



CATALOG SUPPLEMENT 2021-2022

UNDERGRADUATE & GRADUATE



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Catalog Supplement

This catalog supplement is provided to give a brief overview of the new programs and courses that have been approved since the 2021-2022 catalog was published.

(updated June 24, 2022)

New Undergraduate Programs

Program	College	Description	Requirements	Effective Term
Architectural Engineering - Mechanical Concentration BSAE / Architectural Engineering MSAE	College of Engineering	The program allows students to develop technical depth and breadth in their professional and related area, which enhances their professional productivity, whether in industry or as they proceed to the PhD. Their undergraduate courses provide the necessary technical prerequisite understanding and skills for the graduate studies, a natural progression. Because the technical concepts of engineering are common, the MS in a related discipline is readily achieved.	PDF	Fall 2022
Artificial Intelligence and Learning Minor	College of Computing and Informatics	This minor explores the foundation and application of artificial intelligence and machine learning. It is designed to be an advanced minor with a focus on deep understanding of the underlying mathematics and algorithms used in AI. This minor will utilize aspects of computer science, engineering, mathematics, and data science.	PDF	Fall 2022
Biochemistry Minor	College of Arts and Sciences	This program provides a solid grounding in the principles and applications of biochemistry for students interested in exploring in more depth the chemistry of living organisms. Offered jointly by the Departments of Chemistry and Biology, the minor in Biochemistry consists of a set of regularly offered courses in the two departments. The program efficiently complements degree requirements for students majoring in the natural sciences, engineering and the health sciences. It is highly recommended to students interested in pursuing a career in biology, chemistry, biomedical engineering, nanotechnology, material sciences, medicine, pharmaceuticals or chemical biology. The minor must accompany another major program.	PDF	Fall 2022
Chemical Engineering BSCHE / Materials Science and Engineering MSME	College of Engineering	The department of Chemical and Biological Engineering's undergraduate chemical engineering curriculum progresses through sequences in the fundamental physical sciences, humanities, engineering sciences, and engineering design. The graduate program in Materials Science and Engineering aims to provide an education which encompasses both the breadth and depth of the most recent knowledge base in the materials science and engineering fields in a format suitable for individuals seeking careers in academia and/or industry.	PDF	Fall 2022
Digital Media and Virtual Production BS	Westphal College of Media Arts and Design	This program encompasses a unique combination of skills and principles used by industry for the development and execution of a Virtual Reality (VR), Augmented Reality (AR), other forms of Immersive Media including Virtual Production. Among these are creative thinking, understanding of design, aesthetic sensitivity, and storytelling balanced with technical knowledge in areas such as 3D Computer Graphics, Animation, Visual Effects, real-time 3D graphics, interactivity, digital camera and image processing technologies. Additionally, critical thinking, the ability to collaborate effectively and communication skills are also integral to success in this rapidly expanding industry.	PDF	Fall 2022
Digital Media and Virtual Production BS / Digital Media MS	Westphal College of Media Arts and Design	The program is a natural extension of our undergraduate program in Digital Media & Virtual Production and challenges students to push beyond what's known and into what's possible. It combines research with applicable skills in 21st century media applications and offers a mix of academic coursework and project-related activities in advanced digital design, including 3D modeling, animation, interactivity, gaming and digital media history, theory and methods.	PDF	Fall 2022

Elementary Education, Middle Level Math and English BS / Global and International Education MS	School of Education	This program offers a flexible, innovative curriculum with a unique emphasis on creative problem solving, the application of the latest technologies as well as the global and intercultural competencies. The joint-program provides students with an in-depth, applied knowledge of the role of education in solving global problems as well as fostering an understanding of diverse cultures and global issues.	PDF	Fall 2022
Elementary Education, Middle Level Math and English BS / Teaching Learning and Curriculum Advanced Track MS	School of Education	Offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies to learning. The BS/MS prepares students academically and practically for careers in PK–12 teaching or other educational settings.	PDF	Fall 2022
Elementary Education, Middle Level Science and English BS / Global and International Education MS	School of Education	This program offers a flexible, innovative curriculum with a unique emphasis on creative problem solving, the application of the latest technologies as well as the global and intercultural competencies. The joint-program provides students with an in-depth, applied knowledge of the role of education in solving global problems as well as fostering an understanding of diverse cultures and global issues.	PDF	Fall 2022
Elementary Education, Middle Level Science and English BS / Teaching Learning and Curriculum Advanced Track MS	School of Education	Offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies to learning. The BS/MS prepares students academically and practically for careers in PK–12 teaching or other educational settings.	PDF	Fall 2022
Elementary Education, Middle Level Science and Math BS / Global and International Education MS	School of Education	This program offers a flexible, innovative curriculum with a unique emphasis on creative problem solving, the application of the latest technologies as well as the global and intercultural competencies. The joint-program provides students with an in-depth, applied knowledge of the role of education in solving global problems as well as fostering an understanding of diverse cultures and global issues.	PDF	Fall 2022
Elementary Education PK4 BS / Applied Behavior Analysis MS	School of Education	Offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies to learning. This accelerated degree program allows candidates to pursue a BS in Education with Pennsylvania initial state teacher certification and continue for a fifth graduate year to complete the MS in Applied Behavior Analysis The BS/MS in Teacher Education and Applied Behavior Analysis track prepares students academically and practically for careers in PK–12 teaching or other educational settings.	PDF	Fall 2022
Elementary Education PK4 BS / Special Education MS	School of Education	Offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies to learning. This accelerated degree program allows candidates to pursue a BS in Education with Pennsylvania initial state teacher certification and continue for a fifth graduate year to complete the MS in Special Education which would allow them to also obtain special education certification. The BS/MS prepares students academically and practically for careers in PK–12 teaching or other educational settings.	PDF	Fall 2022
Elementary Education, PK4 and Special Education BS / Applied Behavior Analysis MS	School of Education	Offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies to learning. This accelerated degree program allows candidates to pursue a BS in Education with Pennsylvania initial state teacher certification and continue for a fifth graduate year to complete the MS in Applied Behavior Analysis. The BS/MS prepares students academically and practically for careers in PK–12 teaching or other educational settings.	PDF	Fall 2022

Exercise Science BS	College of Nursing and Health Professions	The Exercise Science BS integrates a foundation of developmental health and wellness with rigorous training in exercise science and sports medicine concepts to provide the knowledge, skills and abilities required as an advocate for the promotion of health, well-being, and physical performance. The curriculum is designed to apply these scientific concepts to physical activity and the design of safe and effective fitness practices for diverse populations. Practices are emphasized that are essential for creating a culture of diversity, equity, inclusiveness and interprofessional practice, education, and research.	PDF	Fall 2022
Food Entrepreneurship Certificate	College of Nursing and Health Professions	This program prepares undergraduate students to design and launch a new food product or concept from initial consumer research and conceptualization, through the development and testing of a value proposition and business model. The certificate can be taken on its own or as an adjunct to degree studies in business, entrepreneurship, nutrition, hospitality, or related fields. Both consumer packaged goods and foodservice offerings are considered.	PDF	Fall 2022
Health Data Analytics BS	Dornsife School of Public Health	The Bachelor of Science in Health Data Analytics prepares students to apply quantitative methods to a variety of real-world data analysis problems. Through their coursework, students will learn the analytic and computational skills necessary to handle large and complex data problems and apply statistical analysis techniques appropriately. Computing, data visualization, and scientific communication skills will be emphasized throughout, providing students will tools to serve as essential team members in a variety of data-driven research and industry settings.	PDF	Fall 2022
Human Lactation Consultant Certificate	College of Medicine: School of Biomedical Sciences & Professional Studies	This certificate is designed to provide an opportunity for individuals interested in becoming Internationally Board Certified Lactation Consultants (IBCLCs) to obtain the required 90 hours of didactic coursework and 300 hours of supervised practice to be eligible to sit for the certification exam. There is currently a strong global and national emphasis on increasing breastfeeding to promote health at the population level, prevent acute and chronic illness and decrease societal health care costs.	PDF	Fall 2022
Law BA	Kline School of Law	The undergraduate BA in law prepares students for careers that do not require a licensed attorney, but where a sound understanding of the law and the complex nature of the regulatory state are essential. A series of required courses builds skills in critical thinking, reasoning, written and oral communication, and in the understanding of legal doctrines. Students will learn foundational concepts in public and private law and acquire the requisite skills to find, read, and interpret case law and statutes.	PDF	Fall 2022
Learning Sciences, Experience Design, and Technology BS	School of Education	This program is a credential for future leaders, managers, and staff of organizations or entrepreneurs focused on learning that occurs outside of traditional PK-12 School environments are encouraged to apply. The program is appropriate for those that want to be equipped with a working knowledge of knowledge, skills, and learning strategies aimed at individuals of all ages and in all contexts. Students who complete this degree will be prepared to apply their knowledge skills and tools addressing learning in and out of traditional formal education settings and will have had practical lab-based and job-based experience to build on.	PDF	Fall 2022
Mathematics BA / Biostatistics MS	College of Arts and Sciences / Dornsife School of Public Health	In this accelerated dual degree program, students participate in the undergraduate program for four full years (with or without one co-operative experience). After two years of undergraduate study, students begin their graduate studies in the Master of Science in Biostatistics program. The third and fourth year are a mix of undergraduate and graduate courses. After the successful completion of their fourth year, students receive their BA. When students successfully complete the remainder of their graduate studies (typically two graduate quarters), they will receive the MS degree.	PDF	Fall 2022

Mathematics BS / Biostatistics MS	College of Arts and Sciences / Dornsife School of Public Health	In this accelerated dual degree program, students participate in the undergraduate program for four full years (with or without one co-operative experience). After two years of undergraduate study, students begin their graduate studies in the Master of Science in Biostatistics program. The third and fourth year are a mix of undergraduate and graduate courses. After the successful completion of their fourth year, students receive their BS. When students successfully complete the remainder of their graduate studies (typically two graduate quarters), they will receive the MS degree.	PDF	Fall 2022
Mechanical Engineering and Mechanics BSME / Environmental Engineering MSENE	College of Engineering	The program students them to develop technical depth and breadth in their professional and related area, which enhances their professional productivity, whether in industry or as they proceed to the PhD. Their undergraduate courses provide the necessary technical prerequisite understanding and skills for the graduate studies, a natural progression. Because the technical concepts of engineering are common, the MS in a related discipline is readily achieved.	PDF	Fall 2022
Merchandising Minor	Westphal College of Media Arts and Design	Provides core foundations for the fashion lifestyle industries including retail, ecommerce and wholesale operations, buying and merchandise planning. Students develop key competencies in brand strategy from concept to consumer including, marketplace research, competitive analysis, retail math, assortment planning, product sourcing, inventory allocation and analytics.	PDF	Fall 2022
Sustainability and Innovation BS	Close School of Entrepreneurship	Offers students a multidisciplinary perspective on current-day social and environmental problems challenging us as a global society, and the tools they will need to create responsive solutions to them. Sustainability is the simultaneous pursuit of human flourishing, environmental quality, and economic well-being for current and future generations. Students will benefit from the Close School's unique approach to teaching entrepreneurship as a habit of mind, while highlighting pertinent courses from the arts and sciences, which will provide students depth on the social and environmental issues they are passionate about. Embedded in values of environmental stewardship, social equity, and economic sustainability, this degree will foster students' ability to innovate in multiple contexts including established companies, new or growing ventures, social enterprises, educational institutions, and other nonprofits.	PDF	Fall 2022
Teacher Education, Secondary Biology BS / Teaching Learning and Curriculum Advanced Track MS	School of Education	offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies to learning. The BS/MS prepares students academically and practically for careers in PK-12 teaching or other educational settings.	PDF	Fall 2022
Teacher Education, Secondary Social Studies BS / Global and International Education MS	School of Education	Offers a flexible, innovative curriculum with a unique emphasis on creative problem solving and the application of the latest technologies as well as the global and intercultural competencies. The joint- program provides students with an in-depth, applied knowledge of the role of education in solving global problems as well as fostering an understanding of diverse cultures and global issues.	PDF	Fall 2022
User Experience and Interaction Design Minor	Westphal College of Media Arts and Design	The minor provides basic foundations in user interface design (UI), user experience design (UX), and interaction design (IXD), as applied to the design of digital interfaces (websites and mobile applications).	PDF	Fall 2022

New Graduate Programs

Program	College	Description	Requirements	Effective Term
Business Analytics Management Post- Bacc Certificate	LeBow College of Business	This certificate enables students to understand how Business Analytics can support a firm's strategic objectives and value-creating processes. Students learn the importance of aligning analytics with business challenges and the key management frameworks that can be used to achieve such alignment.	PDF	Fall 2022

Computer Security and Privacy MS	College of Computing and Informatics	The MS in Computer Security and Privacy aims to educate students in the science, technology, and policies that are essential to protecting information technology and data. The degree aims to establish the computer science and software engineering system fundamentals needed by the modern security expert, in addition to how these fundamentals, when combined with expert courses in computer security and privacy, lead to a well-rounded education in the domain of computer security and privacy.	PDF	Fall 2022
Criminal Law Post-Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Cyber Law and Data Privacy LLM	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Cybersecurity and Info Privacy Compliance Post-Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Data Management for Business Analytics Post-Bacc Certificate	LeBow College of Business	Faced with enormous proliferation in sources and volumes of data, organizations must build a solid foundation for data management in order to guarantee their ability to create value. Through this certificate, students can master contemporary techniques for extracting, transforming and storing data as needed for efficient analytics.	PDF	Fall 2022
Ecology, Evolution, and Earth Systems MS	College of Arts and Sciences	Environmental science is a multidisciplinary field in which we try to understand environmental problems and find solutions to them. This field requires understanding of a number of disciplines. The program's areas of focus include ecology, biodiversity, conservation, environmental chemistry and assessment, and paleoecology-geology. A student may alternatively craft a specialized plan of study outside of these strength areas under the guidance of an academic advisor.	PDF	Fall 2022
Ecology, Evolution, and Earth Systems PhD	College of Arts and Sciences	Environmental science is a multidisciplinary field in which we try to understand environmental problems and find solutions to them. This field requires understanding of a number of disciplines. The program's areas of focus include ecology, biodiversity, conservation, environmental chemistry and assessment, and paleoecology-geology. A student may alternatively craft a specialized plan of study outside of these strength areas under the guidance of an academic advisor.	PDF	Fall 2022
Family/Individual Across the Lifespan with Emergency Specialization MSN	College of Nursing and Health Professions	Focuses on applying advanced-practice nursing knowledge—including physical, psychosocial, and environmental assessment skills—to manage common health and illness problems of clients of all ages and their families in primary and emergency care settings. It emphasizes health promotion and disease prevention. Family nurse practitioners primarily practice in ambulatory care settings, such as primary care clinics, physician offices, HMOs, outpatient clinics, schools, nursing centers, emergency departments, long-term care facilities, industry, the armed services, public health departments, correctional institutions, and home health agencies. This rigorous program provides the education and skills necessary to function as a competent nurse practitioner and leader in primary care and emergency care populations. In addition to preparing students for the primary care role across the lifespan, this program prepares students with the diagnostic and therapeutic procedures skills specific to the emergency care setting.	PDF	Fall 2022

Family/Individual Across the Lifespan with Emergency Specialization Post- Master's Certificate	School of Education	Focuses on applying advanced-practice nursing knowledge—including physical, psychosocial, and environmental assessment skills—to manage common health and illness problems of clients of all ages and their families in primary and emergency care settings. It emphasizes health promotion and disease prevention. Family nurse practitioners primarily practice in ambulatory care settings, such as primary care clinics, physician offices, HMOs, outpatient clinics, schools, nursing centers, emergency departments, long-term care facilities, industry, the armed services, public health departments, correctional institutions, and home health agencies. This rigorous program provides the education and skills necessary to function as a competent nurse practitioner and leader in primary care and emergency care populations. In addition to preparing students for the primary care role across the lifespan, this program prepares students with the diagnostic and therapeutic procedures skills specific to the emergency care setting.	PDF	Fall 2022
Financial Regulatory Compliance Post- Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Food Innovation Post-Bacc Certificate	College of Nursing and Health Professions	This program prepares graduate students to design and launch a new food product or concept from initial consumer research and conceptualization, through the development and testing of a value proposition and business model. The certificate can be taken on its own or as an adjunct to degree studies in business, entrepreneurship, nutrition, hospitality, or related fields. Both consumer packaged goods and foodservice offerings are considered.	PDF	Fall 2022
Global Financial Regulation LLM	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Health and Rehabilitation Sciences MS	College of Nursing and Health Professions	The health and rehabilitation sciences MS program is designed to provide a flexible curriculum to meet the needs of students with interests across the health and rehabilitation sciences continuum. Core courses will provide scientific foundations in health and rehabilitation research, biostatistics, and research methods.	PDF	Fall 2022
Health Care and Pharmaceutical Compliance LLM	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Health Care Compliance Post- Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Healthcare Simulation Graduate Minor	College of Nursing and Health Professions	The graduate minor in Healthcare Simulation program prepares nurses, healthcare professionals, and simulation technicians to meet future challenges in both academic and professional spaces. Specialized training in simulation-based education prepares students to be leaders in their fields. The skills attained in this interdisciplinary simulation-based graduate program are transferable to the clinical environment, clinical teaching, and the classroom. Graduates of the program will have the skills to lead a simulation program in an academic or hospital environment. Graduates will also be prepared to sit for the Certified Healthcare Simulation Educator (CHSE) certification as soon as they meet the practice requirements.	PDF	Fall 2022

Healthcare Simulation Post-Bacc Certificate	College of Nursing and Health Professions	The post-bachelor's certificate in Healthcare Simulation program prepares nurses, healthcare professionals, and simulation technicians to meet future challenges in both academic and professional spaces. Specialized training in simulation-based education prepares students to be leaders in their fields. The skills attained in this interdisciplinary simulation-based graduate program are transferable to the clinical environment, clinical teaching, and the classroom. Graduates of the program will have the skills to lead a simulation program in an academic or hospital environment. Graduates will also be prepared to sit for the Certified Healthcare Simulation Educator (CHSE) certification as soon as they meet the practice requirements.	PDF	Fall 2022
Healthy Indoor Environments Post-Bacc Certificate	College of Engineering	This program will educate post-baccalaureate students with the knowledge and skills necessary for assessing the state of existing buildings or designing new buildings through the lens of promoting healthy indoor environments and well-being of building occupants. It combines courses on indoor air quality, indoor airflow, outdoor pollution (which is transported indoors), and/or risk assessment to provide students with the engineering toolkit to conduct meaningful work in the healthy buildings and health-promoting HVAC industry markets. This certificate is responsive to the newly disseminated understanding of the role buildings play in reducing indoor disease transmission and elevating occupant performance and satisfaction. The certificate will train professionals such as architectural, environmental, civil, and mechanical engineers who do or want to work in the healthy buildings industry.	PDF	Fall 2022
Higher Education Compliance Post-Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Human Resources Compliance Post-Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
International Higher Education Post-Bacc Certificate	School of Education	This certificate provides a comprehensive understanding of global higher education to prepare students for administrative and leadership positions in colleges and universities as well as national and international organizations. Students develop the global and intercultural competencies, knowledge and skills needed to navigate complex changes related to diversity and globalization, equity and access, policies and practices, legal and ethical issues, technological advancements, and risk management through transformative leadership across global contexts.	PDF	Fall 2022
Law Graduate Minor	Kline School of Law	A Graduate Minor in Law allows students from other academic units to benefit from education around legal regulation of health care, pharma/med device development, the practice of medicine, and other legal areas of interest.	PDF	Fall 2022
Learning in Game-Based Environments Post-Bacc	School of Education	The Learning in Game-Based Learning certificate is a credential for individuals focused on learning in the context of game-based environments. The program is appropriate for those who want to be equipped with a working knowledge of game-based learning strategies. Students who complete this certificate will have opportunities to examine games, game genres as they relate pedagogy, and how the design of games supports transformative experiences in any learning setting. The focused Learning in Game-Based Environments certificate may be taken as a stand-alone credential to supplement previous credentials. Alternatively, the certificate may be taken as part of a customized plan of study, via the School of Education's stackable credit options, for the MS in Education Improvement and Transformation or the MS in Learning Technologies.	PDF	Fall 2022
Legal Studies MLS	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022

Lifelong Learning Post-Bacc Certificate	School of Education	The Lifelong Learning certificate is a credential for leaders, managers, and staff of organizations focused on learning in developmentally adaptive and industry specific environments. The program is appropriate for those that want to be equipped with a working knowledge of learning strategies for individuals of all ages and in all contexts, with a special emphasis on non-traditional and adult learners. Students who complete this certificate will be prepared to apply knowledge skills and tools addressing learning in and out of traditional formal education settings.	PDF	Fall 2022
Medicine MD / PhD	College of Medicine	MD program offered as a dual degree with 5 different PhD programs (Biochemistry of Health & Disease; Microbiology & Immunology; Molecular & Cell Biology & Genetics; Neuroscience; Pharmacology & Physiology)	PDF	August 2022
Mind, Brain and Coaching Post-Bacc Certificate	School of Education	Examines the critical connections between coaching and Mind Brain Education Science. Students will take a combination of Sport Coaching Leadership courses and Mind, Brain & Learning courses. The program includes interdisciplinary faculty and practitioners with experience in coaching, training, K-12 education, higher education, learning sciences, Mind, Brain, and Education science, Universal Design for Learning, and Culturally Responsive Pedagogy.	PDF	Fall 2022
Mind, Brain, Learning and Creativity Post-Bacc Certificate	School of Education	Provides educators and professional development trainers the opportunity to study mind, brain and education science within the context of creativity, innovation and motivation. Ideally, program completers be able to use the theoretical underpinning, content knowledge, skills and hands-on experiences gained through the courses to optimize learning within educational and other workforce environments.	PDF	Fall 2022
Molecular Basis of Cancer Post-Bacc Certificate	College of Medicine	This new program utilizes a major strength of College of Medicine faculty expertise in cancer research to train graduate students in basic, translational, and clinical research in cancer biology. This training will prepare students for careers in cancer biology research. For career advancers who are already employed, the curriculum will expand their knowledge base to provide detailed understanding of the physiological basis of cancer.	PDF	Fall 2022
NCAA Compliance Post-Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Pharmaceutical and Medical Device Regulatory Compliance Post-Bacc Certificate	Kline School of Law	Existing program converted from semester system to quarter system.	PDF	Fall 2022
Physical Therapy DPT / Business Administration MBA	College of Nursing and Health Professions	This program is designed to prepare students to be competent and compassionate health professionals who have expertise in the rehabilitation of individuals across the life span with an understanding of business principles like, but not limited to, leadership, finance, marketing, and organizational management. Combining these two content areas helps to develop health care professions who can function well in private practice or administrative functions in organizations. This program will help develop leaders in health care who are ready to manage the business of the industry.	PDF	Fall 2022
Planning and Design of Sustainable Infrastructure Post-Bacc Certificate	College of Engineering	This program is designed for individuals to develop and improve career-related skills in the area of sustainable engineering design. The program includes a set of community-based and environmental design and sustainability evaluation courses. Ideal candidates include sustainability specialists in different sectors, as well as individuals working on environmental evaluation in civil, architectural, and environmental engineering, urban planning, and construction management areas.	PDF	Fall 2022
Predictive Business Analytics Post-Bacc Certificate	LeBow College of Business	Predictive analytics provides the tools that contemporary organizations need to create value from their vast collections of data. This certificate provides students with knowledge of programming, decision models, and the statistical techniques that are essential for unlocking patterns and trends from data.	PDF	Fall 2022

Public Policy MS / Law JD	Kline School of Law	This program gives students a strong foundation in research, analysis, economics and law in tandem with hands-on learning and networking opportunities with non-profit organizations and government agencies throughout the Delaware Valley. In addition to acquiring basic skills in the two disciplines, students gain a unique perspective on legal research and its application in legal practice.	PDF	Fall 2022
Quality, Safety, and Risk Management in Healthcare Post-Bacc Certificate	College of Nursing and Health Professions	This program is designed to prepare health professionals who can lead organizational efforts to improve and monitor quality metrics, improve safety for both patients and staff, and manage risks in a dynamic healthcare environment. Graduates of this program will be prepared to lead teams in a wide variety of quality and risk management initiatives.	PDF	Fall 2022
Smart Building Systems Post-Bacc Certificate	College of Engineering	This program will educate post-baccalaureate students with the knowledge and skills necessary for designing new or commissioning existing smart building systems for higher building performance. It integrates courses on the topics of intelligent buildings, building control systems, building energy analytics, human-building interaction, fault detection and diagnosis, machine learning/artificial intelligence etc. to provide students with the scientific and engineering knowledge necessary to make buildings smarter with improved occupant well-being and sustainability.	PDF	Fall 2022
Structures Forensics Post-Bacc Certificate	College of Engineering	This program will educate graduate students with the knowledge and skills necessary for assessing existing structures and structural systems, starting with an in-depth education of mechanics, followed by the use of sensing systems for infrastructure assessment, along with elements of forensics where past structural failures are analyzed so as to prevent similar structural failures in new or existing structural systems.	PDF	Fall 2022
the Internet of Things MS	College of Engineering	The world envisioned by the Internet of Things (IoT) includes high densities of sensors and actuators all communicating with one another to collect and process data for a wide variety of applications. Addressing these societal challenges will require engineers trained with core knowledge in wireless communications and networks supplemented by hands-on laboratory experience. They can supplement this core knowledge with electives in computer engineering and embedded systems, radio frequency electronics, cybersecurity, and machine learning and data analytics. They must also be able to apply these technologies in applications such as biomedical devices, intelligent buildings, and smart power grids.	PDF	Fall 2022
Uncovering Insights with Business Analytics Post-Bacc Certificate	LeBow College of Business	In this certificate, students learn how to frame and present insights from analytics to the broader organization. The benefit of analytics is realized when it is integrated with organizational culture, and techniques such as visualization, story telling and mapping are used to communicate findings cogently and clearly to decision makers.	PDF	Fall 2022

New Undergraduate Courses

Course No.	Title	Description	Effective Term
AE 444	Building Envelope Systems	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.	Fall 2022
AE 455	Data Acquisition and Analytics in Built Environment	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.	Fall 2022
BIO 242	SEA-GENES I	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.	Fall 2022

BLAW 343	Marketing Law	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.	Fall 2022
BMES 353	Computational Neuroscience and Neuroengineering	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.	Fall 2022
BMES 415	Systems Neuroscience and its Applications in Medicine and Engineering	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.	Fall 2022
BMES 418	Brain Computer Interfaces	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.	Fall 2022
BMES 424	Principles of Neuroimaging	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.	Fall 2022
CHLC 205S	Introduction to Human Lactation	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.	Fall 2022
CHLC 305S	Clinical Issues in Human Lactation I	The focus of this course will be to understand clinical aspects of the lactating parent including in-depth 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 lactating parent may encounter. The course will examine the effects of maternal characteristics as well as the effects of birth on breastfeeding outcomes. Strategies to improve breastfeeding success will be discussed.	Fall 2022
CHLC 355S	Clinical Issues in Human Lactation II	The focus of this course will be to understand clinical aspects of the breastfeeding infant and the use of human milk, including in-depth infant and the changing composition of human milk as the infant's needs change. 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 anatomy and characteristics as well as the effects of birth on breastfeeding outcomes. Strategies to improve breastfeeding success will be discussed.	Fall 2022
CHLC 405S	Public Policy of Breastfeeding	This course will examine the barriers to optimal breastfeeding using a socio-ecologic 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.	Fall 2022

CHLC 485S	Clinical Internship in Lactation for Pathway 2	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.	Fall 2022
CJS 230	Police and Society	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?	Fall 2022
CJS 240	Seminar in Justice Informatics	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.	Fall 2022
CJS 270	Crime Analysis Using Open Data	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.	Fall 2022
CJS 310	Crime Prediction Using Open Data	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.	Fall 2022
CJS 405	Data-Driven Investigations and Crime	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.	Fall 2022

COM 215	Communication Resources for Media Studies	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.	Fall 2022
COM 216	Sourcing Challenges in Journalism	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.	Fall 2022
COM 251	Language and Cultural Diversity in the USA	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.	Fall 2022
COM 255	Fans, Fandom, and Audiences	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.	Fall 2022
COM 263	Multiplatform Journalism	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.	Fall 2022
COM 341	Communication Past and Present	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.	Fall 2022
CS 460	Theory Reading Group	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	Fall 2022

DSMR 215	Digital Commerce & Promotion	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.	Fall 2022
DSMR 300	Design and Merchandising Trends and Impact	An exploration of a specialized area of the industry which is relevant to the zeitgeist.	Fall 2022
DSMR 330	Immersive Media and Merchandising	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.	Fall 2022
DSMR 475	Design and Merchandising in the Circular Economy	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.	Fall 2022
ECE 434	Introduction to Multimedia Forensics and Security	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.	Fall 2022
ECON 248	Mathematical Models in Economics	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.	Fall 2022
ECON 324	Economics of Happiness	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.	Fall 2022
EDHE 320	Mind, Brain and learning	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.	Fall 2022
EDHE 321	Neuropedagogy and Assessment	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.	Fall 2022

EDHE 322	Neurodiversity in Education and Workforce	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.	Fall 2022
EDLT 302	Learning Experience Design	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.	Fall 2022
EDLT 303	The Learning Sciences	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.	Fall 2022
EDLT 304	Learning Engineering	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.	Fall 2022
EDLT 310	Making Culture: Designing/Maker-Centered Learning Environments	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.	Fall 2022
EDLT 312	Using and Integrating Learning Technologies	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.	Fall 2022
EDLT 341	Foundations of Game-Based Learning	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.	Fall 2022

EDLT 344	Integrating Games and Pedagogical Content Knowledge	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.	Fall 2022
EDLT 352	Instructional Design: Project Management	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.	Fall 2022
EDLT 355	Learning with Social media and Mobiles	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.	Fall 2022
EDLT 391	Learning Analytics: Lenses on Students, Teaching, and Curriculum Enactment	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.	Fall 2022
EDLT 395	Learning through the Lifespan	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.	Fall 2022
EDLT 396	Lifelong Learning Models & Best Practices	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.	Fall 2022
EDLT 434	Play and Learning in a Participatory Culture	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.	Fall 2022
EDPO 312	Educational Policy, Law & Advocacy	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.	Fall 2022
EHRD 460	Principles of Adult Learning	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.	Fall 2022
ELL 303	Teaching and Learning Issues in E-Learning	This course prepares trainers, teachers, and administrators at all educational levels with the knowledge they will need to provide effective experiences in distance education. Provides a conceptual and theoretical foundation as well as practical skills and knowledge, along with numerous opportunities for hands-on experience.	Fall 2022
ELL 304	Learning Technologies and Disabilities	The course is designed to develop the knowledge and skills required to utilize adaptive and assistive technology (AT) and accommodation in the facilitation of learning design and delivery.	Fall 2022

ENTP 260	Curiosity, Ecology, Empathy & Ethic	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.	Fall 2022
ENTP 445	GreenStart: Applying Entrepreneurship to Cultivate Sustainable Solutions	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.	Fall 2022
ESCI 101	Foundations of Exercise Science	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.	Fall 2022
ESCI 201	Introduction to Exercise Science	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.	Fall 2022
ESCI 210	Health and Wellness Throughout the Lifespan	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.	Fall 2022
ESCI 315	Concepts & Practices in Inclusive Physical Activity	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.	Fall 2022

ESCI 320	Technological Advancements and Integrations in Exercise Science	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.	Fall 2022
ESCI 330	Physical Growth and Motor Behavior	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.	Fall 2022
ESCI 340	Exercise Physiology II	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.	Fall 2022
ESCI 370	Electrocardiogram Interpretation Graded Exercise Testing	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.	Fall 2022
ESCI 410	Aging and Exercise	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.	Fall 2022
ESCI 415	Pharmacology and Ergogenic Aids in Exercise Science	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.	Fall 2022
ESCI 420	Wellness and Fitness Program Management	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.	Fall 2022
ESCI 435	Exercise is Medicine: A Campus Experience	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.	Fall 2022
FMTV 293	Introduction to Money and the Media	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.	Fall 2022

FMTV 206	Audio Production and Post	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.	Fall 2022
GMAP 340	Entrepreneurial Game Studio Incubator Lab Project	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.	Fall 2022
HIST 217	American Insurrection	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.	Fall 2022
HIST 226	American Jewish Experience	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.	Fall 2022
HIST 227	History of Antisemitism	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.	Fall 2022
HIST 228	Antisemitism in America	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.	Fall 2022

HIST 229	Pirates, Planters, Traders: The Jewish Atlantic World	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.	Fall 2022
HNRS 400	Honors Thesis Proposal Workshop	This course is the proposal workshop for students preparing to embark on their Honors thesis. Available to students who are pursuing Honors with Distinction.	Fall 2022
IPS 360	Rethinking Healthy Aging through Public Policy and Healthcare Innovation	According to the World Health Organization healthy aging is about "creating the environments and opportunities that enable people to be and do what they value throughout their lives." The decisions we make and activities we participate in now can impact wellbeing in older age. This course will develop student's understanding of the factors impacting healthy aging including ageism, sociodemographic disparities, physical changes, caregiving, wellness, financial security, environment, housing, and public policy. Students will also learn how to enhance their own personal healthy aging. Guest speakers will include experts in the field and will share their experiences promoting facets of healthy aging at the local, state, and national level.	Fall 2022
JWST 227	History of Antisemitism	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.	Fall 2022
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LAW 135	Foundations of Legal Research	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.	Fall 2022
LAW 216	Regulating Families	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.	Fall 2022
LAW 217	Sex, Gender, Sexuality and the Law	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.	Fall 2022
LAW 315	Power, Professionalism, and the Law	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.	Fall 2022
LAW 495	Capstone Seminar in Law	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.	Fall 2022
LAW T280	Special Topics in Law	This course will explore issues related to law. The topic will vary each time it is offered.	Fall 2022
LAW T380	Advanced Special Topics in Law	This course will explore advanced issues related to law. The topic will vary each time it is offered.	Fall 2022
MATH 375	Materials Selection for Industrial Applications	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.	Fall 2022
MATE 462	Powder Metallurgy	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.	Fall 2022
MATE 475	Materials Data Analysis	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.	Fall 2022
PBHL 210	Biostatistics I	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.	Fall 2022
PBHL 211	Biostatistics II	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.	Fall 2022

PBHL 215	Introduction to Clinical Research	Clinical research is foundational in the development and assessment of the safety and efficacy of medical and health interventions, including medications, devices, diagnostic procedures, and treatment regimens with a goal of improving individuals' health. Critical to designing and implementing valid clinical studies is an understanding of clinical trials and the methods used to analyze them. In this course, students will be introduced to clinical trials and their operations, as well as statistical methods important for designing and implementing clinical trials.	Fall 2022
PBHL 335	Applied Quantitative Research Methods	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.	Fall 2022
PBHL 362	Global Air Pollution and Health	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.	Fall 2022
PBHL 340	Advanced Biostatistical Analysis	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.	Fall 2022
PBHL 400	Introduction to Statistical Inference	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.	Fall 2022
PBHL 401	Introduction to Public Health	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.	Fall 2022
PBHL 453	Longitudinal Data Analysis	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.	Fall 2022
PBHL 455	Introduction to Statistical Computing	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.	Fall 2022

PBHL 459	Survival Data Analysis	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.	Fall 2022
PBHL 495	Health Data Analytics Capstone	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.	Fall 2022
PHIL 151	Ethical Reasoning	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.	Fall 2022
PHIL 201	Non-Western Philosophies	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.	Fall 2022
PHTO 225	Looking at Photographs	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.	Fall 2022
PHTO 496	Exhibition	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.	Fall 2022
PHYS 433	General Relativity	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.	Fall 2022
PHYS 479	The Standard Model	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.	Fall 2022
PSCI 321	The United States Presidency	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.	Fall 2022
PSCI 324	Feminist Political Theories	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.	Fall 2022

PSY 333	Multicultural Issues in Psychology	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.	Fall 2022
SCTS 208	Energy and Society	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.	Fall 2022
SCTS I299	Independent Study in Science, Technology & Society	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.	Fall 2022
VRIM 388	Motion Capture I	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.	Fall 2022
VRIM 488	Motion Capture II	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.	Fall 2022
VSCM 220	Web Graphics I	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.	Fall 2022
VSCM 221	Web Graphics II	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.	Fall 2022
VSCM 222	Web Graphics III	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.	Fall 2022
VSCM 322	Motion Graphics I	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.	Fall 2022
VSST 309	Sculpture: CNC Fabrication	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.	Fall 2022

New Graduate Courses

Course No.	Title	Description	Effective Term
BSAN 601	Business Analytics for Managers	Business Analytics is an interactive process of analyzing and exploring enterprise data, in order to understand the past, make predictions about the future, and guide decision-making. In this course, students will learn how to use analytics in their decision-making. Analytics through the methodology of problem framing, model building, analysis, and communicating insights is explored.	Fall 2022

BSAN 615	Data Visualization & Analytics	Graphical methods enable data and information to be presented in an easily consumable, insightful, and actionable manner. Descriptive, diagnostic, predictive, and prescriptive analytics all benefit from data visualization, through the use of infographics, interactive visualizations, dashboards, and more recently, augmented analytics. This course will focus on three main facets of data visualization: strategy and implementation, Interpretation and insights, and communication and storytelling.	Fall 2022
CFTP 568	Addictions in the Family System	The process of addiction will be examined in the context of the family and larger social systems. The course includes broad exposure to theoretical and treatment models to aid students' clinical assessment and intervention skills in treating families impacted by substance abuse issues.	Fall 2022
CFTP 577	Self of the Therapist	Students will be introduced to multiple self-of-the-therapist models for use in clinical practice This course is designed to help students develop an awareness of the self in the context of their roles as therapists.	Fall 2022
CFTP 578	Couples and Sex Therapy	This course will introduce students to systemic approaches to working couples in therapy, including differences between family therapy and couple therapy, issues of joining, assessment, and intervention, and types of problems typically brought to therapy. Students will be exposed to foundational concepts of human sexuality, as well as the assessment and treatment protocols related to sexual issues and disorders in couple therapy.	Fall 2022
CFTP 797	Capstone Portfolio Development I	The Capstone Portfolio Development I course is the first in a series of three courses which prepare students for the Capstone Portfolio I,II, and III courses. This course series provides students with instructor and peer support to 1) develop a feasible plan to meet key program capstone portfolio requirements, 2) initiate long-term capstone portfolio tasks, and 3) explore opportunities to align capstone portfolio tasks with their professional goals.	Fall 2022
CFTP 798	Capstone Portfolio Development II	The Capstone Portfolio Development II course is the second in a series of three courses which prepare students for the Capstone Portfolio I,II, and III courses. This course series provides students with instructor and peer support to 1) develop a feasible plan to meet key program capstone portfolio requirements, 2) initiate long-term capstone portfolio tasks, and 3) explore opportunities to align capstone portfolio tasks with their professional goals.	Fall 2022
CFTP 799	Capstone Portfolio Development III	The Capstone Portfolio Development III course is the third in a series of three courses which prepare students for the Capstone Portfolio I,II, and III courses. This course series provides students with instructor and peer support to 1) develop a feasible plan to meet key program capstone portfolio requirements, 2) initiate long-term capstone portfolio tasks, and 3) explore opportunities to align capstone portfolio tasks with their professional goals.	Fall 2022
CFTP 805	Couple and Family Therapy Doctoral Internship I	This is the first course in the sequence of required clinical internship courses for students in the Doctor of Couple and Family Therapy Program. Students will complete a supervised placement in a clinical setting providing individual and couple/family therapy services.	Fall 2022
CFTP 806	Couple and Family Therapy Doctoral Internship II	This is the second course in the sequence of required clinical internship courses for students in the Doctor of Couple and Family Therapy Program. Students will continue to build their clinical skills by completing a supervised placement in a clinical setting providing individual and couple/ family therapy services.	Fall 2022
CFTP 807	Couple and Family Therapy Doctoral Internship III	This is the third course in the sequence of required clinical internship courses in the Doctor of Couple and Family Therapy Program. Students will continue to build their clinical skills by completing a supervised placement in a clinical setting providing individual and couple/family therapy services.	Fall 2022
CFTX 501	Introduction to Family Therapy Models I	The purpose of this course is to introduce the student to major family therapy theories and their relationship to general systems theory and cybernetics.	Fall 2022

CFTX 530	Clinical Practicum Supervision I	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 531	Clinical Practicum Supervision II	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 532	Clinical Practicum Supervision III	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 533	Clinical Practicum Supervision IV	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 534	Clinical Practicum Supervision V	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 535	Clinical Practicum Supervision VI	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 536	Clinical Practicum Supervision VII	The purpose of second year practicum is for students to show integration of theory and practice, develop their own style of practice, and globally demonstrate comfort and competency in the role and functions of a couple and family therapist.	Fall 2022
CFTX 573	Group Therapy: Theoretical Models and Practice	Students in this course will gain knowledge of group psychotherapy theoretical models and practices for developing and running group psychotherapies. All types of group processes will be examined, including structured and unstructured, and topic-specific modalities. Strategies for maintaining a systemic perspective will be emphasized, along with a focus on diversity and experience.	Fall 2022
CFTX 601	Advanced Theory and Practice II	This course is designed to advance student understanding of clinical practice through in-depth exposure to an evidenced-based model of treatment.	Fall 2022
CHP 561	Overview of Issues in Global Health	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 health issues across the globe, including general concepts such as determinants of health, the measurements of health status, as well as demographic and other global trends and their impact on the global burden of the disease. The course will also address specific health issues that affect much of the world's population such as communicable diseases, malnutrition, water and sanitation, chronic diseases, injuries and environmental health challenges, as well as the factors that threaten reproductive and child health.	Fall 2022
CIVE 637	Seepage and Consolidation	Covers permeability of soils, seepage and drainage, seepage analysis of geotechnical problem such as dams, sheet piles, excavations. Classical one-dimensional consolidation theories, analysis and interpretation of laboratory and field tests. Extended consolidation theories to include 3D consolidation, nonlinear finite strain, etc. Course covers numerical methods applied to seepage and consolidation geotechnical problems.	Fall 2022

CMCA 500S	Foundations in Bioscience 1	Biology ultimately depends upon the molecular processes that occur within cells. This course introduces you to the foundational concepts in molecular and cell biology and biochemistry. We begin with the key players: The biomolecules used to construct and operate cells. We next consider the Central Dogma, which reveals how the cell builds new molecules (and thereby allows it to copy itself). Finally, we cover the basics of cell biology, providing context in which students can understand the stage upon which these processes play out. These concepts provide a fundamental knowledge base that will support learning at the cutting edge of bioscience.	Fall 2022
CMCA 501S	Foundations in Bioscience 2	Biology ultimately depends upon the molecular processes that occur within cells. This course continues the introduction of foundational concepts in molecular and cell biology and biochemistry begun in CMCA 500S. We begin by exploring cell biology, the movement of cellular constituents and of entire cells, how cells age, as well as how they fuel and renew themselves. Next, we apply our fundamental knowledge to questions relating to inheritance and disease. Finally, we turn our attention to technology, to provide insights into the techniques used to generate the fundamental knowledge that we study.	Fall 2022
CMCA 510S	Introduction to Cancer Biology	This course provides a broad-based introduction to the field of cancer biology. The course focuses on mutations in enzymes that alter activity, modulation of transcription and translation in cancer cells, defects in DNA damage repair pathways, rewiring of signal transduction pathways, and alterations in cell cycle regulation. The majority of the course is discussion-based and focuses on analysis of primary literature, with an emphasis on training students in critical reading of primary scientific research reports.	Fall 2022
CMCA 520S	Molecular Basis of Cancer	This course will educate students on the principles of cancer biology, including the genetic and molecular changes normal cells undergo during transformation into malignant cancer cells. We explore the role of mutations in cancer cells, and how they lead to the dysregulation of essential biological properties like programmed cell death, growth and migration. We compare classical with newer treatment strategies such as targeted therapies and immune therapies. We also explore the challenges associated with preventing and diagnosing cancers.	Fall 2022
CMCA 551S	Control of the Cell Cycle and Cell Death	This course focuses on recent advances in our understanding of the Cell Cycle and Cell Death. Control of the cell cycle is essential for proper cell proliferation. Similarly, controlled cell death, or apoptosis, is important for removing cells that are sick or defective. Dysfunction of these processes is fundamental to many mechanisms of cancer development and clinical treatment.	Fall 2022
CMCA 552S	Experimental Approaches in Cancer Research	To truly understand primary research reports, you must have some understanding of the methods used. In this course, you will learn about widely used bench-based research methods that are useful for researchers studying the molecular basis of cancer. These methods will be covered using a combination of lectures, study exercises, and first-person demonstrations of the methods in action. The research methods covered include bioinformatic, molecular, cellular, and animal models.	Fall 2022
CMCA T580S	Special Topics in the Molecular Basis of Cancer	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.	Fall 2022
COM 538	Copy Editing	Every aspect of communication, whether public relations, social media, technical or scientific writing, needs to be copy edited before it is released to the public. Copy editing does not just examine spelling and punctuation, but also takes into account the flow and length of the text. Copy editors are also routinely asked to write compelling headlines and accompanying captions for photographs and graphics. In this class, students will look at the mechanics of proper writing, delve deeply into AP style, and will learn to be critical readers who ask questions about the purpose and content of written communication. Students will learn best practices for copy editing different texts.	Fall 2022

COM 545	Crisis Communication	This course provides students with an understanding of the frameworks and practical tools necessary to successfully manage a variety of crisis situations from a communications standpoint. Following the crisis management process (prevention, preparation, response, and revision), students will learn the theories, principles, and best practices associated with crisis communication and management. Using real-world case studies, crisis communication theories and ethics, and role-playing activities, students will develop the ability to think strategically, make recommendations to address crisis-related challenges, and develop proactive crisis communication plans to assist organizations during challenging times.	Fall 2022
CR 571S	Health Information Technology in Biomedical R&D	This course focuses on the challenges and opportunities in the development and use of health information technology in facilitating R&D and encouraging patient engagement. The course provides an overview of the regulatory requirements of information technology in support of healthcare research and biomedical product development. It includes a focus on the privacy and data security and interoperability mandates. This course also examines the dynamic environment in which medical device product research is conducted because of the use of information technology, the adoption of software applications designed for the mobile marketplace and the blurring of the distinctions between patients and consumers.	Fall 2022
CR 573S	Patient Generated Data in Clinical Research	This course will provide an overview of the use of patient-generated data in clinical research and development. The course will describe foundational elements for use of patient-reported data in clinical research, as well as the operational considerations for collecting patient-generated data and working with solution providers offering technology and services for the same.	Fall 2022
CR 637S	Risk Management in Clinical Research	This course will provide an overview of the foundational concepts and practices of risk management and current challenges and opportunities in applying risk management and risk-based approaches in clinical research and development and as described in applicable regulatory guidance. The course will identify pertinent tools and strategies for assessing and measuring risk, as well as defining plans for risk controls and risk response.	Fall 2022
CR 639S	Healthcare Inequities in Biomedical Research	The course examines the existence of systemic racism, sexism and other forms of bias and discrimination in the conduct of biomedical R&D that have resulted in healthcare disparities and inequities. Students will learn to identify the various forms of bias and discrimination that are and could be embedded in the way biomedical researchers create and access data used to make decisions about product development. Students also will be introduced to the history of healthcare inequities and bias in the healthcare system and in medical research to help them understand why people of color and of differing ethnicities and cultures and those in the LGBTQ+ communities harbor mistrust of the health system.	Fall 2022
CS 614	Applications of Machine Learning	Machine learning (ML) learns concepts from data to perform complex tasks to solve a variety of challenging problems. With the growth and abundance of data sources and types, ML methods become more sophisticated and give rise to applications in new areas accomplishing tasks perceived as impractical or not feasible before. This course educates students to recognize the relevant factors in applying ML methods and architectures to different application problems in various application domains. The focus on specific application domains, tasks, and areas may vary depending on students' interest but will cover the essential problem areas of artificial intelligence such as vision, natural language, recommender systems, and applications in the biomedical field.	Fall 2022
CS 760	Theory Reading Group	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.	Fall 2022

CTCN 509	Social and Cultural Foundations	This foundational course focuses on the multiple dimensions to developing knowledge, awareness and skills in multicultural competency and cultural humility as professional creative arts therapists and counselors. Theories of multicultural counseling, identity development, psychosocial theories and anti-oppressive intervention strategies in working with diverse populations are considered. Implications of culture, race, ethnicity, sexual orientation, gender, social class, ability and religion within-group, as well as between-group cultural differences, are examined within the context of mental health care. The course centers on the ongoing examination of personal/institutional prejudice, bias, oppression and discrimination as it relates to becoming an anti-oppressive and social justice-informed practitioner.	Fall 2022
CW 510	Prepared to Publish	This course is designed to give MFA creative writing students knowledge of and practice in the situations, roles, and skills they might encounter in their future publishing endeavors (whether as authors with big publishers or small presses, as self-publishers who take on the task of publishing their own books, or as professionals on the editorial or business side of publishing). Students will learn about such topics as editing, copy editing, book production, author rights and contracts, working with agents and editors, small press book publication, book cover design, interior book layout, building an author website, social media and book promotion, and literary magazines.	Fall 2022
DSCI 641	Recommender Systems for Data Science	Recommender systems help users to discover new products and services. The goal is generating meaningful recommendation to a collection of users with items or products that might interest them. Recommender systems are encountered on multiple domains such as e-commerce, content and media distribution, social media, and more. The course will cover fundamental and practical aspects of Recommender systems focusing on the data science approach. The course includes topics and concepts for recommender systems: collaborative filtering, content-based recommendation, knowledge-based recommendation, hybrid recommendation, attack-resistance recommendation, and evaluation of the recommender systems.	Fall 2022
DSRE 626	Design: Making and Disruption	This course combines studio and lecture to introduce students to a variety of disruptive and destructive design techniques and guides them towards innovation and inventions. Through hands-on prompted experimentation, selected readings, in-class discussion, instructive editing, and group critique, students will explore unbuilding and rebuilding of design systems. Students will produce several small-scale experiments and create a larger deliverable based on opportunities discovered during the prototyping phase. To produce this work, students will engage with a variety of digital, philosophical, and material fabrication methods. The course aims to enhance student design abilities by promoting the out-of-the-box expansion of traditional design techniques.	Fall 2022
ECE 504	Computing and Control	This course focuses on the practical aspects of implementing Computer Control using microcontrollers in such applications as: Automated Equipment, Robotics, Motor Control, Process Control and Aerospace. The course is essentially divided into two parts: (1) the computer in the loop and (2) addressing noisy measurements.	Fall 2022
ECEE 500	Advanced Power Electronics	This power electronics course is for graduate students in the area of power engineering, focusing on advanced knowledge and technology in the research and applications of power electronics. It will introduce the latest achievements in power electronics and provides future trend of technology developments.	Fall 2022

ECEE 600	Applied Robotics Laboratory	Students will learn the underlying background/theory to simulate and physically implement a two axis scara robot that can draw a straight line or follow curves. Key topics include: creation of motion profiles, forward and inverse kinematics, Develit-Haretnburg matrices, Lagrangian dynamic, position servo systems and determining required bandwidth of servo system to ensure tracking of desired waveforms as well as fundamentals of robot motion programming. In addition students will also explore commercial codes used for robot design and analysis.	Fall 2022
EDLT 502	Learning Experience Design	This course will prepare students with a 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.	Fall 2022
EDLT 504	Learning Engineering	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 Applied Technology in the creation of Experiences, Environments, and Technologies that will impact learning within social, cultural contexts and intersectional influences of the lived world.	Fall 2022
EDLT 595	Learning through the Lifespan	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.	Fall 2022
EDLT 596	Lifelong Learning Models & Best Practices	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.	Fall 2022
EDSP 601	Advanced Practicum in School Psychology	This course is a required practicum for all second year, school psychology students. It is to be taken each academic quarter (fall, winter, spring) and will follow local school district calendars. In this practicum, students are required to be shadow a school psychologists and engage in assessment, intervention and/or consultative activities, report writing and supervision related to the field of school psychology. The practicum may take place in school settings, behavioral health settings, clinics and hospital settings.	Fall 2022
ENVS 572	Environmental Assessment	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.	Fall 2022
ENVS 576	Environmental and Ecological Remediation	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 (e.g. brownfields).	Fall 2022

EOH 562	Global Air Pollution and Health	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.	Fall 2022
EPI 749	Research and Practice in Epidemiology	This course will engage students in the culminating experience required of second-year master's students in epidemiology. Students will either develop a hypothesis based on a public health problem and perform a multi-variable analysis to test the hypothesis using an appropriate dataset and describe how that addresses the public health problem or conduct a rigorous systematic literature review that both critiques and synthesizes the existing public health literature that addresses the public health problem.	Fall 2022
EPI 805	Advanced Topics in Epidemiologic History, Theory and Biases	This advanced seminar is designed to offer doctoral students an opportunity to synthesize theories and methodologies in epidemiology. The emphasis will be on the combination of theoretical and methodological ideas and tools. Existing controversies in the field will be highlighted. Topics to be covered include: (a) history of epidemiology, (b) the role of theory in epidemiology, (c) philosophy of science as it pertains to epidemiology, and (d) current discussions about causal inference in epidemiology. Students will discuss hypothesis generation and testing, causal reasoning, and the interplay between theories, models and data.	Fall 2022
FASH 500	Sustainable Practice in Fashion	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.	Fall 2022
FASH 541	Patternmaking I	Explores basic patternmaking techniques and manipulations and establishes comparisons between drafting and draping techniques in the development of standard slopers.	Fall 2022
HMP 610	Abolition Frameworks for Public Health: Transformative Policies for a New Society	An abolitionist framework utilizes liberatory policy approaches to create the conditions for health and wellbeing. Through recognizing the United States' history and public health impact of colonization, slavery, Anti-Black racism, structural racism, capitalism, imperialism, ableism and patriarchy, an abolitionist framework views prisons, policing, standardized education, for-profit health care, and other systems as interconnected means of oppression and exploitation. Abolition seeks to dismantle those sources of control and to simultaneously envision and build new social, political and economic structures that ensure that power is with the people and communities to help all of us to live and flourish in a healthy society that promotes dignity for all.	Fall 2022
HMP 667	Professional Seminar for the Executive MPH Program	This Seminar is a requirement of all students completing their MPH degree in the Executive program, providing a cohort-based residency component to the MPH experience. Using DSPH faculty and external partners, this seminar will enhance EMPH coursework and enable students to build connections between the classroom and their public health careers.	Fall 2022

HMP 752	EMPH Capstone I	This course is the first of a 3-course sequence designed to fulfill the requirement that all Master of Public Health degree candidates have the opportunity, as described by the Council on Education for Public Health, "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice". In this course, students will learn the component tasks involved in case analysis, such as stakeholder analysis and the development of an action plan. Students will work in groups to analyze a case study of public health practice and policy, applying general and discipline-specific public health knowledge from their course work to the effective resolution of a public health problem.	Fall 2022
HMP 753	EMPH Capstone II	This course is the second of a 3-course sequence designed to fulfill the requirement that all Master of Public Health degree candidates have the opportunity, as described by the Council on Education for Public Health, "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice". In this course, students will work in groups to analyze a case study of public health practice and policy, identify an effective resolution, develop an action plan for implementation, and articulate an evaluation strategy. Group presentations of the case analysis will be required. Students will then work in groups to identify and develop topics for new cases.	Fall 2022
HMP 754	EMPH Capstone III	This course is the third and final course of a 3-course sequence designed to fulfill the requirement that all Master of Public Health degree candidates have the opportunity, as described by CEPH, "to synthesize and integrate knowledge acquired in course work and other learning experiences and to apply theory and principles in a situation that approximates some aspect of professional practice". In this course, students will work in groups to develop and write a new case study of public health practice and policy. The case will focus on a current and/or continuing public health challenge and will incorporate researched background data such as epidemiologic patterns and trends, organizational and financial data, and relevant issues such as political, cultural and social context.	Fall 2022
HRSC 541	Introduction to Scholarly Inquiry and Communication in Health and Rehabilitation Sciences	This course prepares students to be informed and critical consumers of the scientific research literature and introduces graduate level scholarly communication skills. These skills include searching, reviewing, and interpreting the peer-reviewed literature, and communicating findings in oral and written formats.	Fall 2022
HRSC 671	Research Practicum	Research practicum provides students with an opportunity to develop various components of their research interests. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022
HRSC 672	Research Practicum II	This research practicum builds on HRSC 671 research practicum I. Research practicum provides students with an opportunity to develop various components of their research interests. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022
HRSC 673	Research Practicum III	This research practicum builds on HRSC 672 research practicum II. Research practicum provides students with an opportunity to develop various components of their research interests. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022

HRSC 690	Final Project I	Through the final project a student demonstrates implementation of skills in the health and rehabilitation sciences that were developed during the program. The final project will demonstrate the synthesis of graduate level expertise in health and rehabilitation sciences.	Fall 2022
HRSC 691	Final Project II	This final project course is a continuation of HRSC 690 final project I. Through the final project a student demonstrates implementation of skills in the health and rehabilitation sciences that were developed during the program. The final project will demonstrate the synthesis of graduate level expertise in health and rehabilitation sciences.	Fall 2022
HRSC 695	Thesis Research I	Through the thesis a student demonstrates skills in the research process and produces an original contribution of knowledge. The thesis process provides the student with the foundation for conducting research in the field of interest. The stages of the thesis include: formation of thesis committee, development of a research question, thesis proposal, Institutional Review Board Approval, conducting the research study, data analysis, interpretation of results, writing the thesis, and oral thesis defense.	Fall 2022
HRSC 696	Thesis Research II	This thesis research course is a continuation of Thesis Research I. Through the thesis a student demonstrates skills in the research process and produces an original contribution of knowledge. The thesis process provides the student with the foundation for conducting research in the field of interest. The stages of Thesis Research II typically include: conducting the research study, data analysis, interpretation of results, writing the thesis, and oral thesis defense.	Fall 2022
HRSC 761	Foundations of Health and Rehabilitation Research	Provides exposure to theories and models related to health and rehabilitation sciences research. Contemporary frameworks and models for health and rehabilitation research are examined. Students discuss how these theories are tied to development of research questions in line with the mission, goals, and research priorities of funding sources.	Fall 2022
HRSC 821	Research Practicum I	Research practicum provides students with an opportunity to develop various components of their research interests through faculty-supervised research experiences. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022
HRSC 822	Research Practicum II	This research practicum builds on HRSC 821 research practicum I. Research practicum provides students with an opportunity to develop various components of their research interests through faculty-supervised research experiences. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022
HRSC 823	Research Practicum III	This research practicum builds on HRSC 822 research practicum II. Research practicum provides students with an opportunity to develop various components of their research interests through faculty-supervised research experiences. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022
HRSC 824	Research Practicum IV	This research practicum builds on HRSC 823 research practicum III. Research practicum provides students with an opportunity to develop various components of their research interests through faculty-supervised research experiences. Focuses on one or more stages of the research process, such as developing a question, literature review, design and methods, IRB, grant writing, participant recruitment, instrumentation, measurement, data collection, data analysis, interpretation of results, and/or dissemination of findings.	Fall 2022

HRSC 831	Dissertation Research I	This course focuses upon choosing a research topic for the dissertation. The topic will be chosen with ongoing faculty mentoring. Once the topic is chosen the student prepares a dissertation proposal outline that includes the identification of the problem to be studied, the research question, the purpose of the study, the rationale, and the methodology. The proposal outline must be approved by the student's major advisor. Following approval by the advisor, the student begins writing their dissertation proposal.	Fall 2022
HRSC 832	Dissertation Research II	In this course, with faculty mentoring, the student prepares and submits an IRB, collects preliminary data, and writes the dissertation proposal. In addition, the student finalizes their dissertation committee and meets with the committee members. The proposal is submitted to the dissertation committee and the oral defense of the proposal takes place. The student must pass the oral proposal defense in order to register for HRSC 833.	Fall 2022
HRSC 833	Dissertation Research III	In this course the student revises the dissertation proposal based upon the results of the Dissertation Proposal Defense and earns final approval to proceed. The student prepares and submits IRB amendments/ application as needed. Once the dissertation is approved by the IRB, and with the guidance of the major advisor, the student establishes a data management system and collects data for the dissertation.	Fall 2022
HRSC 834	Dissertation Research IV	This course includes the final stages of the dissertation during which the data are analyzed and interpreted, the manuscripts and discussion chapters are written, and the final dissertation is defended in an oral examination and submitted to the University.	Fall 2022
HRSC I699	Independent Study in Health & Rehabilitation Sciences	Independent study provides students with an opportunity to develop various components of their interests in health and rehabilitation sciences. The course is structured with a contract and is designed to allow students access to avenues and resources (personnel, mentorship, institutional) to enrich their learning.	Fall 2022
IHS 512S	Principles of Immunology	This didactic course will acquaint you with fundamental concepts of the human immune system. First, we will introduce general features, such as innate and acquired immunity, and key players of the immune system (cellular and soluble). We will then study how these components interact to mount an immune response to various types of pathogens and illustrate mechanisms how this response is regulated. We will also discuss failures of these mechanisms, for example in immunodeficiency, hypersensitivity, cancer, and autoimmune disease. Further included is an overview of immune prophylaxis, COVID-19, and experimental systems and methods used to study immunology.	Fall 2022
IHS 517S	Biological Anthropology	This course will examine human adaptation, evolution, and variation. We will discuss evolutionary theory, human genetics, and the evolution of genes. We will also look at the primate kingdom and investigate the living primates, looking at their behavior and evolution. We will learn about human biological diversity and delve into the origins and validity of the race concept. The last portion of the course will be devoted to an in-depth examination of human evolution, starting with the first primates and ending with our species, Homo sapiens.	Fall 2022
INDS T680	Special Topics in Interdisciplinary Business	Topics decided upon by faculty will vary within the area of study.	Fall 2022
INFO 692	Explainable Artificial Intelligence	Machine learning (ML) are data-centric artificial intelligence (AI) methods that became popular as an approach to produce value from data. ML methods produce specific decisions that are narrow and opaque. The more mature field of interpretable ML has provided principles to the recent field of explainable AI (XAI) to produce explanations and make ML methods more transparent and to support user needs with explanations. This course will educate students on the motivations, methods, and the value of XAI. The emphasis is on approaches that help humans comprehend various facets of a ML method such as its decisions, its strengths and weaknesses, and its evaluation.	Fall 2022

INFO 693	Human-Artificial Intelligence Interaction	As AI becomes more broadly embedded in technologies used by people, it is increasingly important to consider human-AI interaction design as part of the AI system development process. This class introduces the unique design challenges presented by AI. It explores questions of usability and user experience specific to AI systems, and it reflects more broadly on the relationship between humanity and emerging technologies. Students will practice skills in design, research, and writing relevant to the human side of AI. Topics include interactive system design, speculative design, algorithmic fairness, explainable AI, human augmentation/amplification, data ownership, and AI ethics.	Fall 2022
INTR 500	Visual Culture: Interiors	Addresses the interior environment by studying the impact history, economics, culture, materials and technological developments have on the design of 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. This is a writing intensive.	Fall 2022
INTR 501	Visualization Fundamentals	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.	Fall 2022
INTR 511	History of Modern Architecture and Interiors	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.	Fall 2022
INTR 532	Interior Studio I	Primary spatial course. Involves conscious recognition of the manipulability of space or spaces within a given volume and small-scale environmental orientation. Includes professionally juried presentations.	Fall 2022
INTR 533	Interior Studio II	Covers diagramming program requirements, designing for complex spatial requirements with an awareness of building systems (e.g., partitions, heating/ventilating/cooling, lighting), and furniture. Includes professionally juried presentations.	Fall 2022
IPS 602	Portfolio Development	In this course, graduate nursing students will be given an opportunity to reflect on both their academic work at Drexel University and their professional experience. Through a series of learning activities and assignments, students will build a robust professional portfolio using online technology that can be shared electronically when applying for advanced role positions in nursing.	Fall 2022
LAW 605S	Constitutional Theory	This course covers central issues in constitutional theory and practice, principally as they have arisen in the United States. Topics include the nature of constitutionalism; theories of constitutional interpretation; the use of history and narrative in constitutional argument; theories of constitutional change; the relationship between constitutional adjudication, democratic politics, and social movements; the significance of constitutional culture; the roles played by executive, legislative, and judicial actors; questions of constitutional legitimacy; and circumstances giving rise to constitutional dysfunction or crises. The course will explore these topics in the context of specific issues arising historically and in recent years.	Fall 2022
LAW 866S	Advanced Immigration Law	This course covers advanced issues concerning the law, policy, and politics of immigration and citizenship in the United States, including relevant perspectives on those issues from other disciplines. Topics covered may include the constitutional power to regulate immigration and its limits, discrimination against noncitizens by private and public entities, workplace and labor rights of noncitizens, the intersection of immigration and criminal law, federal enforcement priorities, asylum and humanitarian protections, state and local enforcement initiatives, immigrant integration and inclusion policies, the politics and policy of immigration reform, and selected contemporary litigation.	Fall 2022

LSTU 550	Introduction to the Legal System	This course will begin to help students "think like lawyers" by providing an overview of the United States legal system. It will explain the legislative and judicial processes, so that students will gain an understanding of where the power to regulate originates and the basis of federal law and regulations. The course will then focus on substantive areas of the law, such as torts, contracts, and criminal law.	Fall 2022
LSTU 551	Compliance Skills: Auditing, Investigation & Reporting	This is a skills course that provides students opportunities to develop internal audit skills and strategies, conduct internal investigation work plans, and draft executive level communications. The skills taught will include work plan development, investigative techniques, interviewing methods, class presentations, and drafting of projects plans and board/executive level reporting.	Fall 2022
LSTU 552	Ethics and Professional Standards	Students will be exposed to fundamental issues and current best practices in managing issues of ethical/legal compliance, corporate social responsibility and business ethics. Topics cover business issues, including anti-corruption, environmental crimes/compliance, child labor, employment discrimination, crisis management, whistleblowing, retaliation, fraud, privacy, sustainability and social enterprise. Special attention is given to preparing students to understand and manage the demands on corporations making complex business decisions in the face of increasing expectations for transparency and accountability.	Fall 2022
LSTU 553	Legal Research and Analysis	Students will learn how to research topics and distill their research in written form through a series of exercises. They will also be expected to complete numerous written communications of increasing length and complexity. Detailed feedback will be provided on all written exercises by the professor.	Fall 2022
LSTU 554	Risk Assessment and Management	Risk assessment and management has become a crucially important field for private sector business as well as government sector agencies and organizations, particularly over the past decade following the passage of laws such as Sarbanes-Oxley and Dodd-Frank. This course will examine regulatory compliance and risk management issues that impact various corporate and governmental entities, providing students the opportunity to explore risk analysis and compliance in a variety of legal environments. This course will help familiarize students with issues that might arise in corporate risk management departments, contracts departments, risk management consulting, and the regulatory compliance departments of financial services industries, banking, insurance, credit, risk assessment, and benefits management.	Fall 2022
LSTU 555	Compliance Communications	This course serves as an introduction to the fundamentals of writing specific to the growing area of compliance and addresses why compliance writing is different than general business writing. Assignments are drawn from the various types of writing that are typical of compliance professionals in various industries. Topics include writing for different audiences (various corporate departments, c-suite executives, boards of directors, regulators, the public, etc.), policy and procedure writing, the complexities of communicating with a diverse global audience, investigation memos and evaluation/communication of metrics-based data.	Fall 2022
LSTU 560	MLS Masters Capstone I	This course will provide students with faculty and peer support and guidance in preparing a capstone research project in completion of the Master of Legal Studies. Students will prepare a major written project which may consist of a novel legal claim supported by a substantial literature review or an experientially-based study grounded in a substantial literature review.	Fall 2022
LSTU 561	MLS Masters Capstone II	This course will provide students with faculty and peer support and guidance in preparing a capstone research project in completion of the Master of Legal Studies. Students will prepare a major written project which may consist of a novel legal claim supported by a substantial literature review or an experientially-based study grounded in a substantial literature review.	Fall 2022

LSTU 600	Health Care Rules and Regulations	This course is designed to provide students with an understanding of the laws and regulations encountered by compliance professionals. The course will equip students to apply statutory and regulatory principles to situations that they will encounter in their work.	Fall 2022
LSTU 601	Health Care Quality, Patient Safety and Risk Management	This course will examine methods and tools for managing quality in health facilities, physician practices, managed care, and public health; including developments in quality assurance and improvement, utilization review, risk management, and patient satisfaction.	Fall 2022
LSTU 602	Patients and Privacy: HIPAA and Related Regulations	The focus of this course will be the privacy and security provisions of the Health Insurance Portability and Accountability Act of 1996 (HIPAA), the foundation for federal protections of health care information. Additionally, the course will examine the interplay between HIPAA and other federal and state health privacy laws and the application and enforcement of those laws in a variety of health care settings. The class will incorporate discussions about the close and evolving relationships among health care policy, evolving social norms, and health privacy laws.	Fall 2022
LSTU 620	Legal Issues in Employee Hiring and Termination	Legal issues in hiring and termination of employees are at the core of human resources responsibilities. This course will examine regulatory compliance and management issues that arise in the context of hiring and terminating employees with special consideration of federal law and its continued developments. This course will help familiarize students with issues that arise in human resource departments, particularly as they pertain to those points of entry and exit and where the need to document becomes a critical duty of those managing the hiring, evaluation and termination process.	Fall 2022
LSTU 621	Human Resources Compliance: Managing the Employer/Employee Relationship	This course is designed to introduce students to the fundamentals of human resource compliance and regulation and to provide an overview of the skills necessary to manage human resources effectively. The course will examine why human resource management matters in today's business world and will show how employee performance and legal compliance serve as intermediary processes that connect human resource practices to organizational performance and effectiveness. Students will discuss the various ways in which the employer/employee relationship can be harnessed in positive ways rather than be seen in an adversarial light. This course will highlight issues that might arise in human resource departments, compliance departments and benefits management departments.	Fall 2022
LSTU 603	Legal Regulation of Pharmaceutical and Medical Device Research and Development	This course explores the regulatory entities and schemes governing the research and development, management, financing, and reporting requirements of clinical trials in the pharmaceutical and life sciences sectors. Topics include the role of the Institutional Review Board, compliance with Good Clinical Practice standards, informed consent, pharmacovigilance and the protection of human research subjects, payments and financial transparency, conflicts of interest, ethical considerations in designing and executing clinical trials, and reporting requirements.	Fall 2022
LSTU 604	Legal Regulation of Pharmaceutical and Medical Device Sales and Marketing Practices	This course explores the law governing pharmaceutical and medical device sales and marketing practices, including product pricing, advertising, labeling, promotion and distribution. Topics may include identification of the entities regulating pharmaceutical and medical device manufacturers, disclosure and transparency requirements, payments to doctors and institutions, fraud and abuse, anti-bribery laws, direct-to-consumer advertising including internet advertising, off-label marketing and promotion, labeling over-the-counter (OTC) drugs, and limitations on the government's ability to regulate commercial speech.	Fall 2022

LSTU 605	Food and Drug Law	This course considers the federal regulation of products subject to FDA jurisdiction, including food, human prescription and nonprescription drugs, animal feed and drugs, biologics and blood products, medical devices, and cosmetics. The course examines the public policy choices underlying the substantive law, FDA enforcement power, and agency practice and procedure.	Fall 2022
LSTU 610	NCAA Governance I: Division I	This course will provide a comprehensive overview of the NCAA governance methodology and structure related to managing a Division I Intercollegiate athletic program. Students will explore the NCAA bylaws, focusing specifically on large public research universities with high-profile teams playing at the top National College Athletics Association level, and will examine the relationship between athletics and undergraduate education.	Fall 2022
LSTU 611	NCAA Governance II - Division II and III	This course will introduce students to the membership criteria and governance structure relating to managing a Division II or III Intercollegiate athletic program. Students will explore NCAA rules-making process and bylaws specific to DII and DIII schools and will continue the examination of the relationship between athletics and education in the higher education setting.	Fall 2022
LSTU 612	NCAA Infractions and Enforcement Process	This course will offer a comprehensive overview of the NCAA enforcement mechanism for infractions of the NCAA rules and regulations in across Divisions. Students will examine the investigatory processes and the consequences member institutions face for violating NCAA bylaws. Students will also explore how the rules have been interpreted and enforced by the NCAA, on campus, and by judicial decisions.	Fall 2022
LSTU 622	Human Resources in Practice: Negotiation, Mediation, and Alternative Dispute Resolution	Human resource managers deal not only with laws, rules and regulations, but also and foremost, with people. This course explores the practical reality of working in human resources and provides the necessary skills to ensure competency and success. The course focuses on negotiation with subordinates, peers and supervisors; mediation, because human resource workers often act as informal mediators between employees and supervisors; and alternative dispute resolution, as more employers require their employees to submit their complaints to some form of resolution process as an alternative to a formal lawsuit. This course will familiarize students with issues that arise in human resource departments and provide them with concrete tools to analyze, understand, and implement the best possible path to resolution.	Fall 2022
LSTU 630	Corrections Law	This course is designed to introduce students to the constitutional rights of prisoners and the implications of those rights for prison management. In particular, students will gain a working knowledge of the role of the First Amendment in regulating inmate mail, associational rights, religious practice, and visitation. They will learn how the Fourth Amendment relates to searches of both inmates and visitors. Students will discover how the Fifth and Fourteenth Amendment Due Process rights control inmate transfer, classification and discipline. They will also learn how the Eighth Amendment controls prison policy with respect to the conditions of confinement and provision of health care.	Fall 2022
LSTU 631	Criminal Law	This course examines the principles that underlie liability for criminal conduct. Topics include the definition of crimes and the principles of punishment, the required acts and mental states necessary for liability, and defenses to and justifications for conduct.	Fall 2022
LSTU 632	Criminal Procedure: Investigations	This course considers the Fourth Amendment's protection against unreasonable search and seizure, the Fifth Amendment's right to Due Process and against compulsory self-incriminations, and the Sixth Amendment's right to counsel, all with particular emphasis on the application of these constitutional provisions within the context of criminal investigation.	Fall 2022

LSTU 640	Legal Landscape of Student Rights and Campus Safety	This course will discuss the legal rights of students beginning at the application process and continuing through matriculation and separation from the higher education institution. Topics may include the Family Educational Rights and Privacy Act (FERPA); anti-discrimination and equal access issues; campus crime and safety, including sexual assault and required disclosures; and liability and negligence on the part of the institution.	Fall 2022
LSTU 641	Institutional Compliance: Aid and Accreditation	This course will provide an overview of compliance issues in American institutions of higher learning as they pertain to financial aid and accreditation. In particular, this course will focus on issues pertaining to federal and state financial aid, college access, and reporting requirements. The course will also examine accreditation and disclosure requirements under the Higher Education Act and other relevant regulations and laws.	Fall 2022
LSTU 642	Higher Education Institutions: Financial Rules and Regulations	This course will introduce students to the many financial rules and regulations that govern institutions of higher learning. This course will expose students to areas such as governance and accountability, charitable gifts and endowments and their attending tax implications as well and issues that arise in the areas of intellectual property and scientific research.	Fall 2022
LSTU 649	Foundations of Financial Regulation	This foundational course will introduce students to various types of financial services institutions in the U.S. and the bodies that regulate them. The course will explore the history of domestic financial regulation and the development and current state of regulation in different industry sectors, including commercial and consumer depository institutions, investment companies, securities firms, private investment funds, and insurance companies.	Fall 2022
LSTU 650	Legal Regulation of Global Financial Crimes	This course covers a broad scope of global financial crimes and their intersection with the US financial system. Students will learn about a variety of types of financial crimes; what laws and regulations come into play; which regulators enforce them; the consequences for individuals and financial institutions who enable such crimes (whether intentionally or otherwise); the latest data breach issues, laws, and regulations (including GLBA, GDPR, and others); and how current events, politics, and technological advances intersect with these criminal enterprises.	Fall 2022
LSTU 651	Legal Regulation of Investment Advisers	This course will thoroughly review the Investment Advisers Act of 1940 and how it laid the foundation for present day regulation. It will explore the various legal and regulatory schemes that govern investment companies and look at the key policies that drive them.	Fall 2022
LSTU 652	Legal Regulation of Investment Companies	This course will thoroughly review the Investment Company Act of 1940 and how it laid the foundation for present day regulation. It will explore the various legal and regulatory schemes that govern investment companies and look at the key policies that drive them.	Fall 2022
LSTU 653	Broker/Dealer Regulation	This course will discuss the legal and regulatory frameworks that govern broker-dealers. It will explore the multiple legal and regulatory regimes that govern broker dealers and affiliated institutions.	Fall 2022
LSTU 654	Banking Law	This course will explore the development of banking law and how that development shapes our current banking regulatory regime. It will also compare the US banking regulatory scheme comprised of state and federal bodies with the more uniform systems operating in many foreign jurisdictions.	Fall 2022
LSTU 660	Information Privacy Law	This course will introduce students to the development of information privacy law in the United States. It will focus on legal regulations limiting government access to private information as well as laws regulating the ability of third parties to access such information. It will conclude with an introduction to the privacy regulatory regime imposed by the Federal Trade Commission and European Union regulators.	Fall 2022
LSTU 661	The Law and Strategies Surrounding Cybersecurity	This course will introduce students to the legal and regulatory frameworks governing US cybersecurity. It will examine topics including domestic cybersecurity standards, data breach notification and response, and the creation of compliance programs to manage cybersecurity risks.	Fall 2022

LSTU 662	European Union Data Privacy and Protection	This course explores the law governing information privacy, data protection, and data security in the European Union. Topics may include an introduction to the EU Data Protection Directive and the new General Data Protection Regulation (2018), the Data Protection Authorities and cybersecurity in Europe. Students will also explore the so-called "Right to Be Forgotten," and how EU law affects US companies doing business in Europe or with European entities.	Fall 2022
LSTU 998	Thesis I - Scholarly Legal Writing: Planning and Preparation	This course will introduce you to research and writing techniques commonly used in legal scholarly writing. Specifically, this course will help you identify and develop an original thesis topic and will provide you with the foundation needed to draft, edit, and present an original scholarly work of publishable quality in Thesis II.	Fall 2022
LSTU 999	Thesis II - Scholarly Legal Writing: Writing, Refining, and Presentation	Following Thesis I, this course will provide faculty-guided oversight and mentorship for the drafting, editing, and presentation of an original piece of publishable-quality legal scholarship akin to a law review article. Students will confer with a faculty advisor weekly, either live or via real-time video conference, submit interim drafts as assigned, and receive meaningful faculty feedback. Students will submit a final scholarly paper and present it to colleagues in a workshop format.	Fall 2022
MATE 516	Computational Techniques in Materials	In the past few decades, computational materials modeling and simulation tools have become an essential component to modern materials design, development, and deployment. This course will teach the basics of a broad range of materials modeling and simulation approaches, with emphasis on the first-principles calculations based on density functional theory (DFT) and computational thermodynamics approach (the CALPHAD approach). Teaching contents will be organized to be practice-oriented. There will be lots of hands-on experience with using the modeling software to study the structural, mechanical, electronic, thermodynamic, and kinetic properties of materials.	Fall 2022
MATH 604	Topics in Matrix Analytics	Advanced matrix analysis, including topics such as inequalities involving eigenvalues and/or singular values, norms and their duals, operator monotone and convex functions, spectral variation and spectral perturbation, matrix inequalities, numerical range and its variations.	Fall 2022
MATH 626	Dynamical Systems	Dynamical systems, including topics on phase portraits, invariant sets, one-dimensional and higher-dimensional flows, the study of equilibrium and other dynamical phenomena such as periodic orbits, homoclinic orbits and heteroclinic orbits, linear and structural stabilities of equilibrium, Poincaré maps of dynamical systems, bifurcations of equilibrium and periodic orbits, the normal forms of bifurcations, the existence of invariant manifolds, the persistence and differentiability of invariant manifolds under perturbation.	Fall 2022
MIIM 655S	Emerging Biomedical Interventions for Human Disease	An advanced course that focuses on emerging biomedical interventions for human diseases. Includes in-depth discussions and analyses of experimental and emerging approaches for treating or preventing disease and infections by human pathogens. Students learn about important aspects of each featured experimental therapeutic or preventative approach, including its premise, key developmental milestones, current applications, and future potential. Students are also guided through critical analyses of these approaches and technologies to identify significant strengths and weaknesses.	Fall 2022
NUPR 520	Nurse Practitioner Clinical Orientation Seminar	Serves as a clinical orientation for all nurse practitioner students who will be starting their clinical practicum sequence of the nurse practitioner program. The course introduces students to the clinical support services, the clinical requirements of their specific population specialty, the clinical contracting process, and the clinical compliance process.	Fall 2022
NUPR 618	Nursing Education Practicum I	The nursing education practicum course allows students the opportunity to apply knowledge and demonstrate competence in the areas of nursing education and their clinical specialty, under the supervision of a preceptor.	Fall 2022

NUPR 619	Nursing Education Practicum II	The nursing education practicum course allows students the opportunity to apply knowledge and demonstrate competence in the areas of nursing education and their clinical specialty, under the supervision of a preceptor. During NUPR 619 – Nursing Education Practicum II, students will expand on their work in NUPR 618 – Nursing Education Practicum I to deepen their knowledge of nursing education.	Fall 2022
NUPR 701	Evidence-based Practice: Research-driven Health Care Delivery	This course is designed to assist students in building evidence-based practice (EBP) expertise. Students will identify and define practice problems and incorporate this understanding into comprehensive database and gray literature searches designed to reveal relevant research and science. Studies will be appraised and synthesized to reveal potential science-driven interventions that are anticipated to improve or resolve the practice problem. Organizational culture and structures will be considered as important influences in the uptake of EBP by nurses and interprofessional colleagues.	Fall 2022
NUPR 702	Research Methodologies Seminar	This course is designed to assist students in solidifying their understanding of the research process. Learning opportunities will assist students in preparing for research study appraisal and evidence synthesis. Qualitative and quantitative paradigms will be explored. Common sampling strategies, instrumentation concerns, and data analysis techniques (parametric and non-parametric) will be considered.	Fall 2022
NUPR 703	Nursing Knowledge Development: Ways of Knowing	This course is designed to help students explore the development of nursing knowledge and its relationship to practice. A critical analysis of historical and contemporary views of nursing science knowledge development and the evolution of nursing inquiry will be addressed. Approaches to concept analysis will be an integral part of this course. Students will examine the role that theory plays in research and evidence-based nursing practice. Students will consider opportunities to improve health outcomes and care delivery processes within the context of theory application.	Fall 2022
NUPR 704	Evaluating Research Quality: Evidence Appraisal	This course is constructed to provide students with opportunities to select and apply critical appraisal tools to selected research studies. Students will learn to recognize critical components of published scientific studies and gray literature and evaluate the rigor and relevance of quantitative and qualitative studies retrieved via a methodical search. There will be opportunities for students to summarize and present research findings to student-colleagues using various communication modalities.	Fall 2022
NUPR 705	Health Policy and Politics: Nurses Influencing Health	This course prepares students to lead and participate in health policy development and policy implementation across all levels of systems. Students explore political activism and policy development as critical elements of professional nursing practice and as obligations of service-leadership on behalf of the public and the profession. Students consider the politics that influence policy development and consider economic factors that are relevant to potential policy discussions. Practice opportunities expose students to policy discussions and decisions that occur within and across diverse settings and systems of varying complexity and size.	Fall 2022
NUPR 706	Improving Quality and Safety of Health Care Delivery	This course provides graduate students with the expertise necessary for leading and/or contributing to quality improvement projects and science-driven safety initiatives within varying types of healthcare systems to enhance outcomes by improving processes and/or organizational structures and designs. Knowledge, skills, and attitudes related to patient-centered care; teamwork and collaboration, evidence-based practice, quality improvement, safety and informatics will be investigated. Reports, recommendations, and evidence-driven toolkits will be reviewed and applied to select practice problems. Safety science is viewed as a critical component of high-quality care.	Fall 2022

NUPR 707	Health Law and Clinical Practice/Organizational Ethics	This course provides graduate students with the critical thinking framework and content expertise necessary for thoughtful, ethical and legal analyses and decision-making when confronted with simple and complex situations that occur during professional practice and administrative activities. Nursing's code of ethics and its interpretive statements are carefully explored. Practice hours provide opportunities for students to witness various activities that pertain to health-related organizational processes that connect to ethical decision-making and law/risk management.	Fall 2022
NUPR 708	Leading Projects and Evaluating Programs in Nursing and Healthcare Systems	This course prepares students to evaluate nursing and other interprofessional health programs, craft measurable outcomes in partnership with stakeholders and manage projects that often connect in various ways to health programs.	Fall 2022
NUPR 781	Advanced Clinical Practice Specialization	This purpose of this course is to support and enhance students' advanced practice or advanced leadership/administrative expertise within a specialty area or with a specialization focus. Experiences will be directed by careful self-appraisal and consideration of advanced clinical practice or administration professional aspirations and requirements with the end-goal of improving healthcare/health care processes and outcomes.	Fall 2022
NUPR 782	DNP Scholarly Project Seminar 1: Planning Practice Change	This purpose of this course is to support and enhance students' expertise in devising solutions to practice problems using evidence-based practice strategies. Students will construct a proposed DNP Scholarly Project that demonstrates progression toward achieving required competencies. Students will identify practice problems and solutions as they relate to the student's area of academic focus; specifically, advanced clinical expertise or nurse executive/leadership expertise.	Fall 2022
NUPR 783	DNP Scholarly Project Seminar 2: Implementing and Evaluating Practice Change	This purpose of this course is to implement and complete the DNP Scholarly Project Proposal that was designed during NURS 782: Seminar 1: Planning Practice Change. Students are required to demonstrate DNP competencies and participate in a dissemination activity at the conclusion of the project.	Fall 2022
NUPR 785	Changing Practice Using Evidence	The purpose of this course is for doctoral students in either the advanced clinical expert or nurse executive leadership pathways to demonstrate their developing expertise in DNP competencies by identifying a practice problem or opportunity for improvement and designing a change project in response to this concern that is informed by evidence that has been acquired through a comprehensive search of published science and gray literature.	Fall 2022
NUPR 788	DNP Scholarly Project: Independent Study Completion Seminar	The purpose of this independent study course is to provide additional opportunities for DNP Scholarly Project completion, including practicum experiences, with guidance from the supervising professor.	Fall 2022
NURS 802	Epistemology, Ontology, and the Philosophy of Nursing Science	This course examines nurses' ways of knowing and the philosophical underpinnings of the nursing profession. Students examine the process of scientific inquiry and appraise scholarly products that have relevance to nursing knowledge development and health.	Fall 2022
NURS 992	Dissertation in Nursing Science	Through this course the student will conduct original research with the goal of producing a contribution to the knowledge of the discipline. The quality of the original research must conform to that needed for submission of a manuscript to a peer-reviewed scientific journal (traditional dissertation) or granting agency in the student's area of research. This course builds from the successfully defended dissertation proposal including, conducting a pilot study, securing IRB approval, study implementation, data analysis, interpretation of results, writing the dissertation report, defense, and dissemination of results through publications and presentations.	Fall 2022
NURS 988	Dissertation Proposal Development	The purpose of this course is to provide opportunity for the student, with faculty advisement, to develop the proposed dissertation and prepare for its oral and written defense (candidacy examination). Students will work with their faculty advisor to establish the dissertation committee and to plan the format of the proposed dissertation.	Fall 2022

PLCY 571	Science and Technology Policy	This graduate seminar examines how science informs public policy, and how public policies foster advances in science and technology. Topics addressed include public trust in science, democratic participation in science, and technology-related decisions.	Fall 2022
PTRS 708	Advanced Manual Therapy Techniques	This course expands the manual therapy content, including mobilization and manipulation techniques taught in the curriculum. Emphasis is on current evidence, implications, technique refinement, and clinical decision-making associated with manual therapy.	Fall 2022
PTRS 710	Advanced and Emerging Technologies in Physical Rehabilitation	This course will expose students to advanced and emerging technologies in physical rehabilitation and enable them to critically evaluate these technologies so that they may most appropriately apply and advocate for their use to improve patient care. Areas that will be covered will span the physical rehabilitation spectrum from neurorehabilitation to precision rehabilitation to outpatient technology. Specific topics will include but are not limited to rehabilitation robotics, exoskeletons, advanced prosthetics, brain-machine interfaces, neuro-stimulation & modulation, regenerative medicine, genetics, epigenetics, augmented & virtual reality, mobile & wearable technology, motion capture & analysis, and telerehab.	Fall 2022
PTRS 712	Advanced Regional Anatomy	This course is intended to give 3rd year DPT students exposure to structural and functional aspects of a specific region of the human body. The course is self-paced and focused on skilled dissection of the regional anatomy to develop dissections to be used for future instruction. The area to be dissected is driven by students' interests. Students will spend lab time focused on detailed dissection and research of their selected region related to answering a clinical question.	Fall 2022
PTRS 714	Analysis of Running Biomechanics and Interventions for Running Injury	Analysis of Running Biomechanics and Interventions for Running Injury is a lecture and lab format course that focuses on providing foundational information about running injury and analysis of running gait biomechanics that will be used to create interventions for runners with musculoskeletal injury. Students will spend time in the lab assisting and performing examination, data collection, and gait analysis of patients with injuries and formulating evidence-based treatment plans for interventions. This is an elective course that may be taken by entry-level DPT students during the second year of the program.	Fall 2022
PTRS 716	Pelvic Health Physical Therapy: A Woman's Health Perspective	This course covers the anatomy and physiology of the pelvic floor with an emphasis on the impact that pathophysiological conditions have on pelvic floor health for cis females across the lifespan. Application of advanced knowledge to pelvic floor health for PT examination, evaluation and intervention strategies are emphasized. Musculoskeletal components of urinary incontinence and urogynecological pain conditions will be discussed and expanded upon as they relate to pelvic floor dysfunction and pelvic health. Physical examination of the pelvic floor will highlight information gained from lectures and provide opportunities to practice. PT evaluation, examination, interventions, and identification of red and yellow flags for pelvic floor dysfunction including trauma history and chronic pain will be discussed.	Fall 2022
PTRS 718	Interprofessional Pain Care	This elective is for health professions students interested in improving their interprofessional skills within the context of chronic pain care. The purpose of this elective is to engage the learner in reflective and critical reasoning about contemporary evidence for interprofessional chronic pain care. The course is taught in a journal club format with guiding questions and team building activities to structure discussion and apply evidence to clinical practice scenarios. Learners will collaborate as an interprofessional team to discuss, reflect, and practice application of knowledge and communication skills. They will explore how to best implement evidence in clinical practice, working within various systemic, reimbursement, and organizational barriers.	Fall 2022

RSCH 700	Foundations in Quantitative Research	This course is a survey of quantitative research methodology for the health and rehabilitation sciences. Doctoral students completing the course will develop skills to understand, evaluate, and apply quantitative research across the sciences and the health professions. This course emphasizes why a particular methodology is suited to a particular research agenda and introduces students to measurement theory and psychometric properties of quantitative measures.	Fall 2022
RSCH 715	Qualitative Research Methods II	This is an advanced seminar course for doctoral students in qualitative research methods. Through assigned readings, experiential exercises, and class discussions, students will engage in in-depth discussions of philosophical, theoretical, ethical and practical aspects of qualitative research methodologies. Using existing data sets as well as those collected during the course, students will demonstrate skills in qualitative research with particular emphasis on identifying and aligning analytical strategies compatible with their research topics.	Fall 2022
RSCH 720	Foundations of Biostatistics	This is an introductory course that focuses on the fundamentals of biostatistics for nursing and health sciences graduate students.	Fall 2022
RSCH 721	Intermediate Statistics in Health I	This is an advanced level statistics course focusing on general linear models and selected multivariate statistical tests used in the rehabilitation and health sciences and biomedical engineering.	Fall 2022
RSCH 722	Intermediate Statistics in Health II	This is an advanced level statistics course focusing on selected multivariate, measurement and correlational statistical tests used in rehabilitation, health and medical sciences.	Fall 2022
RSCH 723	Interpretation of Data	The focus of this course is on understanding the methods used to analyze and interpret the results of quantitative data analyses in the health and rehabilitation sciences and determine their meaningfulness (clinical significance). Fundamental to this process is an understanding of the interrelatedness of statistical power, effect size, sample size, and alpha.	Fall 2022
RSCH 742	Scientific Writing	This is an advanced seminar on scientific writing. Emphasis is on conceptualization, writing, and revising research products (e.g, journal article). Topics include components of providing peer-review and how messaging changes for different audiences.	Fall 2022
RSCH 743	Grantsmanship	This course focuses on the organization, development and preparation of a grant application as well as understanding grant application processes and opportunities. Students are expected to prepare components of their grant application under the direction of their mentor using the guidelines for an appropriate funding organization.	Fall 2022
SCL 525	Athlete Leadership Development	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.	Fall 2022
SCL 580	Kinesiology	This course provides an introduction and overview to the science of human movement. Students will apply basic kinesiology concepts to the areas of physical activity, athletics, and recreation/fitness.	Fall 2022
SCL 627	Emerging Trends in Sport	This course focuses on emerging technologies and new trends in sport. Contemporary developments in sport will be explored in order to provide students with the information necessary to best utilize these technologies and trends for sustained success and prepare athletes for successful competition.	Fall 2022
STAT 645	Time Series Forecasting	This course provides a comprehensive introduction to the latest time series forecasting methods. Topics such as autocorrelation, forecast accuracy, seasonality, stationarity, decomposition, time series linear models, exponential smoothing, and ARIMA models are discussed. The course provides a practical skillset to students interested in more accurately forecasting future energy usage, retail sales, crime, economic indicators, user engagement, or any data which is repeatedly measured over time.	Fall 2022

URBS 640	Sanctuary Cities	Historically associated with privately held enclosures within urban space (churches, homes, gardens), "sanctuary" is increasingly understood as a public practice that shapes public policy. This course explores the role of so-called "sanctuary cities"—municipalities that limit their collaboration with (and sometimes openly defy) state and federal agencies—within the bitter struggle to reform the US immigration system. We examine the historical records, interviews, legal statutes, executive orders, artistic projects, and literature that have shaped this contested issue, with particular focus on how cities at once activate and restrict the revolutionary potential of sanctuary.	Fall 2022
VRIM 538	Motion Capture I	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. This class further incorporates the use of these principles and tools in live, real-time interaction and performance settings.	Fall 2022
VRIM 539	Motion Capture II	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. This class further incorporates the use of these principles and tools in live, real-time interaction and performance settings.	Fall 2022
VSST 509	Sculpture: CNC Fabrication	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.	Fall 2022
VSST 511	Drawing Fundamentals	This graduate studio course that deals with the skills and concepts utilized in sketching from both observation and imagination. Honing observational skills, exploring a variety of drawing techniques and materials including imagination-based sketching, encouraging conceptual development and using the principles of design for creative expression will be emphasized.	Fall 2022

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