rehabilitation Act of 1973. Students will apply special education process strategies such as collaboration, problem solving, progress monitoring and early dispute resolution techniques. Specific legal cases will be reviewed throughout the term. A field experience component is required for this course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 344 Inclusive Practices 3.0 Credits

This course focuses on the management of instruction for all students in the inclusive classroom by examining the diverse cognitive, physical, social, behavioral, and language development of children, and emphasizes curricular, environmental, and instructional adaptations in addressing students' needs. This course has a field component.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B]

EDEX 348 Emotional and Behavioral Support of Individuals with Disabilities 3.0 Credits

This course focuses on both low and high-incidence emotional and behavioral problems encountered in general and special education environments. Specific emphasis will be on an understanding of characteristics and interventions that support these types of students. Field experience hours are required for this course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 349 High Incident Disabilities 3.0 Credits

This course focuses on high-incidence disabilities, specifically learning disabilities and language disorders encountered in general and special education environments. Additional emphasis is placed on an understanding of characteristics and interventions that support these types of students. Field observation hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 350 Teaching Individuals with Low Incident Disabilities 3.0 Credits

The focus of this course is on curriculum development approaches, instructional strategies, and accommodations for students with low incident and moderate/severe disabilities such as: low vision and blindness, hearing impairments and deafness, deaf-blindness, severe health and physical disabilities, and traumatic brain injuries. Field experience hours are required for this course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 352 Integrating Technology for Learning & Achievement 3.0 Credits

This course is designed to teach educators how to integrate technology into instruction in general education and special education classes, specifically to support reading, writing and mathematics achievement. It also focuses on the use of technology for universal design for learning and using assistive technology with students with disabilities. Field observation hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 355 Teaching Students with Autism Spectrum Disorders 3.0 Credits

The focus of this course is on students with an Autism Spectrum Disorder (ASD). Specific emphasis will be on the understanding of characteristics, instructional strategies, and interventions that work with the range of students with ASD. The course also emphasizes behavior reduction strategies that are consistent with a positive behavioral support approach for use with students with ASD. Field experience hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 368 [WI] Literacy and Content Skill Development PK-12 3.0 Credits

The focus of this course is the literacy skill development of students at-risk for literacy disabilities and delays and those students identified with literacy disabilities. The course will teach a variety of instructional interventions and strategies for improving student decoding, encoding, vocabulary, fluency, and comprehension. Strategies to teach literacy skills in the content areas are also covered. Participants will assess literacy learners and monitor progress towards improved literacy skills. Field experience hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 375 Teaching STEAM in an Inclusive Environment PK-12 3.0 Credits

The focus of this course is the teaching of science, technology, mathematics and the arts to all students in an inclusive environment. STEAM is an educational approach that uses content for guiding students in inquiry, dialogue, creative and critical thinking. These are critical life skills that students with disabilities often struggle to master. This course will teach instructional interventions and co-teaching strategies for improving student understanding of complex concepts and fostering experiential and creative learning opportunities. Field experience hours are required for this course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 378 Special Education: Methods & Practices PK-12 3.0 Credits

This course will focus on effective instructional strategies to meet the learning needs of students with disabilities. Specific emphasis will be placed upon lesson planning, unit planning, grouping strategies and collaboration with other teachers and staff in all delivery settings. Field experience hours are required for this course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 380 Social Emotional Wellness and Evidence-Based Preventative School Practices 3.0 Credits

This course is designed to teach future educators the critical role that social emotional wellness plays in the academic, social and behavioral development of children and youth. Research based programs and practices, including but not limited to, universal screening and school-wide PBIS and proactive educative approaches to encouraging coping and resiliency will be highlighted. Students will develop an understanding of universal screenings, assessments and instructional strategies related to resiliency and social emotional wellness. Field placement hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 381 Understanding Social Emotional Disorders 3.0 Credits

This course is designed to provide future educators with an understanding of social emotional wellness and common types of mental health issues that children and youth in school experience. An understanding of the role adverse childhood experiences and trauma has on the growth, development and learning of children and youth will be stressed. Additionally, the role of the teacher and the school in contributing information to the assessment process and their responsibility to provide support according to a student's classification and/or diagnosis will be explored. Field placement hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 382 Evidence-Based School Interventions and Trauma Informed Education/Care 3.0 Credits

This course is designed to teach future educators about research-based interventions that schools use to support individual students in the general education setting who are struggling with mental health issues or students who have experienced trauma or adverse childhood experiences. Students will gain an understanding of the critical features of mandated and best-practice programs (e.g., trauma-informed care, PBIS, crisis planning) that support students within school settings. Evidence-based tools that can be used on a daily basis will be presented as well as crisis de-escalation. This course will focus on the use of data to inform educational practices and interventions. Field placement hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 383 Collaboration and Community Based Practices to Promote Social Emotional Wellness 3.0 Credits

This course will highlight the need to work collaboratively and authentically with parents, students and the community to address and promote social emotional wellness as well as intervening with students who are experiencing mental health issues at an intensive level. Tools and processes to communicate and advocate on behalf of students will be highlighted. Structured, intensive interventions, curriculum, and best practices will be addressed that have research support to address the needs of the individual students most in need of supports. Field placement hours are required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDEX 388 Implementing Academic Interventions in Inclusive Educational Environments 3.0 Credits

This course is designed to teach educators how to use assessment and progress monitoring data to identify, implement, and modify academic interventions for students with disabilities. This course will focus on interventions in mathematics, literacy, science as well as problem solving and organization. Students will implement these interventions with a working knowledge of the Pennsylvania Academic Standards in core content areas. Students will learn how to match specific interventions to the instructional areas of need and how to document these interventions in student IEPs. Field experience is a requirement of the course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B]

EDEX 414 [WI] Special Education Student Teaching Seminar 9.0 Credits

This course is designed to develop special education teaching knowledge, skills and abilities through student teaching, supervision and reflective practice. Activities include journaling, best practice workshops and reflecting on relevant case studies. This is the special education student teaching course. Each student will be assigned a university supervisor and be observed five times over the course of the term.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDEX 348 [Min Grade: B] and EDEX 349 [Min Grade: B] and EDEX 350 [Min Grade: B] and EDEX 352 [Min Grade: B] and EDEX 142 [Min Grade: B] and EDEX 344 [Min Grade: B] and EDEX 355 [Min Grade: B] and EDEX 336 [Min Grade: B] and EDEX 368 [Min Grade: B] and EDEX 378 [Min Grade: B]

EDEX I199 Independent Study in EDEX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX I299 Independent Study in EDEX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX I399 Independent Study in EDEX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX I499 Independent Study in EDEX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX T180 Special Topics in Special Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX T280 Special Topics in Special Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX T380 Special Topics in Special Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDEX T480 Special Topics in Special Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

Sport Coaching Leadership

Courses

SCL 101 Principles of Coaching 3.0 Credits

This course will include setting performance goals in coaching, the various roles of the coach, ethical conduct in coaching, the psychology of coaching, coach-athlete compatibility, coaching burnout, personality of the coach, and coaching youth sports. An emphasis is placed on conducting practices and competitions to enhance the social-emotional growth of athletes.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 102 Principles of Coaching II 3.0 Credits

This course will examine the administrative side of coaching by approaching the profession from a business manager's standpoint. Students will be introduced to the business concepts and techniques applicable to coaching athletics.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 201 Sport-Based Youth Development 3.0 Credits

This course is designed to provide students with an understanding of the field of sport-based youth development (SBYD). Students will learn about sport-based youth development best practices, establishing program goals, key components to successful programs, strategies for financially supporting SBYD programs, and established guidelines for program assessment and growth.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 203 Sports Conditioning 3.0 Credits

This course will take a multi-faceted approach to the general science of strength training and sports conditioning. Students will gain a basic understanding behind training principles by covering the following topics: exercise physiology concepts and applications, testing and evaluation, flexibility and exercise techniques, program design, periodization, aerobic and anaerobic training considerations. This course will provide a practical challenge to the students to apply scientific concepts and principles to the development of a sport specific program in a sport of their choice. Developing and administering a training plan is a key component to coaching and students will become adept at this skill after completing this course.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 210 Prevention and Care of Athletic Injuries 3.0 Credits

This course is designed to introduce the student to the care and prevention of athletic injuries. The course content will include a review of pertinent anatomical structures and their relationship to injuries. The course will also cover mechanisms of injuries, intrinsic and extrinsic variables of injuries, and basic preventative and treatment measures for common sports related injuries. In addition, students will complete the requirements of American Sport Education Program (ASEP) curriculum for Sport First Aid certification and complete the on-line Sport First Aid Test.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 280 Kinesiology 3.0 Credits

This course provides an introduction and overview to the science of human movement. Identifies uses of the field of kinesiology in relation to science, medicine, human behavior, athletics, and overall fitness. Applies knowledge and concepts to the areas of physical activity, athletics, and recreation/fitness. Students will actively participate in and observe human movement in human performance labs.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 314 Sport Performance and Energy Systems 3.0 Credits

This course covers nutrient categories and how they function in the body, with a particular emphasis on how to instill in athletes the advantages of healthy eating, and how to impart good information regarding food and food choices to a group of athletes in a team environment.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 315 Athletic Recruiting 3.0 Credits

This course is designed to provide students with the necessary tools to become effective recruiters of athletic talent. Students will learn how to identify and recruit talent that will have a high impact within their athletic programs. Students will understand how to be compliant with NCAA, NAIA, and NJCAA rules when recruiting. A major deliverable of this course will be a comprehensive recruiting plan.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 325 Athlete Leadership Development 3.0 Credits

This course is designed to provide students with an understanding of athlete leadership development and its importance in sport programming. Various athlete leadership models at the youth, scholastic, collegiate, and professional levels will be reviewed and students will have the opportunity to create their own athlete leadership development program.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 345 Evaluating Athletes and Teams 3.0 Credits

This course is designed to provide students with the necessary tools to become effective evaluators of athletes, teams, and coaches. Students will learn how to create a comprehensive evaluation strategy and to communicate and share this strategy with key constituents to effectively manage overall improvement. A major deliverable of this course will be a comprehensive evaluation plan.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 401 Professional Coaching Portfolio 3.0 Credits

The professional portfolio is a capstone course that provides Sport Coaching Leadership majors with an opportunity to demonstrate achievement in their major and to engage in self-reflection. Components include reflective essays and carefully chosen samples of academic and relevant professional work completed during the college experience.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 419 Global Coaching Seminar 3.0 Credits

This course is designed to expose coaches to a variety of international coaching methods and concepts via a study abroad experience for 7-10 days. This seminar is offered each summer and locations vary by year. Each student in the Sport Coaching Leadership program will attend this study abroad experience. An emphasis is placed on athlete interaction and engagement, practice planning, recruiting, and sport for development.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: SCL 101 [Min Grade: C] and SCL 102 [Min Grade: C]

SCL 495 Coaching Practicum I 3.0 Credits

The practicum is designed to develop greater breadth and depth of students' understanding and experience within the coaching industry. This course provides an opportunity for students to apply the knowledge and skills acquired in the Sport Coaching Leadership program in a practical setting. This is the first practicum in a series of three coaching practicums. This practicum experience will focus on using basic coaching theory and principles under the guidance of the current coaching or administrative staff.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 496 Coaching Practicum II 3.0 Credits

The practicum is designed to develop greater breadth and depth of students' understanding and experience within the coaching industry. This course provides an opportunity for students to apply the knowledge and skills acquired in the Sport Coaching Leadership program in a practical setting. This is the second practicum in a series of three coaching practicums. This practicum experience will focus on gaining experience in the administrative aspects of coaching under the guidance of the current coaching or administrative staff.

College/Department: School of Education

Repeat Status: Not repeatable for credit

SCL 497 Coaching Practicum III & Project 6.0 Credits

The practicum is designed to develop greater breadth and depth of students' understanding and experience within the coaching industry. This course provides an opportunity for students to apply the knowledge and skills acquired in the Sport Coaching Leadership program in a practical setting. This is the final practicum in a series of three coaching practicums. This practicum experience will focus on designing and completing a coaching project for a particular team under the guidance of the current coaching or administrative staff.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: SCL 495 [Min Grade: CR] and SCL 496 [Min Grade: CR]

SCL I199 Independent Study in Sport Coaching Leadership 0.0-12.0 Credits

Self-directed course requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL I299 Independent Study in SCL 0.0-12.0 Credits

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL I399 Independent Study in SCL 0.0-12.0 Credits

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL I499 Independent Study in SCL 0.0-12.0 Credits

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL T180 Special Topics in Sport Coaching Leadership 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL T280 Special Topics in SCL 0.0-12.0 Credits

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL T380 Special Topics in SCL 0.0-12.0 Credits

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

SCL T480 Special Topics in SCL 0.0-12.0 Credits

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

Sport Management

Courses

SMT 110 The Business of Sport 4.0 Credits

This course will introduce students to the billion-dollar international sports industry and identify the vast, creative, and substantial role business plays in professional, collegiate and amateur sports. Sports business applications are explored in the following areas: sponsorship, promotions, marketing, fundraising, finance, media, ticketing, public relations, law, facilities, and sport careers.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 120 The Business of Esport 4.0 Credits

This course will introduce students to the esport industry and discuss its foundational concepts. After discussing esport's history, this course will explore the esport ecosystem. The duration of course will investigate the business model of esport, governance issues, potential career opportunities, and the future of esport.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 201 Sports Marketing, Promotion, and Public Relations 4.0 Credits

Students will build an integrated marketing plan for a sporting event by first describing how the four Ps of marketing are applied in sports. Students learn about the uses of the essential elements of marketing. Students will be able to identify the conventions of sport promotions and public relations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: MKTG 201 [Min Grade: D] (Can be taken Concurrently)

SMT 205 Sport Media Relations 4.0 Credits

This course is an overview of media relations and its role in the field of sport management. This course will cover skill sets and roles a media relations specialist must demonstrate in order to be successful. There will be emphasis on writing, communication, planning, and organizational skills.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 227 Sport Entrepreneurship 4.0 Credits

This course will introduce students to the field of sport entrepreneurship by coupling entrepreneurship as a generic activity with the many opportunities the sports industry presents. It explores the challenges faced by individuals starting up new ventures and the probable paths of career development for students pursuing entrepreneurship.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 230 Sports and the Law 4.0 Credits

Reviews the legal and regularity aspects, elements, and relationships for all constituents participating in sports: administrators, coaches, athletes, agents, vendors, sponsors, faculty managers and owners, and spectators. Seminal court cases are discussed. Students examine the inextricable links between the law and business ethics.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SMT 240 Olympic Games 4.0 Credits

Provides an overview of modern Olympic Games focusing on the organization, politics, economic implications and the bidding process of the Games. Topics of sponsorship, media coverage and ethical considerations will be discussed. The course will also address how the spirit of the Olympic Games has changed over time.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 245 NCAA Compliance 4.0 Credits

This course will overview basic regulatory, legal and due process rules that govern NCAA competition. Course will cover elements of NCAA regulations, rules interpretations, enforcement decisions and sanctions. An understanding of NCAA rules compliance will be gained through legal cases and actual NCAA enforcement proceedings.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SMT 254 Women & Minority Opportunities in Sport 3.0 Credits

This course chronicles the major events and strategies used for women and minorities to have equal opportunities to participate in sports at all levels. It points out the social and legal issues surrounding the dramatic rise in women and minority participation at all levels of play.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

SMT 255 Legal Foundations of Title IX 4.0 Credits

This course will overview the basic legal concepts surrounding Title IX and its applications to intercollegiate athletics programs. The basic elements of Title IX and how various tests are applied by the court system will be included. Course will focus on actual legal cases, investigations and remedial plans.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 260 Sports Agents & Labor Relations 4.0 Credits

This course examines the controversial nature of being a sports agent. Students will be exposed to legal and ethical issues that surround sports agents. Additionally, students will review the labor relations laws and collective bargaining agreements that govern professional sports through a variety of lectures, readings and assignments.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SMT 230 [Min Grade: C-] or BLAW 201 [Min Grade: C-]

SMT 262 Digital Sports Storytelling 4.0 Credits

This course is designed to introduce students to digital storytelling in sports. Topics will include locating and defining a sports story, framing a sports story for audience and platform, and storyboarding. Students will learn the power behind stories and how to use them to enhance and develop fan engagement, drive attendance and increase sponsorship. Students will write, produce and edit digital stories on mobile platforms.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: SMT 110 [Min Grade: D]

SMT 270 Sports Facility Planning & Management 4.0 Credits

This course is designed to provide learning experiences in managing sport facility operations, planning new sport facilities, and renovating and maintaining new facilities. An understanding of sports facilities, their design, and management will be gained through field study, speakers, and standard classroom material.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 275 Sports Event Management 4.0 Credits

This course provides the student with exposure to comprehensive event planning, funding and managing sports events including those for professional, amateur and collegiate sports events, and commercial, recreational, and club sports.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 285 Sport, Industry, and Society 4.0 Credits

The focus of this course is on the social forces that shape the sport industry in the United States and internationally and the influence the sport industry has on society. Students are encouraged to critically examine common understandings of sport from economic, historical, political, and sociological perspectives.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: SMT 110 [Min Grade: D]

SMT 290 Digital Media in Sport 4.0 Credits

This course is designed to introduce students to the digital landscape of sport business. Topics include current issues in digital sports media, digital media and sports facilities, digital media and professional sports teams, mobile applications in sport, and selling digital sport products and services.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: SMT 110 [Min Grade: D]

SMT 305 Fundraising in Sports 4.0 Credits

Fundraising in Sports will examine the skills, strategies and techniques needed for successful annual and major gift solicitation in the field of athletic development. Areas to be addressed include: understanding annual fund and major gift fundraising, examining booster club: organization structure and benefits, priority seating programs, the importance of donor research in the fundraising process, capital campaigns in sport, and the use of special events to achieve fundraising success.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SMT 110 [Min Grade: D]

SMT 307 Corporate Sponsorship in Sports 4.0 Credits

Course will examine marketing strategy and techniques used by industry professionals to increase revenues for sports properties. Students will gain an understanding of sponsorship sales terminology, cold calling and prospecting techniques, marketing proposal presentation guidelines and relationship building strategies to increase overall sales.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 310 Sports Contracts 4.0 Credits

Course will cover basic legal issues and strategies surrounding contract issues in sports. Students will be introduced to basic elements of contract law and see it applied by the court system in the context of the sports industry.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: SMT 230 [Min Grade: C-] or BLAW 201 [Min Grade: C-]

SMT 320 Sport Economics 4.0 Credits

An introduction to the economics of sports. Topics include sports markets: demand, supply and pricing; organization, monopoly power and market failure; labor relations, labor market problems and remedies, public finance of sports, the law and economics of sports, and the economics of college sports.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: ECON 201 [Min Grade: C-]

SMT 321 Money, Power, Politics: College Sports in America 4.0 Credits

Students will examine the dynamics that drive college athletics departments today. Looking through the lens of divisional and conference affiliation, students will begin to understand internal and external forces that drive athletics outcomes.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 325 Business of Sports Media 4.0 Credits

This course examines the media companies' financial relationships with sports franchises both nationally and internationally. Students will assess the technology shifts over time and learn how those broadcasters who control sports programming have been aided by favorable Federal policies and interpretations, as well as (at times) Congressional intervention. Included in this course is an examination of how the NFL, Major League Baseball, the NBA and College Conference Networks structure their media rights deals. Students will research how to value a media deal.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 333 Sports Gambling 4.0 Credits

This course will review and examine the history, policies, economics, and regulation of sports gambling in the United States. The emphasis will be on assisting the student in understanding the concepts related to the relatively new area of legalized sports betting in the United States. Class sessions will be devoted to examining and discussing the reading assignments and current issues in the field of sports gambling. Real world examples will be used to illustrate the concepts and principles.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 335 Sport Governance & Policy 4.0 Credits

Basic theories of organization and leadership applied to sport organizations. Included are professional team-sport leagues, intercollegiate athletics, the Olympic movement, and international sport associations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 340 [WI] International Aspects of Sport 4.0 Credits

International sport should be understood within and outside the culture of a country in which it is being played or viewed. This course will allow students to develop an appreciation of non-American sporting cultures across the world, learn about potentially unfamiliar sports and sporting events and contrast different aspects of the sports industry with those within the US. Globalization and its implications for the sporting world will also be investigated, as will trans-national companies and organizations that impact the sport marketplace.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: SMT 110 [Min Grade: D]

SMT 350 Corporate Social Responsibility in Sport 4.0 Credits

Course provides an overview of the concept of 'corporate social responsibility' (CSR), focusing on the economic, social and environmental impacts of the sport industry and the resulting challenges faced by sport organizations, their participants and their managers. The emphasis will be on assisting the student in understanding the concepts related to the role sport plays in CSR. Class sessions will be devoted to examining and discussing the reading assignments and current CSR issues in sport. Real world examples will be used to illustrate the concepts and principles.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 362 Sport Ticket Sales 4.0 Credits

This course provides training in all aspects of ticket sales including networking, prospecting and qualifying, creating sales proposals, overcoming objections, and closing sales. Specific techniques such as role playing will be used to prepare students for careers in sport ticket sales.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 372 Sport Business Consulting 4.0 Credits

In this course, students act as consultants for an organization, focusing on developing insights for sport business challenges. Students conduct research and analyses to form recommendations that will help the organization achieve its goals. In addition to working closely with faculty, students also interact with and present their work to leaders within the participating organization.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

SMT 375 Sport Finance 4.0 Credits

Basic theory in finance applied to managerial decision making in sport firms and organizations. Includes forms of ownership, financial analysis, risk analysis and portfolio evaluation, and capital budgeting techniques, all as applied to sports. The finance of sports facilities including taxation and subsidization and methods for evaluating publicly financed projects.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 [Min Grade: C-]

SMT 380 Sports Analytics 4.0 Credits

Theory, development, and application of analytics in sport. The application of analytics in sport for purposes of evaluating player performance, managerial decisions, pricing, and other areas in sport industry operations.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: STAT 201 [Min Grade: C]

SMT 475 Sports Industry Practicum 4.0 Credits

The practicum is designed to develop greater breadth and depth of students' understanding and experience within the industry. The practical application of knowledge and skill acquired in class will help students extend their expertise by working in a sport management related organization. Suggested for non-co-op students.

College/Department: LeBow College of Business

Repeat Status: Can be repeated 2 times for 12 credits

SMT I199 Independent Study in SMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

SMT I299 Independent Study in SMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

SMT I399 Independent Study in SMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Can enroll if major is SMT.

SMT I499 Independent Study in SMT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

SMT T180 Special Topics in Sport Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

SMT T280 Special Topics in Sport Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

SMT T380 Special Topics in Sport Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

SMT T480 Special Topics in Sport Management 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

STEM Teacher Education

Courses

ESTM 201 DragonsTeach: Step 1 1.5 Credit

This course is an introduction to mathematics, computer science, and science teaching as a career. Discussions include standards-based lesson design and various teaching and behavior management strategies. Fieldwork consists of planning and teaching two inquiry-based lessons to students in local elementary schools. Fieldwork in local schools is required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

ESTM 210 DragonsTeach: Step 2 1.5 Credit

Topics include routes to teacher certification in mathematics, computer science, and science teaching; various teaching methods that are designed to meet instructional goals; and learner outcomes. Students develop and teach two inquiry-based lessons in their field in a middle school, and participate in peer coaching. Fieldwork in local schools is required.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: ESTM 201 [Min Grade: B]

ESTM 301 Knowing and Learning in Mathematics and Science 3.0 Credits

The course focuses on what it means to know and learn mathematics and science, how this knowledge changes over time and how it develops in learners. Topics include foundations of STEM education; problem solving in mathematics and science education utilizing technology; principles of expertise and novice understanding of subject matter. The course also serves to set the stage for field experiences in ESTM 302 and will involve fieldwork in local schools.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: ESTM 210 [Min Grade: B] (Can be taken Concurrently) and ESTM 201 [Min Grade: B]

ESTM 302 Classroom Interactions 3.0 Credits

Classroom Interactions builds on previous DragonsTeach courses and continues the process of preparing students to teach mathematics and science in upper elementary and secondary settings by providing opportunities to see how theories explored in Knowing and Learning play out in instructional settings. Students design and implement instructional activities informed by their own understanding of what it means to know and learn mathematics and science, and then evaluate the outcomes of those activities on the basis of student artifacts (i.e., what students say, do, or create). The course will involve fieldwork in local schools.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: ESTM 301 [Min Grade: B]

ESTM 303 Research and Practice in Science and Mathematics Education 3.0 Credits

The course focuses on research and practice in science and mathematics education and supports students as they connect the two in the context of their classroom. Typical topics include assessment and evaluation, technology, equitable STEM instruction and learning environments and additional current topics in STEM Education. Students will gain experience as practitioner-researchers through observation and fieldwork in local schools.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: ESTM 302 [Min Grade: B]

ESTM 335 Teaching Secondary Computer Science 3.0 Credits

This course emphasizes the major issues in learning and teaching computer science in the secondary school. Topics will include instructional practices, learning theories, philosophies of assessment, and curriculum in the secondary school. Throughout the course, emphasis will be placed on issues of equity and inclusion.

College/Department: School of Education

Repeat Status: Not repeatable for credit

ESTM 342 Teaching Engineering Concepts to Children 3.0 Credits

This course is designed to provide elementary educators with the background knowledge and experiences that will enhance their ability to teach engaging, effective, and meaningful engineering lessons. These include: trends and issues in 21st century engineering education; best practices pedagogies in engineering education; connections and integration between engineering curriculum and other content areas; engineering design practices; planning, managing, implementing, and assessing engineering lessons; safety in engineering classrooms; the use of technology to enhance engineering instruction; and how to engage all learners in positive classroom engineering experiences.

College/Department: School of Education

Repeat Status: Not repeatable for credit

ESTM 350 Project-Based Instruction 4.0 Credits

Project-based instruction engages learners in exploring authentic, important, and meaningful questions of real concern to students. Through a dynamic process of investigation and collaboration and using the same processes and technologies that scientists, mathematicians, and engineers use, students work in teams to formulate questions, make predictions, design investigations, collect and analyze data, make products and share ideas. Students learn fundamental concepts and principles that they apply to their daily lives. Project-based instruction promotes equitable and diverse participation and engages students in learning. In this class you will develop a complete unit as opposed to individual lessons in preparation for apprentice teaching. This course involves fieldwork in local schools.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: ESTM 302 [Min Grade: B] (Can be taken Concurrently) and ESTM 201 [Min Grade: B] and ESTM 210 [Min Grade: B]

ESTM 362 Perspectives in Science and Mathematics Education 3.0 Credits

In this course, students will gain expertise in how to incorporate the history of science (defined as the life and physical sciences and mathematics) into primary and secondary education curricula. Based on a survey of the major transitions and examples in the history of science from the Renaissance to Modernity, students will gain a unique perspective on historical methodology, the content of science, and creativity in scientific research. These lessons will support student teachers in developing unique Science and Mathematics courses that are founded on their new historical perspective.

College/Department: School of Education

Repeat Status: Not repeatable for credit

ESTM 364 Methods of Research and Inquiry in Science and Mathematics 3.0 Credits

This course is an introduction to analysis of current topics in science and engineering and serves as an introduction to teaching and learning research-based courses. The intended audience is undergraduate students from all STEM areas and particularly those interested in STEM Education. Through quantitative analysis, the students will experience first-hand the societal, environmental, financial, economic, and technological impacts of scientific, engineering and business processes. The course requires procuring data, analyzing large-scale data sets using statistical software applications, synthesizing qualitative information using quantitative results, presentation of research, results, conclusions, and developing instruction that supports students' engagement in similar practices.

College/Department: School of Education

Repeat Status: Not repeatable for credit

ESTM 409 Student Teaching Seminar 3.0 Credits

This seminar course is designed to compliment the Student Teaching capstone, field experience by developing the pre-service teacher's teaching knowledge and strengths throughout their field placement, supervision, and reflective practice. The goal of the seminar is to create reflective practitioners by providing a forum for collaborative, critical inquiry based on the field experience.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM 410 DragonsTeach Student Teaching 6.0 Credits

DragonsTeach Student Teaching is the capstone course of the DragonsTeach program, providing the opportunity for STEM majors to earn both their degree and Pennsylvania Instructional I certification to teach at the secondary level (middle or high school). Student teaching allows will experience the day-to-day responsibilities of the professional middle or high school math or science teacher and demonstrate the competencies needed for certification. In addition to extensive fieldwork, student teachers meet as a group for a weekly seminar.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: ESTM 350 [Min Grade: B]

ESTM I199 Independent Study in ESTM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM I299 Independent Study in ESTM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM I399 Independent Study in ESTM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM I499 Independent Study in ESTM 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM T180 Special topics in ESTM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM T280 Special topics in ESTM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM T380 Special topics in ESTM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

ESTM T480 Special topics in ESTM 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

Systems Engineering

Courses

SYSE 401 Introduction to Systems Engineering 3.0 Credits

This course is an introduction to systems engineering. Systems engineering covers a higher level system concept, applying well tested engineering practices to address the processes which are critical to most large engineering efforts, and optimizing them for effectiveness and financial success. This course covers the complete system engineering process, touching on the many facets of engineering systems from needs and requirements generation to production to system operation. Students will learn to apply the systems processes and acquire skills to integrate user needs, manage requirements, conduct technological evaluation and build elaborate systems architectures.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: EET 311 [Min Grade: D]

SYSE 488 Systems Engineering Analysis 3.0 Credits

Introduces multiple System Engineering Analysis practices used to execute systems engineering processes. Provides foundation to execute, monitor, and manage the traditional practices and also develops ability to modify and establish new practices based on this massive foundation. Instills confidence so student can contribute, lead, monitor or manage any systems effort.

College/Department: College of Engineering

Repeat Status: Not repeatable for credit

Prerequisites: SYSE 401 [Min Grade: D]

Taxation

Courses

TAX 341 Federal Income Taxes 4.0 Credits

Surveys the tax structure of the United States, with emphasis on those portions of the Internal Revenue Code that affect the federal income tax liabilities of individuals and small businesses. Considers the tax impact on individuals and small businesses relating to compensation, portfolio income and business investments.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ACCT 115 [Min Grade: C]

TAX 342 Advanced Federal Taxes 4.0 Credits

Considers the tax impact on business entities including corporations, partnerships, and S corporations of property acquisitions and dispositions, formation of a business, taxable income, redemption of ownership interest, liquidation of the entity and dividends and distributions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if classification is Senior.

TAX 353 Personal Income Taxes 4.0 Credits

Non-accounting majors only. Introduces the federal tax system, with emphasis on the individual income tax. Uses tax preparation software.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if major is ACCT or classification is Freshman

TAX 360 Cannabis, Cookies and Cyberspace: The New Age of State & Local Taxation 4.0 Credits

This course provides a basic introduction to state and local taxation, with an emphasis on income and franchise taxes imposed on businesses. The course is designed to encompass all of the major topics relevant to multistate taxation, including recent legislative developments and state tax policy trends.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

TAX 390 Financial Planning and Taxes 4.0 Credits

The Financial Planning and Tax course introduces students to increase personal wealth due to the influence of tax on business and personal decision making. Thin influence of tax illustrated through class discussions and case assignments, which are real world personal financial and investments opportunities.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: TAX 341 [Min Grade: C]

TAX 411 Tax Research 3.0 Credits

In this course you will develop the skills of tomorrow's tax consultant to maintain your edge in providing value to the client in an efficient and effective manner. That value is to professionally resolve a tax issue by means of thinking creatively, conducting basic research using primary tax authority sources, communicating findings in a concise manner, and maintaining ethical standards.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: TAX 341 [Min Grade: C] or TAX 342 [Min Grade: C]

TAX 415 Tax Experiential Learning 4.0 Credits

In this experiential service-learning class, students participate in Volunteer Income Tax Assistance (VITA), a nationally recognized program supported by the IRS. It requires students to complete a short IRS training program and then prepare actual individual income tax returns to help those in need of pro bono assistance in the Philadelphia community through a neighborhood service project.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

TAX 425 Tax & Business Strategy 4.0 Credits

The adage is that there are only two things that are guaranteed: Death and Taxes. Since taxes influence each of us daily, it is important to have an appreciation for the tax law and how it influences a person or a business. Students will apply their cross-disciplinary knowledge and skills to study the intersection of strategy and taxes. This course does not attempt to make a person a tax accountant but rather a businessperson with the savvy to ask the rights questions.

College/Department: LeBow College of Business

Repeat Status: Not repeatable for credit

Prerequisites: FIN 301 (Can be taken Concurrently)

TAX I199 Independent Study in TAX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

TAX I299 Independent Study in TAX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

TAX I399 Independent Study in TAX 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

TAX I499 Independent Study in TAX 0.5-4.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

TAX T180 Special Topics in TAX 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

TAX T280 Special Topics in TAX 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

TAX T380 Special Topics in TAX 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

TAX T480 Special Topics in TAX 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: LeBow College of Business

Repeat Status: Can be repeated multiple times for credit

Teacher Education

Courses

EDUC 101 Foundations in Education I: A Historical and Philosophical Perspective 3.0 Credits

In this course students are introduced to pedagogical and philosophical concepts, theories, methods and procedures in the historical context of education in America. Students develop an understanding of how schools work and of the teaching/learning dynamic through required mentoring activities.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 104 Supporting Learners through Classroom Partnerships 1.0 Credit

This 1-credit course works in partnership with local teachers to support Drexel students to work one-on-one and in small groups with K -12 students on particular learning goals. This course is repeatable for credit and requires background checks and clearances to work in schools.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC 106 First Year Seminar: A Case of Schools and Cities 1.0 Credit

In this course, students will examine the relationship between city school district and cities and the role of politics, race and poverty in school closings in a major US city.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 107 First Year Seminar: Exploring Pedagogies 1.0 Credit

In this course, students will discuss the education landscape within and outside of the US focusing on the role of class, race and gender in perpetuating a range of structures and systems and the ways that many of those may not be designed to support all learners.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 108 First Year Seminar: Designing Learning Spaces 1.0 Credit

In this course, students will examine how researchers design and implement learning activities and explore learning spaces as a way to foster engagement and youth empowerment.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 112 Integrative Instruction: Focus on World Geography 3.0 Credits

Through the study of geography, encourages students to find a meaningful framework for understanding the system of human culture as it exists over the surface of Earth. Explores the use of technology in education.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is EDUC.

EDUC 120 Child Development I: Typical Development 3.0 Credits

This course addresses the multifaceted complexities of child development, through discussion of classic and emerging theories. Students will recognize and apply developmental domains of theory and research in the field of child development.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 121 Child Development II: Atypical Development 3.0 Credits

Students will apply knowledge of typical growth and development in childhood to those children whose development is atypical. Key topics include newborn screening, patterns in development and cognitive testing. This course has a Stage 1-2 field component. Successful completion of the course and field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDUC 120 [Min Grade: D]

EDUC 122 Development in Early Childhood Education 3.0 Credits

This course addresses the multifaceted complexities of typical and atypical child development, through the discussion of classic and emerging theories. The readings and class assignments make use of research-based, real-world, and cross-cultural examples. In this course students will apply their knowledge of typical growth and development in childhood to those children whose development is atypical. The course places specific emphasis on how student develop and learn through play. An ecological systems approach will be taken to explain possible reasons for atypical and atypical developmental patterns. Systems include biological, environmental, and societal. This course has a required field experience.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 123 Adolescent Development 3.0 Credits

This course addresses the complexities of adolescent development, through discussion of theories. It uses research-based, real-world, and cross-cultural examples. It aims to foster the student's ability to recognize and apply connections among developmental domains, theory, and research with the field of human development. This course also fosters an understanding of the organizational structure of middle and high school programs as related to the diverse set of developmental, cultural, social, and emotional needs of the adolescent learner. This course requires additional field experience hours. This course has a Stage 1-2 field component. Successful completion of the course and field component is required for recommendation for certification.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 205 Sophomore Pedagogy Seminar 1.0 Credit

Education majors only. Builds on the freshman seminar and incorporates service learning as an instructional strategy.

College/Department: School of Education

Repeat Status: Can be repeated 3 times for 4 credits

Restrictions: Can enroll if major is EDUC and classification is Pre-Junior or Sophomore .

EDUC 210 Early Language Development 3.0 Credits

Provides preservice teachers an overview of language development in the early years of a child's life from birth to age five, in the home and school settings. Topics include; phonological awareness, acquisition of phonetic knowledge, semantic understanding and syntactic use. This course requires additional field experience hours.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 216 Diversity and Today's Teacher 3.0 Credits

This course explores major issues related to the increasing diversity of students in elementary and secondary classrooms in the United States. The multifaceted challenges of teaching heterogeneous student populations.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 222 Development in Early Childhood Education 3.0 Credits

This course addresses the multifaceted complexities of typical and atypical child development, through the discussion of classic and emerging theories. The readings and class assignments make use of research-based, real-world, and cross-cultural examples. In this course students will apply their knowledge of typical growth and development in childhood to those children whose development is atypical. The course places specific emphasis on how student develop and learn through play. An ecological systems approach will be taken to explain possible reasons for atypical and atypical developmental patterns. Systems include biological, environmental, and societal. This course has a required field experience.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 236 Early Literacy I 3.0 Credits

This course examines research-validated literacy instruction and literacy interventions. Topics will include phonics, fluency, comprehension, vocabulary, and the reading-writing connection. Emphasis is placed on the scio-cultural aspects of reading. Focus is also placed on literacy instruction across the curriculum.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 305 [WI] Junior Pedagogy Seminar 1.0 Credit

Education majors only. Continues further exploration of relationships among service learning, content knowledge, pedagogy knowledge, learner characteristics utilizing generic influences, special needs students, and motivation techniques.

College/Department: School of Education

Repeat Status: Can be repeated 2 times for 3 credits

Restrictions: Can enroll if major is EDUC and classification is Junior.

EDUC 306 Assessment of Young Children I 3.0 Credits

Students will gain an understanding of the role of the assessment process in early education. Students will explore evaluation procedures and classroom-based data collection strategies for young children in inclusive education settings. Course covers 3 major functions of assessment: program planning, program monitoring and program evaluation.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 308 Creating a Positive Classroom Climate 3.0 Credits

This course focuses on the practical aspects of classroom management, school safety and other critical social issues that relate to providing a positive and productive learning environment, particularly in under-served classroom settings. Specific focus in this course will be dedicated "knowing the learner", identifying individual student needs, building rapport and constructing a "democratic classroom". Additional emphasis will be placed on teacher leadership and how each pre-service candidate will develop his/her own approach to leading and managing a PK-12 classroom.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 312 Educational Policy, Law & Advocacy 3.0 Credits

This course introduces students to the complexities of the law and policy that shape public schooling in the U.S. Emphasis is placed on how education law and policy impact and are impacted by teachers' evolving roles, relationships, and practices. Additionally, the course provides students with foundational information and tools they will need in order to advocate, as teachers, for students and for themselves.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 314 Science Teaching Methods 3.0 Credits

This course bridges theory and practice, providing hands-on experience in the application of constructivist learning theory to designing and delivering effective classroom experiences in the area of science.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 315 Secondary Science Teaching Methods 3.0 Credits

Methods for teaching middle and secondary school science are explored including strategies and technologies to support student learning as defined by the state and national science standards. Inquiry-based model of learning and assessment emphasized. Theory and practice bridged to provide hands-on experiences in application of constructivist learning theory and effective classroom experiences. This course has a Stage 3 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and stage 3 field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 316 Teaching in Urban Contexts 3.0 Credits

This course enables students to understand the complex conditions that have led to issues that impact urban education. The course will explore recent reform efforts focused on changing the organizational structure and curriculum. Specific emphasis will be placed on the teacher's disposition towards the learner, the impact of racism and knowledge and skills related to teaching in urban settings. This course will introduce historical references for the current condition of urban schools as well as the aspects of teaching that lead to a classroom of respect and rapport for the urban learner and his/her family.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 322 Evaluation of Instruction 3.0 Credits

Permits students to acquire competence in new evaluation techniques, including portfolios, journals, performance assessments, individual and collaborative projects, and presentations. Covers qualitative and quantitative assessment used in measuring student achievement. Teaches techniques for grading and reporting pupils' classroom performance in cognitive, affective, and (where appropriate) motor tasks. The course is directed toward instruction in elementary and high school settings.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

EDUC 324 Current Research in Curriculum & Instruction 3.0 Credits

Examines the theories and assumptions underlying various approaches to instruction for elementary and high school teaching. Included are areas such as a) knowledge acquisition and critical reasoning in mathematics and science, b) teaching general and specific skills as related to content material, c) study skills and abilities to learn, and d) the roles of memory and metacognition in learning. Explores these processes of human cognition and learning with particular attention to how conditions that foster them might be built into materials, pedagogy, and learning environments.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 326 [WI] Language Arts Processes 3.0 Credits

This course studies the nature of language, including phonetic, semantic, and syntactic aspects of language development. The course applies contemporary research to processes in teaching oral and written communication and assumes that listening, speaking, writing, and reading in the content areas are integrated processes and should be taught as such. This introductory course is designed to provide a student with the experiences, concepts, and skills to teach literacy effectively in any PreK-8 classroom. This course has a Stage 1-2 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

EDUC 328 Language Arts Processes 4-8 3.0 Credits

This course develops knowledge and competencies for teaching adolescent literacy in grades 4-8. Students will use supportive contexts, diverse texts, ongoing assessments, and technology to engage learners in developing self-directed, life-long literacy skills across all disciplines. This course has a Stage 1-2 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 335 Engaging the Learner 3.0 Credits

This course provides multiple approaches to the critical linked processes of assessment, curriculum development, and inclusive instruction of all young children. Topics of study include: planning and preparation, using appropriate materials, scope and sequence and strategies for student-centered assessments.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 336 Early Literacy II 3.0 Credits

This course focuses on teaching strategies that are effective in developing students' writing abilities within a literacy rich environment. The interrelationship between reading and writing will be emphasized. This course has a Stage 3 field component. Successful completion of the course and field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Prerequisites: EDUC 236 [Min Grade: D]

EDUC 338 Expressive Arts for PK-4 3.0 Credits

The focus of this course is to teach educators to develop and incorporate relevant curriculum for the expressive arts (dance, music, theatre and visual arts) into the PK-4 classroom(s). Students will explore instructional strategies, modern technologies, stages of artistic development and multicultural art forms.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 355 Social Studies Teaching Methods 3.0 Credits

This course focuses on the effective, responsible and ethical teaching of social studies in the elementary classroom. Topics include; perspectives of social studies, curriculum standards, unit development, assessment design, integrated curriculum and technology, and teacher decision-making.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 356 Secondary Social Studies Methods 3.0 Credits

Students will be able to identify content and appropriate pedagogy strategies for the various National Council for the Social Studies disciplinary standards for history, geography, civics, economics and psychology. Major curriculum movements and teaching diverse learners are also explored. Classroom-based experiences are required. This course has a Stage 3 field component. Successful completion of the course and field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and stage 3 field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 358 English Teaching Methods 3.0 Credits

This course is designed to support the development of pre-service teachers in the middle and secondary English/Language Arts classroom. Students will be provided opportunities to integrate and apply theories of learning, curriculum and pedagogy to instruction of English/Language Arts. Students will also be required to make connections between theory and current research to classroom instruction and examine best practices in working with struggling readers and writers in the secondary classroom. Classroom-based experiences are required. This course has a Stage 3 field component. Successful completion of the course and field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and stage 3 field experience requirements.

College/Department: School of Education

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: EDUC 101 [Min Grade: B]

EDUC 360 English/Language Arts Teaching Methods for the Middle Years 1.5 Credit

The course prepares pre-service teachers to teach reading and writing to adolescents in middle years classrooms by providing knowledge of the literacy needs of middle level learners with emphasis on reading and writing development, methodology, assessment and accountability. The latest research findings are reflected in studies of how middle level learners require instructors to be adept at a breadth of instruction. Strategies and methods for assisting adolescents are provided as they become fluent readers and writers. This course has a Stage 3 field component, successful completion of the field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and stage 3 field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 361 Middle Years Science Methods 1.5 Credit

This course examines the many aspects of the teaching of science in elementary schools today. The role of national and state standards (e.g., National Science Education Standards, the Next Generation of Science Standards, and the Pennsylvania State Standards) in curriculum development and reform is explored in depth. Topics covered include planning science instruction to include inquiry and integrated concepts, developing authentic assessments involving a variety of tools, creating and maintaining a safe laboratory and learning environment that meets the needs of diverse learners, and the integration of technology into science education. Successful completion of the Stage 3 field component is required for recommendation for certification. See FPO website for clearance policy and stage 3 field requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 362 Middle Years Social Studies Methods 1.5 Credit

This course prepares pre-service teachers with the skills to plan, design and teach adolescents a social studies curriculum with appropriate assessments based on national and state standards related to middle year social studies (e.g., National Council for Social Studies, PA Department of Education) encompassing geography, history, civics and government, and economics. Preparation includes exploration of adolescent development, subject matter pedagogy, assessment and intervention for students with disabilities and English Language Learners. This course has a Stage 3 field component. Successful completion of the course and field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 365 Foundations in Instructing English Language Learners 3.0 Credits

This course explores principles and theory of second language and literacy acquisition, bilingualism, academic language competence and linguistics, and instructional approaches based on these principles. This course has a Stage 1-2 field component. Successful completion of the course and field component is required for recommendation for certification. See SoE Field Placement Office website for all clearance policy and field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 405 Senior Pedagogy Seminar 1.0 Credit

Education majors only. Focuses on the teacher as a researcher. Presents descriptions of collaborations between university faculty and faculty from K-12 schools and discusses student involvement in learning and pedagogy issues.

College/Department: School of Education

Repeat Status: Can be repeated 2 times for 3 credits

Restrictions: Can enroll if major is EDUC and classification is Senior.

EDUC 409 [WI] Teaching Seminar I 9.0 Credits

This course is part one of a two-course requirement specifically aligned with the teacher candidate's full-time, two term Student Teaching experience. The course is designed to develop one's teaching knowledge and strengths through classroom practice, supervision and reflective practice. In this seminar, students will share experiences through reflective journaling, discuss best practices in instruction, learn about resources, reflect on what is being encountered in the field and begin to construct professional teaching portfolios. Through this course candidates will be evaluated according to the four domains of effective teaching and learning, which include; planning and preparation, instructional delivery, the classroom environment and professionalism. Clearances/Stage 4 Field Placement Appl. req'd.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC 410 [WI] Student Teaching 9.0 Credits

The second Student Teaching field experience that approximates full time classroom teaching and related activities; it is designed to allow the candidate to demonstrate competencies necessary for certification. See SoE Field Placement Office website for all clearance policy and stage 4 field experience requirements.

College/Department: School of Education

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

EDUC 411 Family and Community Partnerships 3.0 Credits

This course focuses on the process of family assessment and intervention, issues of family and professional collaboration and diversity, and methods of promoting adult communication and management strategies. It applies knowledge of socio-cultural and political contexts as they relate to the family, culture and society.

College/Department: School of Education

Repeat Status: Not repeatable for credit

EDUC I199 Independent Study in EDUC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC I299 Independent Study in EDUC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC I399 Independent Study in EDUC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC I499 Independent Study in EDUC 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

Restrictions: Cannot enroll if classification is Freshman

EDUC T180 Special Topics in Teacher Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC T280 Special Topics in Teacher Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC T380 Special Topics in Teacher Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

EDUC T480 Special Topics in Teacher Education 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: School of Education

Repeat Status: Can be repeated multiple times for credit

Theatre

Courses

THTR 110 Voice and Articulation 3.0 Credits

A beginning course in speech for the stage. The study of standard American speech, techniques for vocal projection, oral interpretation and the effective use of the voice on stage.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 115 Theatrical Experience 3.0 Credits

This course explores the Theatrical Experience from a non-practitioner's perspective. Through lectures, demonstrations, slides and videos students will examine the roles of theatre artists and how they combine their efforts in creating a unique Theatrical Experience.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 116 Philadelphia Theatre Let's Go! 3.0 Credits

Philadelphia Theatre Let's Go! exposes students to the variety of theatrical opportunities available in the Philadelphia region. Through research, discussion and attendance at theatrical productions, students will enhance their abilities to discuss, evaluate and enjoy theatre.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 121 [WI] Dramatic Analysis 3.0 Credits

Through the reading of play-scripts, this course will expose students to a variety of methods of play analysis that can be applied to the various theatre disciplines (production, performance, and design). It will also provide students with the methodology to be used in the Theatre History and upper theatre courses.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 130 Introduction to Theater Production Practicum 0-1 Credits

Provides an introduction to the tools, equipment and basic procedures required to enable students to participate in the technical aspects of a theatrical production.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 131 Theatre Performance Practicum 1.0 Credit

Provides practical experience in acting for the stage. Requires student to play a role in a Department of Performing Arts theatre production. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 132 Theatre Production Practicum 1.0 Credit

Provides practical experience in theatre production. Requires students to participate in planning, preparation, and completion of a realized production as a crew head or crew member. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: THTR 130 [Min Grade: D]

THTR 133 Theatre Management Practicum 0-1 Credits

This class provides practical experience in Theatre Management including Production Management, Stage Management, Box Office Management, and other Administrative Management areas for live theatrical events. Students are required to participate in a production for the Theatre Program.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 134 Open Mic Management Practicum 0-1 Credits

Students will gain hands on experience running a performance venue on campus. Students are responsible for daily operations of Late Night Series Productions including: financial operations, strategic planning, artistic management, volunteer coordination, strategic partnerships, artist recruitment and management, marketing, and internet presence. Also all production elements including: sound design and operation, light design and operation, and stage management and run crew.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 141 Theatre Performance Ensemble 0-1 Credits

The Theater Performance Ensemble focuses on a specific area of performance training, creation, and research to supplement the standard theater curriculum in performance. Each quarter focuses on a specific area with emphasis on learning as an ensemble and a priority on developing new skills.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 142 Director's Lab Practicum 0-1 Credits

This course provides practical experience in acting for the stage through participation in a student directed one-act play in conjunction with the Play Directing Class.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 143 Musical Theatre Cabaret 0-1 Credits

An introductory course for singers and non-singers emphasizing applying acting techniques to the performance of a song. Focus will be placed on lyrics, and advancing dramatic action through the song. The class will conclude with a public performance of the material students have worked on in class.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 144 NewWorks Festival Performance Practicum 0-1 Credits

This course provides practical experience in acting and dramaturgy for the stage through the participation, development, and performance of student written plays.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR 145 Advanced Theatre Improvisation Ensemble 0-1 Credits

This course provides practical experience in various forms of Theater Improvisation. Students will put basic skills into practice including listening, building relationships in a trusting ensemble, risk-taking, letting go of fear, spontaneity, and being present. This course will lead to a public presentation of the skills learned.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Prerequisites: THTR 209 [Min Grade: C] (Can be taken Concurrently)

THTR 209 Improvisation for the Theatre 3.0 Credits

This course is designed to develop spontaneity and increase listening skills. It will begin with exercises in trust building, listening and ensemble building. It will then progress to scenes to increase skill, and by the end of the quarter students will learn long form work that will lead to performance.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 210 Acting: Fundamentals 3.0 Credits

Introductory acting course. Covers basic exercises, improvisations, fundamentals of voice production, and stage movement.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 211 Acting: Scene Study 2.0 Credits

Continues THTR 210. Intermediate course in acting, focusing on application of the techniques of acting through scene study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 5 times for 12 credits

Prerequisites: THTR 210 [Min Grade: D]

THTR 212 Sketch Comedy 3.0 Credits

This course explores the various techniques employed by sketch comedians to imagine and create scripts which spring from a specific point of view. Through exercises and assignments, sketch comedy will be explored as it relates to collaborates writing, improvisation, character development and the rehearsal process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 221 [WI] Theatre History I 3.0 Credits

This course will expose students to the origins of drama from antiquity through the Jacobean period. Through the reading of plays and text, students will explore the relationship of the drama to the social, political, and trends within a given period and how they influenced one another.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: THTR 121 [Min Grade: D] or HUM 103 [Min Grade: D] or HUM 105 [Min Grade: A] or HUM 108 [Min Grade: D] or ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A] or ENGL 103 [Min Grade: D]

THTR 222 [WI] Theatre History II 3.0 Credits

This course continues the study of drama beginning with the Restoration and continuing through the modern era. Through the reading of plays and texts, students will explore the relationship of the drama to the social, political, and economic trends within a given period and how they influenced one another.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 231 Introduction to Musical Theatre 3.0 Credits

The Musical is one of America's greatest contributions to the world of theatre. Through class discussions, viewing live performance, audio/video examples, and readings students will explore the development of the American Musical from the Minstrel show through the Golden Age of the Musical.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 232 Contemporary Musical Theatre 3.0 Credits

The Musical is one of America's greatest contributions to the world of theatre. Through class discussions, viewing live performance, audio/video examples, and readings students will analyze the changes in the American Musical form beginning in the 1960s to the present and predict its future direction.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 240 Theatre Production I 3.0 Credits

Uses lectures, discussions, and practical experience to introduce the processes and equipment used in the production of plays, including scenery construction, lighting, sound, and costuming.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

THTR 260 Production Design 3.0 Credits

This course will allow students to expand on principles learned in Dramatic Writing enabling them to develop and communicate, through a variety of means, a unified production concept for a playscript. Students will present their designs in the areas of scenery, costumes and lighting demonstrating their ability to translate their production concept into theatrical reality.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

THTR 320 Play Direction 3.0 Credits

Introduces the art of directing, including play analysis, interpretation, rehearsal procedures, techniques of blocking, composition, picturization, and director-actor communications.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: THTR 211 [Min Grade: D] and THTR 121 [Min Grade: D]

THTR 360 Lighting Design 3.0 Credits

This course provides students with a complete introduction to the Theatrical Lighting Design, including discussions of color, composition, movement and electricity. Students apply the principles discussed in a theatre laboratory setting and are prepared to create innovative and practical designs for the stage.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

THTR 495 Directed Studies in Theatre 0.0-12.0 Credits

Provides supervised individual study of special subjects in theatre. May be repeated for credit.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR I199 Independent Study in Theatre 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR I299 Independent Study in Theatre 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR I399 Independent Study in Theatre 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR I499 Independent Study in Theatre 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR T180 Special Topics in Theatre 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR T280 Special Topics in Theatre 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR T380 Special Topics in Theatre 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

THTR T480 Special Topics in Theatre 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TV Production

Courses

TVPR 100 TV Studio: Basic Operations 3.0 Credits

This course will focus on developing operational skills for all studio production facilities including camera operations and composition, microphones and audio mixers, basic lighting, teleprompter, video switcher and graphics playback.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TVPR 220 TV News Writing 3.0 Credits

This is a basic introduction to writing for television news broadcasts. Students will learn to conceptualize, confirm and write stories on deadline, and develop basic interviewing skills. Issue of journalistic ethics will be presented and discussed. Weekly story assignments will be given to augment classroom work.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TVPR 236 Reality TV Production 3.0 Credits

This course gives students instruction and experience in doing Reality TV shows in the field.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: (FMVD 110 [Min Grade: D] and FMVD 115 [Min Grade: D] and FMVD 120 [Min Grade: D]) or (FMTV 110 [Min Grade: D] and FMTV 115 [Min Grade: D] and FMTV 120 [Min Grade: D])

TVPR 242 TV On-Camera Performance 3.0 Credits

Students will receive practical experience in all aspects of television performance, including anchoring, reporting, announcing, hosting, and acting. This class is designed specifically for those production students with little or no acting or on-camera experience, but who will benefit from a greater understanding of the performance process.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TV Studies

Courses

TVST 100 Recent TV Trends 3.0 Credits

This course covers recent trends in television, whether on streaming services, premium channels, cable, or on network channels. The focus will be on television shows that have notable narrative and artistic characteristics early on, possibly foretelling their emergence as culturally significant later on.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TVST 105 TV History 3.0 Credits

This course explores the history of television as art and communication. Topics include: the origins and development of television programming, the regulatory environment and the history of the business of television. Television programs, both fictional and non-fictional, will be viewed from the fifties through the present time.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TVST 260 History of Television 3.0 Credits

This course explores the history of television as art and communication. Topics include: the origins and development of television programming, the regulatory environment and the history of the business of television. Television programs, both fictional and non-fictional, will be viewed from the fifties through the present time.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TVST 261 History of TV Journalism 3.0 Credits

This course presents a history of broadcast introduction in the United States. It includes an introduction to the origins, portocals, and principles of journalism on television. It also acquaints students with the prominent trends, programs, and reporting styles throughout the decades leading to present-day norms and motivations.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

TVST 361 Art of TV Comedy 3.0 Credits

This course explores the history of television comedy and examines its role as both programming staple and artistic form. By examining how sitcoms reflect our society and its most important social issues, the course seeks to enable students to gauge where both culture and the sitcom are headed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

TVST 362 Art of TV Drama 3.0 Credits

Students will view and analyze prime-time, hour-long, dramatic TV shows, starting with television's golden age of the fifties and moving to television's "second golden age" starting in the eighties. Students will examine the relationship of the series to other programs, contemporary culture, and television history.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

TVST 363 Science Fiction Television 3.0 Credits

Students will view a progression of science fiction television shows from the fifties to the present time. Students will examine how each show uses an imagined world as a vehicle for exploring facets of our own world. The concepts and the production values will be discussed for each show.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

TVST 364 Teen Television 3.0 Credits

This course looks at acclaimed television programs from the fifties to the present, which present the experience of teenagers as central to the overall show. Students will discuss the content and form of each show, in terms of the directing, the cinematography, the editing, the production design, the sound track, as well as the acting.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

TVST 368 Supernatural Fantasy TV Shows 3.0 Credits

We will examine television shows from the 1950's to the present that include vampires, werewolves, witches, ghosts, demons, monsters, and other beings with unusual abilities that arise from myths, legends, fairytales, and folktales (and not from scientific fact.) We will explore a variety of supernatural themes in television drama, including those that reflect our fears of the unknown and our desires to be more than we are. We will also discuss what goes into creating a high-caliber supernatural drama television show, looking at both the content and the form. We will discuss the writing, the directing, the production design, the camerawork, the sound, the editing, and the special effects.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

TVST I199 Independent Study in TV Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TVST I299 Independent Study in TV Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TVST I399 Independent Study in TV Studies 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TVST I499 Independent Study in TV Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TVST T180 Special Topics in TV Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TVST T280 Special Topics in TV Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

TVST T380 Special Topics in TV Studies 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 6 times for 21 credits

TVST T480 Special Topics in TV Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Visual Studies

Courses

VSST 100 Introduction to Art & Design 3.0 Credits

In this course students will explore the main concepts and principles of design and color through studio assignments, lectures and field trips.

What is Design? How does it relate to your major, and how can it be applied to your daily life? We will study visual theory and learn how to organize visual information. The importance of using visual knowledge/perception to make decisions will be stressed.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSST 101 Design I 4.0 Credits

Focuses on two-dimensional space, black and white, and appropriate tools and materials.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSST 102 Design II 4.0 Credits

Expands the visual vocabulary to include color theory. Continues the process of discovery and visual decision-making.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 101 [Min Grade: D] or VSST 104 [Min Grade: D] or VSST 108 [Min Grade: D]

VSST 103 Design III 4.0 Credits

Design III utilizes the knowledge acquired from Design I and II to construct three-dimensional forms. It is an intensive studio based course with some lecture components, rooted in visual concepts that define structure and space. Students will work with basic materials to explore: joint construction, tension, and open and closed forms in the round and in relief. This is the final course in the Design Foundation Sequence.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 104 Accelerated Design I 2.0 Credits

This is an accelerated course offered as a substitute for VSST 101. The work concentrates on two-dimensional space with a primary focus in black and white.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSST 105 Accelerated Design II 2.0 Credits

This is an accelerated course offered as a substitute for VSST 102. The work concentrates on color, expanding the two-dimensional vocabulary.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 101 [Min Grade: D] or VSST 104 [Min Grade: D] or VSST 108 [Min Grade: D]

VSST 106 Accelerated Design III 2.0 Credits

This is an accelerated 4-week course offered as a substitute for VSST 103. The work concentrates on three-dimensional space with a primary focus on materials and craftsmanship.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 107 Introduction to Design for Media 3.0 Credits

This is an introductory course in which students will learn and use the essential concepts and language associated with design employing a variety of both black and white and color media combining hand and computer approaches.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSST 108 Design I for Media 3.0 Credits

Design for Media I is a hybrid studio and digital course, introducing the visual language of two-dimensional design. Students will be given a series of visual problems in black and white to solve through the combination of studio media (including paint, collage, cut paper, and mixed media) and digital media (including pixel, vector, and motion based software.) With the completion of these integrated projects, students will gain an understanding of the elements and principals of design in relation to media-based disciplines and have the basic skill sets to guide them into Design for Media II.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSST 109 Design II for Media 3.0 Credits

Design for Media II is the second course of the Design for Media Foundation Sequence. It is a hybrid studio and digital course encompassing the visual language of color theory, color application and two-dimensional design. Students will be given a series of visual problems in color to solve through the combination of studio media (including paint, Color Aid, collage, and mixed media) and digital media (including pixel, vector, and motion based software.) With the completion of these projects, students will gain an understanding of the structure of color in relation to both design and media. This course builds on the skill sets established in Design for Media I and completes the Design for Media Foundation Sequence.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 108 [Min Grade: D]

VSST 110 Introductory Drawing 3.0 Credits

Provides basic understanding of the perceptual problems in drawing, including how three-dimensional objects can be represented on a two-dimensional surface.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VSST 111 Figure Drawing I 3.0 Credits

Introduces drawing of the human figure, with emphasis on composition and shape-area relationships.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 110 [Min Grade: D]

VSST 112 Figure Drawing II 3.0 Credits

Continues VSST 111. Covers developing mass and form in the human figure.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 111 [Min Grade: D]

VSST 113 Figure Drawing for Fashion 3.0 Credits

This is an advanced figure drawing class that bridges observational figure drawing and fashion illustration. While focusing on the structure of the body and its rhythms, students will also be introduced to elements of stylization of the figure.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 110 [Min Grade: D] and VSST 111 [Min Grade: D]

VSST 114 Tablet Drawing 3.0 Credits

An introductory course to digital visual note-taking and painting.

Observation is emphasized, as is visual organization, experimentation and conceptualization. The class will meet at various locations on the Drexel campus as well as locations throughout the city.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

VSST 201 Multimedia: Performance 4.0 Credits

Investigates 4D design (the organization of space over time) using objects, light, sound, movement, gesture, and language in solo and group presentations. Incorporates conceptualization, experimentation, perception and analysis.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

VSST 202 Multimedia: Space 0.0-4.0 Credits

Concentrates on environment and spatial concepts. Expands previous concern with the object and personal space to envision space and the action within. Requires students to work individually or in groups to create works at this new scale.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D]

VSST 203 Multimedia: Materials 4.0 Credits

This course augments the design studio experiences by introducing the influence of material characteristics and fabrication techniques. Students learn how to design projects, reduce them to the specific parts, make the parts and assemble the work in a coordinated sequence. Work is done in the Visual Studies Arts Annex woodshop.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 210 Painting Basics 3.0 Credits

Painting Basics explores the fundamentals of making representational paintings. Working from direct observation, students learn the hands-on practices, materials and concepts of painting applicable to digital representation. Projects that use still life, interior and landscape subjects address design, composition and proportion as well as the effective use of color contrasts to create illumination and spatial depth. Water-based media will be used.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 108 [Min Grade: D]

VSST 301 Painting I 4.0 Credits

New techniques, materials, and terminology, are introduced through a series of assignments based on observations of still life's and life models. Emphasis is placed on the application of color to articulate space and the development of individual expression.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 302 Painting II 4.0 Credits

Expands the techniques, methods and materials covered in Painting 1. Representational and abstract styles are explored. Using techniques of observation and imagination, new approaches to painting are encouraged.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 301 [Min Grade: C]

VSST 303 Painting III 4.0 Credits

Painting 3 expands on the ideas, methods, and materials, covered in Painting 1 and 2. Students formulate a self-styled project that focuses on a particular approach to painting. Emphasis is placed on mastering technical ability, and inventing imaginative solutions to challenges that arise in the project's completion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 302 [Min Grade: C]

VSST 304 Materials Exploration 4.0 Credits

This course examines the relationship of fibers, processes and textile creation and form as it relates to the body.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 103 [Min Grade: D] or VSST 106 [Min Grade: D]

VSST 309 Sculpture: CNC Fabrication 4.0 Credits

This course approaches sculpture through the use of computerized (CNC) routers, using these digital fabrication tools to create three-dimensional objects in a variety of materials. Course projects are designed to give students familiarity with a variety of processes, materials, and ideas pertinent to making art in three dimensions. Additionally, the course will give students hands-on experience designing for, programming, setting up, and operating Westphal's CNC routers.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 102 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 310 Sculpture: Metal Fabrication 4.0 Credits

This specialized course teaches welding and metal fabrication techniques that students use to develop a series of projects. Students also experiment with alternative material combinations and investigate the use of metal in contemporary sculpture.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 2 times for 8 credits

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 102 [Min Grade: D] or ARCH 102 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 311 Sculpture I 4.0 Credits

This course focuses on idea development, the creative application of materials and process, and introducing basic wood and metal working tools and techniques. Projects bring these elements together with an emphasis on investigating new media and developing critical dialogue as it pertains to discussing and evaluating artwork.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 103 [Min Grade: D] or VSST 106 [Min Grade: D]

VSST 312 Sculpture II 0.0-4.0 Credits

Continues VSST 311.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 311 [Min Grade: D]

VSST 313 Sculpture III 0.0-4.0 Credits

Continues VSST 312.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 312 [Min Grade: D]

VSST 321 Screenprint I 4.0 Credits

Water based and photographic techniques are combined to create painterly and precise imagery in the building of a body of work. Techniques may include stencil-making, digitizing, mono-printing and color exploration. This course introduces the foundations of technical skills, language and theories used by the artist as printmaker.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 322 Printmaking I 4.0 Credits

Explores various printmaking techniques including but not exclusive of photographic lithography, relief block printing and screen-printing. Drawing processes and mixed media are emphasized. The foundations of technical skills, language and theories used by the artist as printmaker are introduced.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 16 credits

Prerequisites: VSST 102 [Min Grade: D] or VSST 105 [Min Grade: D] or VSST 109 [Min Grade: D]

VSST 323 Printmaking II 4.0 Credits

A continuation of Printmaking I, exploring techniques to a greater depth. Drawing, photographic processes and mixed media are emphasized. The foundations of technical skills, language and theories used by the artist as printmaker are introduced.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VSST 322 [Min Grade: D]

VSST 324 Advanced Printmaking 4.0 Credits

Explores combination-printmaking, portfolio development and building a cohesive body of work. Techniques may include mixed media printmaking, digital and alternative media. Students will document their work and develop an artistic statement. The foundations of technical skills, language and theories.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 16 credits

Prerequisites: VSST 321 [Min Grade: D] or VSST 322 [Min Grade: D]

VSST 325 Screenprint II 4.0 Credits

A continuation of Screenprinting I, exploring techniques to a greater depth. Techniques may include stencil-making, digitizing, mono-printing and color exploration. This course introduces the foundations of technical skills, language, and theories used by the artist as printmaker.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 16 credits

Prerequisites: VSST 321 [Min Grade: D]

VSST I199 Independent Study in Visual Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST I299 Independent Study in Visual Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST I399 Independent Study in Visual Studies 0.5-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST I499 Independent Study in Visual Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST T180 Special Topics in Visual Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST T280 Special Topics in Visual Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST T380 Special Topics in Visual Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VSST T480 Special Topics in Visual Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VR and Immersive Media Design

Courses

VRIM 100 Digital Tools for Immersive Media 3.0 Credits

Students will learn fundamentals of digital tools used for creating Immersive Media including Virtual Reality (VR) and Augmented Reality (AR) content. Tools introduced include pixel based image manipulation tools (such as Photoshop), video and animation compositing tools (such as Nuke), 3D CGI tools (such as Maya) and immersive 3d interactive engines (such as Unreal Engine).

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 110 Digital Imaging for Immersive Media 3.0 Credits

Students learn foundational image acquisition, lighting and processing techniques and principles utilized for creating Immersive Media including Virtual Reality (VR) and Augmented Reality (AR) content. Topics covered include digital still and video imaging and lighting fundamentals and image processing.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: ANIM 100 [Min Grade: D] or DIGM 100 [Min Grade: D] or VRIM 100 [Min Grade: D] or PHTO 141 [Min Grade: D] or VSCM 200 [Min Grade: D] or FMVD 110 [Min Grade: D] or VSST 104 [Min Grade: D]

VRIM 120 Immersive Production Lab I 3.0 Credits

Students learn to integrate principles of color, design, story telling, three dimensional layout, and a users' sense of presence within Immersive Media by working in small teams to iterate through a number of design and production projects, producing a variety of prototype immersive experiences using readily available components and assets.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 215 History of Immersive Media 3.0 Credits

Students learn the pre-cursors to modern Immersive Media forms and the evolution of the art spanning centuries of aesthetic, social and technological development. Concepts in 2D, 3D, VR, AR, Full dome and other forms of Immersive Media will be covered.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 220 Immersive Production Lab II 3.0 Credits

Students learn to integrate principles of color, design, story telling, three dimensional layout, and a users' sense of presence within Immersive Media by working in small teams to iterate through a number of design and production projects, producing a variety of prototype immersive experiences by implementing their own custom created assets.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 250 Professional Practices for Immersive Media 3.0 Credits

Provides a professional orientation to the Immersive Media industry through an exploration of a variety of projects and studies. In addition to lecture and discussions, students learn to take active part in role plays and presentations to achieve an understanding of the importance of team building, team work, and team management in all phases of animation and visual effects productions from proposals to final delivery, as well as personal development and promotion through personal learning, development of work demonstration materials.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VRIM 120 [Min Grade: D]

VRIM 310 Immersive Media Workshop I 3.0 Credits

This course examines the roles of the executive producer and the development team in taking an Immersive Media project from concept to design document through prototype while maintaining close connection to story and communication. Students will work in small teams to research and plan a production effort that results in a pre-production prototype.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 320 Immersive Media Workshop II 3.0 Credits

This course provides an environment in which the pre-production of VRIM 310 Immersive Media Workshop I can be taken through a full production effort. Students work in small teams to bring a selected prototype to completion.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 388 Motion Capture I 3.0 Credits

Students learn to use motion capture systems for full-body, human performance capture as well as the processing and use of the resulting data in character animation and real-time/game engine applications.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

VRIM 488 Motion Capture II 3.0 Credits

Students learn to use advanced motion capture systems and the data output from these systems. This course combines the use of full-body capture along with facial performance capture as well as the processing and use of the resulting data in character animation and real-time/game engine applications.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Prerequisites: VRIM 388 [Min Grade: B]

VRIM I199 Independent Study in Immersive Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM I299 Independent Study in Immersive Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM I399 Independent Study in Immersive Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM I499 Independent Study in Immersive Media 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM T180 Special Topics in Immersive Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM T280 Special Topics in Immersive Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM T380 Special Topics in Immersive Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

VRIM T480 Special Topics in Immersive Media 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

Web & Motion Graphic Design

Courses

WMGD 421 Motion Graphics II 4.0 Credits

This course focuses on applying aesthetics and skills learned in the first level to real-world applications that emphasize the graphics design of moving images.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

Restrictions: Can enroll if major is GRDS.

Prerequisites: VSCM 322 [Min Grade: D]

WMGD I199 Independent Study in Web & Motion Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD I299 Independent Study in Web & Motion Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD I399 Independent Study in Web & Motion Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD I499 Independent Study in Web & Motion Graphic Design 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD T180 Special Topics in Web & Motion Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD T280 Special Topics in Web & Motion Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD T380 Special Topics in Web & Motion Graphic Design 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WMGD T480 Special Topics in Web & Motion Graphic Design 3.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 3 times for 12 credits

WEST Studies

Courses

WEST 100 Introduction to Digital Design Tools 3.0 Credits

This introductory level course will provide the technical background for creative and professional digital communication on several platforms.

Students will examine basic elements of design through the use of print and web based programs including Illustrator, Photoshop, InDesign, Acrobat, Powerpoint, Word Press and Constant Contact. Students will explore the current potentials, limitations, and issues related to the use of computer software for design application.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

WEST 105 Deciding Design & Media 3.0 Credits

This course concentrates on the observation and exploration of majors in Media Arts & Design as explored in the class offerings at Westphal College. Students will record personal observations and will use reflective writing to develop more informed impressions of disciplines.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

WEST 107 Maker Workshop 3.0 Credits

This course is an introduction to making, the composing and decomposing of physical artifacts and digital technologies to suit a variety of purposes – from practical to whimsical. Students will learn to take things apart, explore tools and materials, and build wondrous, wild art that's part science and part technology.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

WEST 210 Innovative Problem Solving 3.0 Credits

A seminar course that examines different methods of problem solving and its role across disciplines. The intention is to give the student a basis with which interdisciplinary projects can be approached in an innovative way and problem solving can be examined from multiple viewpoints.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

WEST 220 Multimodal Research 4.0 Credits

This course will develop student's critical thinking skills through examining research and information gathering models. The topics around which students will gather, analyze and synthesize information include: Systems and the Environment, Community Interaction, Technology and Problem Solving.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Not repeatable for credit

WEST I199 Independent Study in Westphal Studies 0.0-12.0 Credits

Provides individualized study in an area related to a major within the Antoinette Westphal College of Media Arts & Design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WEST I299 Independent Study in Westphal Studies 0.0-12.0 Credits

Provides individualized study in an area related to a major within the Antoinette Westphal College of Media Arts & Design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WEST I399 Independent Study in Westphal Studies 0.5-12.0 Credits

Provides individualized study in an area related to a major within the Antoinette Westphal College of Media Arts & Design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 84 credits

WEST I499 Independent Study in Westphal Studies 0.0-12.0 Credits

Provides individualized study in an area related to a major within the Antoinette Westphal College of Media Arts & Design.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WEST T180 Special Topics in WEST Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WEST T280 Special Topics in WEST Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WEST T380 Special Topics in WEST Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated multiple times for credit

WEST T480 Special Topics in Westphal Studies 0.5-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: Antoinette Westphal College of Media Arts Design

Repeat Status: Can be repeated 7 times for 84 credits

Women's and Gender Studies

Courses

WGST 101 Introduction to Women's and Gender Studies 3.0 Credits

Women's and Gender Studies is a field that takes as its themes the study of women and gender, utilizing multi-disciplinary approaches from fields such as history, psychology, philosophy, and sociology. WGST 101 approaches the topics experientially and allows students to explore their own gender and sexuality as living identities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WGST 201 Introduction to Feminisms 3.0 Credits

Feminisms are movements to understand and critique gender relations and gender oppression, and also attempts to construct positive visions of human freedom and ethical action in an unjust world. This course is an introduction to the history of feminisms. The major movements that make up feminism in the modern era, in both the U.S. and abroad, will be examined.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WGST 220 Writing on the Body 3.0 Credits

A study of the female body, since the publication of "Our Bodies Ourselves" to the present, dealing with such themes as the body as sexual object or reproductive womb, the body as social construct and the tyranny of the look, and related issues in politics, violence, sexism, fashion, peer-pressure, illness, age, etc.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

WGST 225 Women & Human Rights Worldwide 3.0 Credits

Women's human rights emerged in the 1980 as a special area, distinct from existing human rights norms. They are intended to better defend women's rights throughout the world. This class will consider women's human rights in a global context, looking at all parts of the world. We will examine women's rights around various topics such as health, social position, exile, war, censorship, childhood, and work. Academic literature, fiction, and film will all contribute to an understanding of the topic.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

WGST 240 Women and Society in a Global Context 3.0 Credits

Studies women in a global society with one major area covered during each offering. Offered each year to accommodate one major world area.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

Restrictions: Cannot enroll if classification is Freshman

WGST 255 Gender and Black Popular Culture 3.0 Credits

This course critically examines the media's role in the social construction of "Blackness." Paying particular attention to images of race, culture and gender, this course examines representations of Black women and men in "popular culture" (film, television, music, advertising, etc.).

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WGST 260 Gender and Judaism 3.0 Credits

An exploration of gender in Jewish religion and tradition. How has Judaism historically understood gender? Is Judaism a traditional or progressive religion where gender is concerned? What is the future of gender in Judaism?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

WGST 275 Women's Health and Human Rights 3.0 Credits

This course explores the relationships between women's health and human rights under political and socially constructed influences. Health and well being are intricately associated with fundamental rights. We will conduct a comprehensive overview of women's health by engaging in lectures, class discussions, readings, journaling, group work, interviews and in-class activities.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

WGST 301 Sex, Gender, Feminism: A Seminar in Feminist Theories 3.0 Credits

What does it mean to call oneself a feminist in the twenty-first century?

This class explores the history of feminism from the perspective of sex and gender. In it, students ask and answer the question, "What kind of feminist am I?".

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

WGST 308 Queer Theory 3.0 Credits

In an attempt to theorize the meaning of "queer" (and, in turn, its counterparts - "normal" and "straight") and to articulate what "queer theory" is/does, this course will examine major attempts to challenge the concept of "normal" and explicate the meaning and use of the concept "queer".

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

WGST 320 Masculinities 3.0 Credits

An exploration of how masculinity is lived its multiple forms, traditional and alternative, in contemporary Western society. This course aims to arrive at a theory of masculinity – what does it mean to be "masculine"?.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WGST 324 Retail Intersections: Social & Cultural Issues 3.0 Credits

Those who participate in the business of fashion such as retailers, merchants, designers, manufacturers and stylists must evolve in order to sell to customers. Throughout their lives, students are exposed to retailing, merchandising, buying, design, sales, branding, promotions, manufacturing and other such fields. For those interested in the study of retailing, fashion and merchandising, it is essential to understand landmark research and theoretical concepts behind the influences of this field and how social change, innovations and with the evolution of a multicultural marketplace, shifts have occurred over generations, and into the 21st century. This conceptual and theoretical course will expose students to a diverse range of clients and consumers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WGST I199 Independent Study in Women's and Gender Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WGST I299 Independent Study in Women's and Gender Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WGST I399 Independent Study in Women's and Gender Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WGST I499 Independent Study in Women's and Gender Studies 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WGST T180 Special Topics in Women's and Gender Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WGST T280 Special Topics in Women's and Gender Studies 1.0-6.0 Credit

Gives students an opportunity to apply the interdisciplinary methodology of women's studies to a focused topic. Topics to be announced. May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 24 credits

WGST T380 Special Topics in Women's and Gender Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WGST T480 Special Topics in Women's and Gender Studies 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Writing

Courses

WRIT 195 Threshold Concepts in Writing Studies 3.0 Credits

This course introduces students to threshold concepts in writing studies. Threshold concepts are "concepts critical for continued learning and participation in an area or within a community of practice" (Adler-Kassner and Wardle 2). In this course, we will explore how threshold concepts in writing studies provide insight into writing and writing process, using them to analyze texts and our own experiences as writers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WRIT 200 Language Puzzles and Word Games: Issues in Modern Grammar 3.0 Credits

In this course, we will investigate how grammar is presented, debated, and viewed in our culture. While you will learn about grammar along the way, this is not a hard-core course about learning grammatical correctness. Rather, we will examine the consequences of grammar in how we think about language and, thus, how we think about one another.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 210 [WI] The Peer Reader in Context 3.0 Credits

This course focuses on reading and writing practices. Students engage in autobiographical explorations and examine writing center theory and practice. After successful completion, students may apply to become a Drexel Writing Center Peer Reader.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (ENGL 101 [Min Grade: C] or ENGL 111 [Min Grade: C]) and (ENGL 102 [Min Grade: C] or ENGL 112 [Min Grade: C])

WRIT 211 Advanced Composition 3.0 Credits

This course exposes students to theories and practices that shape how we think about composition. Students will have the opportunity to research topics related to their own writing experiences and interests, particularly in terms of disciplines in which they participate or are interested.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 212 Intro to Rhetorical Theory 3.0 Credits

Rhetoric is a way of understanding texts as oriented to audiences and intentions. Rhetorical theory has taken many forms from ancient to contemporary times, and across the globe. This course introduces students to some of these theories, such as feminist, material, and dramatist, and engages students in their own rhetorical criticism projects that build from these approaches.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 215 [WI] Story Medicine 3.0 Credits

Students go to local hospitals to perform for pediatric patients. Students host, write scripts and lead imagination activities for patients. Students will also write fiction. Subjects covered include: character, plot, setting, and sensory writing. All exercises are suitable for beginning and intermediate fiction writers.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D], ENGL 113 [Min Grade: D] (Can be taken Concurrently) or (ENGL 101 [Min Grade: D] or ENGL 111 [Min Grade: D]) and (ENGL 102 [Min Grade: D] or ENGL 112 [Min Grade: D])

WRIT 220 [WI] Creative Nonfiction Writing 3.0 Credits

A writing workshop in which students will read and write nonfiction; emphasis is placed on experimenting with different forms such as the personal essay, literary journalism, nature writing, science writing and editing, and preparing manuscripts for publication.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 225 [WI] Creative Writing 3.0 Credits

A workshop course in composing imaginative forms of personal expression, including poems, short stories, and personal essays.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 226 Writing in Public Spaces 3.0 Credits

This introductory-level creative writing course asks students to write descriptively about objects in museums and public spaces around the city. The class meets mostly in public spaces. The last two classes will be held on campus to workshop the short stories we will produce over the term.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 250 “Mistakes Were Made”: Truth, Writing, and Responsibility 3.0 Credits

Examines ways that writing—and writers—can represent and misrepresent through exploration of topics such as metaphor, representation of facts and events in nonfiction writing, and even use (and misuse) of the verb to be.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D]

WRIT 280 The Writers Room Lab Credit 1.0 Credit

The Writers Room LAB Credit is a single-credit laboratory meant to be attached to courses with projects engaging in civic action. The LAB credit is meant to allow motivated and self-directed students to invest more time in integrating the knowledge from an academic class with community work participated in beyond the classroom setting (and as aspects of the course). The student will engage in reflective writing at the beginning and end of the course that will frame and deepen the synthesis of academic knowledge and experiential action taken in the community.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT 290 Writers Room Experience 0.0-3.0 Credits

The Writers Room Experience builds community writing skills, with a particular emphasis on active listening, multi-modal storytelling, collaborative text production, and the processing of heterogeneous group experiences through field note-taking and reflective and recursive writing practices. This course is meant to be repeatable, and taken for variable credit (0-3) depending on the time commitment the student contracts for and their available credits.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT 295 Forms Seminar 3.0 Credits

Introduces students to concepts and terminology that allows them to describe formal qualities of creative texts. Supports creative writers by helping them consider how formal features contribute to the meaning or effect of a text, as well as how to communicate about this to other writers (in order to help enhance workshop and collaborative writing situations). This variable topics course may focus on fiction/prose writing, poetry, or sentence-level style.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 2 times for 9 credits

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 301 [WI] Writing Poetry 3.0 Credits

A writing workshop in which students will read and write poetry; emphasis is placed on experimenting with different forms of poetry, editing, and manuscript preparations for publication.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 302 [WI] Writing Fiction 3.0 Credits

A creative writing workshop course focusing on fiction. Students read and write short stories. Students develop skills by creating complete fictional works and critiquing the work of other students. Emphasis placed on narrative structure, prose style, pacing, voice and tone, appropriate material, character, plot, description, dialogue, and editing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: D]

WRIT 303 Writing Humor and Comedy 3.0 Credits

A creative writing course focusing on humor and comedy. Students read and write satire, essays, social commentary and special forms. Students develop skills by creating complete works and critiquing the work of other students. Emphasis is placed on writing for specific audiences, narrative structure, prose style and editing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 305 Life is Beautiful 3.0 Credits

This community partnership course links memoir with life, story-telling, and dying. Specifically, the course partners students with local hospice patients to co-create a life-story for the patient and his or her family. Students learn interviewing, listening, and writing techniques as well as skills in analysis and presentation. Additionally, the course facilitates interactions with the community and helps students to see themselves as linked to a community outside of college.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

WRIT 306 Writing About the Media 4.0 Credits

This course teaches students how to write about media events and artifacts (books, movies, theatre, music, etc.), both as individual works and in a larger cultural context. It also teaches them about the kinds of media outlets which publish reviews and the style of writing these outlets favor.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (ENGL 101 [Min Grade: D] and ENGL 102 [Min Grade: D] and ENGL 103 [Min Grade: D]) or ENGL 105 [Min Grade: D]

WRIT 308 Writing Your Novel 3.0 Credits

A fiction writing workshop that focuses on beginning the process of writing a novel. Its purpose is to help students develop their skill in creating their own fictional narratives. In addition, students will develop their skill as critical readers of fiction. Students will outline their own novel, write the first three chapters or equivalent (approximately 24-30 manuscript pages), read and critique student fiction, and participate in class discussions about student work and the concerns of fiction writers, including such matters as point-of-view, meaning, plot, scenes, setting, dialogue, description, tone, voice, syntax, editing, character, prose.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 310 Literary Editing & Publication 3.0 Credits

A course focusing on the techniques of editing, copyediting, proofreading, graphic selection and placement, the development of qualitative standards in manuscript selection for literary texts as well as connecting useful editorial/publication practice and social concerns in the fields of literary production.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 311 Writing and Reading the Memoir 3.0 Credits

Students will explore the problems and thrills of self-representation and self-expression through memoir. Deconstructing the work of other memoirists will show students how to develop themselves as flawed, yet likable protagonists. By the end of the course, students will be able to effectively analyze the elements of successful memoir, demonstrate an understanding of narrative theory, memory, and changing conceptions of "the self," and articulate and implement these skills through analysis of literary texts and in construction of their own creative works.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Prerequisites: (ENGL 101 [Min Grade: C] or ENGL 111 [Min Grade: C]) and (ENGL 102 [Min Grade: C] or ENGL 112 [Min Grade: C]) and (ENGL 103 [Min Grade: C] or ENGL 113 [Min Grade: C])

WRIT 312 [WI] Writing for Target Audiences 3.0 Credits

This course is structured as a writing workshop in which students will read and write in various rhetorical modes; emphasis is placed on experimenting with different forms such as review, proposal, and feature article writing as well as how to target various publications and therefore, various audiences. Students will read, discuss, and deconstruct published examples of many rhetorical modes, then write their own. Students will develop interview, review, research and persuasive writing skills.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT 315 Writing for Social Change 3.0 Credits

Guides students through a sequence of writing situations and activities central to writing for purposes of social change. Focusing on a current social issues, students will identify and define an issue, write to persuade the public and call for action, and attempt to gather support to address the issue.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 9 credits

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D]

WRIT 320 Publishing Veterans' Memoirs for the Library of Congress 3.0 Credits

This community-based learning (CBL) course connects Drexel students with local veterans to create texts for the Library of Congress Veterans History Project. By publishing experiences that are not often heard, students will broaden social understanding of the relationship of gender, race, and socioeconomic to war and peace. Students will explore writing as a healing modality, read selected texts, and learn interview techniques while meeting with local veterans. As students learn the veterans' stories, they will work with the vets to craft narratives that fit Library of Congress guidelines. Male and female veterans will be included and will represent a wide range of military experiences. Students will practice writing, analysis and editing, and create a Library of Congress product to list on their resumes.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

WRIT 330 Writing and Contexts 3.0 Credits

Offers writing practice and study of writing as it functions in different contexts (for example, Writing and the Brain, Writing and Freelance Work, Writing and Other Arts, Writing and Community Publishing). May be repeated for credit.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

WRIT 400 [WI] Writing in Cyberspace: Writing for/about the Web 4.0 Credits

In this advanced writing course, students explore writing in web environments. Through close reading of theories and formative ideas of cyberspace and the web, they consider how the digital environment affects ways we interact, write, and learn. Students rhetorically examine nuances of writing and writing process in digital spaces, and improve their ability to compose in them. Students will have opportunities to work in multiple genres, including creative and critical writing.

College/Department: College of Arts and Sciences

Repeat Status: Not repeatable for credit

Restrictions: Cannot enroll if classification is Freshman or Sophomore

WRIT 401 Advanced Poetry Workshop 3.0 Credits

Advanced Poetry Workshop will focus on continuing to develop students' poetry writing, editing, and criticism skills introduced in WRIT 225 (Creative Writing) and/or WRIT 301 (Poetry Writing). This class will concentrate on the art and skill of workshopping one another's poems as well as using the critiques gained in workshops to revise and improve one's poems.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: WRIT 295 [Min Grade: C] and WRIT 301 [Min Grade: C]

WRIT 402 Advanced Fiction Workshop 3.0 Credits

The Advanced Fiction Workshop allows students to continue to develop as a fiction writer, building on writing, editing, and response skills introduced in WRIT 225 Creative Writing, WRIT 302 Writing Fiction, and other writing experiences.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 1 times for 6 credits

Prerequisites: WRIT 295 [Min Grade: C] and WRIT 302 [Min Grade: C]

WRIT 405 Internship in Publishing 3.0 Credits

Internship in Publishing offers students knowledge of and practical experience in the publishing industry through the Drexel Publishing Group. Students participate in the administrative, editorial, publicity, and writing aspects of publishing by working on Drexel Publishing Group's publications, which may include The 33rd (an annual print anthology of creative and academic writing), Write Now Philly (an online book review and literary culture magazine), and other related projects.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

Prerequisites: ENGL 103 [Min Grade: D] or ENGL 113 [Min Grade: D] or ENGL 105 [Min Grade: A]

WRIT I199 Independent Study in WRIT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT I299 Independent Study in WRIT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT I399 Independent Study in WRIT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT I499 Independent Study in WRIT 0.0-12.0 Credits

Self-directed within the area of study requiring intermittent consultation with a designated instructor.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT T180 Special Topics in Writing 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT T280 Special Topics in Writing 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

WRIT T380 Special Topics in Writing 3.0 Credits

A variable topics course in writing in which students will read and write in different genres, according to the specific topic (i.e., Writing Fiction; Joking, Comedy and Laughter; Memoir and Autobiography; Nature Writing); emphasis is places on editing and manuscript preparation for publication. Students should anticipate a significant amount of writing in this course.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated 3 times for 12 credits

Restrictions: Cannot enroll if classification is Freshman or Sophomore

WRIT T480 Special Topics in Writing 0.0-12.0 Credits

Topics decided upon by faculty will vary within the area of study.

College/Department: College of Arts and Sciences

Repeat Status: Can be repeated multiple times for credit

Index

A

Accounting	4
Advertising Design	6
Africana Studies	7
Anatomy	9
Animation	9
Anthropology	12
Arabic	14
Architectural Engineering	44
Architecture	15
Art History	45
Arts & Sciences-Interdisp Stud	48

B

Behavioral & Addictions Couns	49
Biomedical Engineering & Sci	52
Biomedical Engineering Tech	61
Bioscience & Biotechnology	62
Business Analytics	73
Business Statistics	74

C

Chemical Engineering	75
Chemical Engineering Chemistry	78
Chemistry	79
Chinese	84
Civic Engagement	86
Civil & Arch Engineering	87
Civil, Arch & Envr Engr	90
Civil Engineering	87
Common Exams	91
Communication	91
Complementary and Integrative Therapies	98
Computer Engineering Technology	98
Computer Science	99
Computing and Informatics	105
Computing Technology	106
Construction Management	108
Cooperative Education	112
Course Descriptions	3
Creativity Studies	112

Criminology & Justice Studies	113
Culinary Arts	119
Custom-Designed Major	122

D

Dance	123
Data Science	126
Design & Merchandising	126
Digital Media	130

E

Economics	131
Education Human Resource Development	134
Education Learning Technologies	135
Electrical & Computer Engineering	137
Electrical & Computer Engineering - Power Engineering	142
Electrical & Computer Engineering - Computers	145
Electrical & Computer Engineering - Electroph	148
Electrical & Computer Engineering - Systems	150
Electrical Engineering Lab	154
Electrical Engineering Technology	155
Engineering, General	160
Engineering Management	158
English	161
English as a Second Language	167
Entertainment & Arts Management	173
Entrepreneurship and Innovation	176
Environmental Engineering	180
Environmental Graphic Design	183
Environmental Science	184
Environmental Studies & Sustainability	191
Exercise Science	192

F

Fashion Design	194
Film & TV Production	197
Film Studies	202
Finance	204
First-Year Exploratory Studies	206
Food Science	207
French	208

G

Game Art & Production	210
General Business	212

General Studies	214
Geoscience	215
German	218
Global Studies	220
Graphic Design	221

H

Health Sciences	224
Health Services Administration	228
Hebrew	233
History	234
Honors Program	241
Hotel & Restaurant Management	243
Human Resource Management	247
Humanities, General	247

I

Industrial Engineering	248
Information Science & Systems	251
Interactive Digital Media	254
Interior Design	257
International Business	260
International Studies	261
Italian	261

J

Japanese	261
Jewish Studies	263

K

Korean	266
--------------	-----

L

Language	267
Law	267
Legal Studies	269
Linguistics	271

M

Management	271
Management Information Systems	273
Manufacturing Engineering Technology	274
Marketing	277
Materials Engineering	280
Mathematics	283
Mathematics Education	289
Mechanical Engineering & Mechanics	290

Mechanical Engineering Technology	297
Middle East and North Africa Studies	299
Military Science	299
Music	301
Music Industry Program	305

N

Naval Science	310
Neuroscience	311
Nursing	311
Nutrition & Food Science	318

O

Operations Management	321
Operations Research	322
Organizational Behavior	323

P

Peace Engineering	324
Performing Arts	324
Philosophy	325
Philosophy, Politics and Economics	329
Photography	330
Physics	333
Physics - Environmental Science	340
Political Science	340
Product Design	344
Professional Studies	347
Project Management	348
Psychology	349
Public Health	355

Q

Quarter	3
---------------	---

R

Real Estate	360
Real Estate Management & Development	361
Religious Studies	362
Retail Leadership	362

S

Science, Technology and Society	363
Screenwriting & Playwriting	364
Sociology	367
Software Engineering	372
Spanish	373

Special Education	375
Sport Coaching Leadership	377
Sport Management	379
STEM Teacher Education	382
Systems Engineering	384

T

Taxation	385
Teacher Education	386
Theatre	390
TV Production	393
TV Studies	393

U

Undergraduate	3
---------------------	---

V

Visual Studies	394
VR and Immersive Media Design	397

W

Web & Motion Graphic Design	399
WEST Studies	399
Women's and Gender Studies	400
Writing	401