Drexel University
Catalog 2007 / 2008

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The School of Educagtion Undergraduate Programs

The School of Education

About the School

The School of Education is the umbrella for:

- Teacher education and its undergraduate and graduate programs, which lead to B.S. and M.S. degrees and Pennsylvania State Teacher Certification for grades kindergarten through grade 12, and graduate Instructional Technology Specialist and school principal certification programs .
- The Drexel Center for the Prevention of School Violence, which is committed to reducing violence in schools by assisting schools in designing, implementing, and evaluating a creative school violence prevention model of pedagogy based on current research in creativity as opposed to the prevalent punitive focus on discipline.
- Ph.D. degree program in Educational Leadership Development and Learning Technologies, and School Superintendent certification.

Title II Reporting

In compliance with Title II, Section 207, of the Higher Education Act of 1998 and General Standards for the Institutional Preparation of Professional Educators (Chapter 354), pass rates on the Praxis Series Exam for students prepared as teachers by Drexel University are available at the School of Education.

The School of Education

About the Curriculum
Certification for classroom instruction is available in:

- Elementary education (emphasis on mathematics, science, and technology)
- Secondary education (grades 7-12)
  - Biology
  - Chemistry
  - Earth and Space Science
  - General Science
  - Mathematics
  - Physics
  - Library Science
- Secondary education (grades K-12)
  - Environmental Educaton

Students may acquire certification in more than one subject area.

Teacher education uses University-wide resources to prepare fully qualified mathematics and science teachers at both the elementary and secondary levels. It applies the microcomputer in teaching and learning, and it is the only such program in the country to incorporate a six-month paid internship in industry related to the student's area of certification (for example, a prospective chemistry teacher might co-op at a chemical company).

Because the program requires that students have a B average in content courses needed for certification, the student's content coursework is evaluated at the end of the sophomore year for formal admittance into the Teacher Preparation program. All students are expected to meet the B average requirement in content coursework before beginning pre-student field teaching experience. Students who fail to meet this requirement must take additional content coursework until the B average is met.

Students participate in two periods of direct teaching experience. The first period, in the junior year, consists of a ten-week field experience (EDUC 320 WI) through which students participate in limited teaching; on-campus coursework accompanies the field experience (EDUC 325 and EDUC 326 WI). In the senior year, students complete the 12-week student-teaching experience (EDUC 412 WI) required for certification. Students must receive a grade of at least B in student

teaching and in all pedagogy coursework to be recommended for certification.

Students pursuing the appropriate majors in the College of Arts and Sciences may also complete the requirements for certification within their area of study. For more information, contact the Program Coordinator for the School of Education at 215-895-6770.

Writing-Intensive Course Requirements
In order to graduate, all students beginning with the entering class of 2002/01 (fall, 2002) must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog indicates that this course can fulfill a writing-intensive requirement. Departments will designate specific sections of such courses as writing-intensive. Sections of writing-intensive courses are not indicated in this catalog. Students should check the section comments in Banner when registering. Students scheduling their courses in Banner can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term. For more information on writing-intensive courses, see the Drexel University Writing Program's Writing-Intensive Course page.

The School of Education

Co-operative Education

Drexel University has long been known for its co-operative education program, through which students combine periods of fulltime, career-related employment with their studies. Internship employment is a requirement for all teacher education majors.

The degree is completed in four years, and it includes one six-month or three-month internship period of full-time employment. The goal of the co-op program in teacher education is to provide real-world experiences for future teachers to use in their classrooms.

Students pursue varied positions geared directly to their area(s) of certification. For example, a student working toward certification in chemistry might seek employment in a corporate laboratory, just as a chemistry major would do. Some students, especially elementary certification majors, intern in liberal arts areas or such educationally oriented museums as Philadelphia's Please Touch Museum and the Franklin Institute Science Museum.

The School of Education

Combination Certifications

Combination certifications are available. Sample combinations include:

- Biology certification, with courses for additional certification in chemistry.
- Chemistry certification, with courses for additional certification in biology.
- Earth and space science certification, with courses for additional certification in chemistry.
- Earth and space science certification, with courses for additional certification in physics.
- Mathematics certification, with courses for additional certification in physics
- Physics certification, with courses for additional certification in mathematics.

Elementary Education Certification

Bachelor of Science Degree: 180.0 Credits

Degree Requirements

General education requirements		Credits
ARTH 101	History of Art	3.0
COM 111	Techniques of Speaking	3.0
ECON 201	Economics I	4.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
HIST 298	Special Studies in History: Pennsylvania/Philadelphia History	3.0
INFO 101	Introduction to Information Technology	3.0
MATH 181	Mathematical Analysis I	3.0
MATH 182	Mathematical Analysis II	3.0
MATH 183	Mathematical Analysis III	3.0
MUSC 130	Introduction to Music	4.0
SOC 335	Sociology of Education	3.0
PSY 101	General Psychology	3.0
PSY 320	Educational Psychology	3.0
UNIV 101	The Drexel Experience	2.0
	English elective course between 200-329	3.0
	Nutrition elective*	3.0
	Professional or free electives	27.0

*NFS 101 is the recommended Nutrition elective.

One of the following courses		3.0
HIST 201	U.S. History to 1815	
HIST 202	U.S. History 1815 -1900	
HIST 203	The United States Since 1900	

Science requirements	Credits

BIO 102	**Bioscience I**	4.0
BIO 104	**Bioscience II**	4.0
CHEM 111	**General Chemistry I**	
or		
PHYS 103	**General Physics I**	4.0
CHEM 112	**General Chemistry II**	
or		
PHYS 104	**General Physics II**	4.0
ENVR 260	**Environmental Science and Society**	3.0
PHYS 131 WI	**Survey of the Universe**	3.0

Education requirements		**Credits**
EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0
EDUC 475	**Special Studies in Teacher Education: Conflict Resolution/ Prevention of School Violence**	3.0

Student teaching experience		
EDUC 412 WI	**Student Teaching**	12.0

Suggested Professional Electives

Bioscience		**Credits**
BIO 201	**Human Physiology I**	4.0
BIO 203	**Human Physiology II**	4.0
BIO 221	**Microbiology**	5.0
BIO 244	**Genetics I**	3.0

BIO 254	**Invertebrate Morphology and Physiology**	5.0
BIO 256	**Vertebrate Morphology and Physiology**	5.0
BIO 260	**Plant Biology I: Evolution and Diversity**	4.0
BIO 262	**Plant Biology II: Morphology and Physiology**	4.0
BIO 235	**Terrestrial Ecology**	5.0

Chemistry		**Credits**
CHEM 103	**General Chemistry III**	5.0
CHEM 230	**Quantitative Analysis**	3.0
CHEM 231 WI	**Quantitative Analysis Laboratory**	2.0
CHEM 241	**Organic Chemistry I**	4.0
CHEM 242	**Organic Chemistry II**	4.0

Nutrition and foods		**Credits**
NFS 200 WI	**Nutrition I: Principles of Nutrition**	4.0

Physics		**Credits**
PHEV 145	**Weather 1: Climate and Global Change**	4.0
PHEV 146	**Weather 2: Analysis and Forecasting**	4.0
PHYS 106 WI	**The Physics of High Fidelity**	3.0

Writing-Intensive Course Requirements

In order to graduate, all students beginning with the entering class of 2002/01 (fall, 2002) must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Elementary Education

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 181	Mathematical Analysis I	3.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*14.0*

Term 2		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized System of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 182	Mathematical Analysis II	3.0
UNIV 101	The Drexel Experience	1.0
HIST 201	US History to 1815	3.0
or		
HIST 202	US History, 1815-1900	3.0
or		
HIST 203	US History Since 1900	3.0
	Term Credits	*14.0*

Term 3		Credits
ARTH 101	History of Art I: Ancient to Medieval	3.0
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
EDUC 324	Current Research in Curriculum and Instruction	3.0
EDUC 475	Special Studies in Teacher Education: Analysis	3.0
ENGL 103	Analytical Writing and Reading	3.0
INFO 101	Introduction to Information Technology	3.0
	Term Credits	*19.0*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
MUSC 130	Introduction to Music	3.0
NFS 101	Introduction to Nutrition and Foods	3.0
	Term Credits	*17.0*

Term 5		Credits
BIO 104	Biology II: Growth and Heredity	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 218	Math: Methods and Content	3.0
	English (ENGL) course between 200-329	3.0
	Term Credits	*14.0*

Term 6		Credits
COM 111	Principles of Communication	3.0

ECON 201	Economics I	4.0
EDUC 205	Sophomore Seminar	1.0
PSY 320	Educational Psychology	3.0
	Free electives	6.0
	Term Credits	*17.0*

Term 7		Credits
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
HIST 298	Special Studies in History	3.0
PHYS 131	Survey of the Universe	3.0
CHEM 111	General Chemistry I	4.0
or		
PHYS 103	General Physics I	4.0
	Term Credits	*14.0*

Term 8		Credits
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
ENVR 260	Environmental Science and Society I	3.0
SOC 335	Sociology of Education I	3.0
CHEM 112	General Chemistry II	4.0
or		
PHYS 104	General Physics II	4.0
	Term Credits	*15.0*

Term 9		Credits
EDUC 114	Science Teaching Methods	3.0
EDUC 320	Professional Studies in Instruction	9.0
EDUC 325	Multimedia in Instructional Design	3.0
	Term Credits	*15.0*

Term 10		Credits
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
	Free electives	9.0
	Term Credits	*14.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 405	Senior Seminar	1.0
EDUC 475	Special Studies: Conflict Resolution	3.0
	Free electives	9.0
	Term Credits	*16.0*

	Total Credits (minimum)	181.0

Biology Certification

Bachelor of Science: 186.5 credits
Certification is for grades 7 - 12

Degree Requirements

General education requirements		Credits
HIST 280	History of Science I	3.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology	3.0
PSY 320	Educational Psychology	3.0
UNIV 101	The Drexel Experience	2.0
	English elective course between 200-329	3.0

Science requirements		Credits
BIO 121	Physiology and Nutrition	4.5
BIO 122	Cells and Genetics	4.5
BIO 123	Organismal Diversity and Ecology	4.5
BIO 201	Human Psychology I	4.0
BIO 214	Principles of Cell Biology	3.0
BIO 215	Techniques of Cell Biology	2.5
BIO 218	Principles of Molecular Biology	3.0
BIO 219	Techniques of Molecular Biology	2.5
BIO 270	Developmental Biology	3.0
BIO 271	Developmental Biology Laboratory	2.0
BIO 404	Structure and Function of Biomolecules	4.0
BIO 306	Biochemistry Laboratory	2.0
CHEM 101	General Chemistry I	3.5

CHEM 102	**General Chemistry II**	4.5
CHEM 241	**Organic Chemistry I**	4.0
CHEM 242	**Organic Chemistry II**	4.0
CHEM 244	**Organic Chemistry I Laboratory**	3.0
CHEM 245	**Organic Chemistry Laboratory II**	3.0
ENVR 169	**Environmental Science**	3.0
ENVR 284 WI	**Ecology I: Physiological and Population Ecology**	5.0
ENVR 460	**Evolution**	3.0
PHYS 152	**Physics for Life Sciences I**	4.5
PHYS 153	**Physics for Life Sciences II**	4.5

Education requirements		**Credits**
EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	2.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience		
EDUC 412 WI	**Student Teaching**	12.0

Writing-Intensive Course Requirements
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Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Biological Sciences

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
CHEM 101	General Chemistry I	3.5
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized Systems of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.5*

Term 3		Credits
CHEM 102	General Chemistry II	4.5
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
	Term Credits	*15.5*

Term 4		Credits
CHEM 241	Organic Chemistry I	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
BIO 121	Physiology of Nutrition	4.5
	Term Credits	*15.5*

Term 5		Credits
BIO 122	Cells and Genetics	4.5
CHEM 242	Organic Chemistry II	4.0
CHEM 244	Organic Chemistry Lab I	3.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 218	Math: Methods and Content	3.0
	Term Credits	*18.5*

Term 6		Credits
BIO 123	Organismal Diversity & Ecology	4.5
CHEM 245	Organic Chemistry Lab II	3.0
EDUC 205	Sophomore Seminar	1.0
PHIL 251	Ethics	3.0
PSY 320	Educational Psychology	3.0
	Term Credits	*14.5*

Term 7		Credits
BIO 218	Principles of Molecular Biology	3.0
BIO 219	Techniques in Molecular Biology	2.5
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
PHYS 152	Physics for Life Science I	4.5
	Term Credits	*14.0*

Term 8		Credits
BIO 214	Principles of Cell Biology	3.0
BIO 215	Techniques in Cell Biology	2.5
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
PHYS 153	Physics for Life Sciences II	4.5
	English (ENGL) course between 200-329	3.0
	Term Credits	*18.0*

Term 9		Credits
BIO 201	Human Physiology I	4.0
BIO 270	Development Biology	3.0
BIO 271	Developmental Biology Laboratoy	2.0
EDUC 320	Professional Studies in Instruction	9.0
	Term Credits	*18.0*

Term 10		Credits
BIO 306	Biochemistry Laboratory	2.0
BIO 404	Structure and Function of Biomolecules	4.0
EDUC 323	Diagnostic Teaching	4.0
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 405	Senior Seminar	1.0
	Term Credits	*14.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
BIO 460	Evolution	3.0
EDUC 114	Science Teaching Methods	3.0
EDUC 325	Multimedia in Instructional Design	3.0
EDUC 405	Senior Seminar	1.0
ENVR 284	Ecology I: Physiological and Population Ecology	5.0
	Term Credits	*15.0*

	Total Credits (minimum)	185.5

Chemistry Certification

Bachelor of Science: 186.5 credits
(Certification is for grades 7 - 12)

Degree Requirements

General education requirements		Credits
HIST 280	**History of Science I**	3.0
ENGL 101	**Expository Writing and Reading**	3.0
ENGL 102	**Persuasive Writing and Reading**	3.0
ENGL 103	**Analytical Writing and Reading**	3.0
MATH 121	**Calculus I**	4.0
MATH 122	**Calculus II**	4.0
MATH 123	**Calculus III**	4.0
PHIL 251	**Ethics**	3.0
PSY 101	**General Psychology**	3.0
PSY 320	**Educational Psychology**	3.0
UNIV 101	**The Drexel Experience**	2.0
	English elective course between 200-329	3.0

Science requirements		
BIO 102	**Bioscience I**	4.0
BIO 104	**Bioscience II**	4.0
BIO 404	**Structure and Function of Biomolecules**	4.0
BIO 306	**Biochemistry Laboratory**	2.0
CHEM 101	**General Chemistry I**	3.5
CHEM 102	**General Chemistry II**	4.5
CHEM 103	**General Chemistry III**	5.0
CHEM 230	**Quantitative Analysis**	3.0
CHEM 231 WI	**Quantitative Analysis Laboratory**	2.0
CHEM 241	**Organic Chemistry**	4.0
CHEM 242	**Organic Chemistry II**	4.0
CHEM 243	**Organic Chemistry III**	3.0
CHEM 244	**Organic Chemistry Laboratory I**	3.0

CHEM 245	**Organic Chemistry Laboratory**	3.0
CHEM 251	**Physical Chemistry I**	3.0
CHEC 352	**Physical Chemistry and Applications II**	4.0
CHEM 357	**Physical Chemistry II Laboratory**	2.5
CHEM 421	**Inorganic Chemistry I**	3.0
CHEM 430	**Analytical Chemistry I**	4.0
ENVR 401	**Chemistry of the Environmental**	3.0
PHYS 111	**Physics I**	4.5
PHYS 112	**Physics II**	4.5
PHYS 131 WI	**Survey of the Universe**	3.0
or		
PHEV 145	**Weather 1: Climate and Global Change**	4.0

Education requirements		**Credits**
EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience		
EDUC 412 WI	**Student Teaching**	12.0

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Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Chemistry

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
CHEM 101	General Chemistry I	3.5
EDUC 105	Freshman Seminar	1.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
PHYS 111	Physics I	4.5
UNIV 101	The Drexel Experience	1.0
	Term Credits	*17.0*

Term 3		Credits
CHEM 102	General Chemistry II	4.5
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
PHYS 112	Physics II	4.5
	Term Credits	*20.0*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
CHEM 103	General Chemistry III	5.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
	Term Credits	*16.0*

Term 5		Credits
BIO 104	Biology II: Growth and HereditY	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 218	Math: Methods and Content	3.0
EDUC 301	Introduction to Personalized Systems of Instruction	3.0
	Term Credits	*14.0*

Term 6		Credits
BIO 306	Biochemistry Laboratory	2.0
BIO 404	Structure and Function of Biomolecules	4.0
EDUC 114	Science Teaching Methods	3.0
EDUC 205	Sophomore Seminar	1.0
MATH 200	Multivariate Calculus	4.0
PHIL 251	Ethics	3.0
PSY 320	Educational Psychology	3.0

	Term Credits	*20.0*

Term 7		Credits
CHEM 230	Quantitative Analysis	3.0
CHEM 231	Quantitative Analysis Lab	2.0
CHEM 241	Organic Chemistry I	4.0
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
PHEV 145	Weather I: Climate and Global Change	4.0
or		
PHYS 131	Survey of the Universe	3.0
	Term Credits	*17.0*

Term 8		Credits
CHEM 242	Organic Chemistry II	4.0
CHEM 244	Organic Chemistry Laboratory I	3.0
CHEM 356	Physical Chemistry Lab	2.0
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
	Term Credits	*14.0*

Term 9		Credits
CHEC 352	Physical Chemistry II	4.0
CHEM 245	Organic Chemistry Lab II	3.0
EDUC 320	Professional Studies in Instruction	9.0
	Term Credits	*16.0*

Term 10		Credits
CHEM 421	Inorganic Chemistry I	3.0
CHEM 430	Analytical Chemistry I	3.0
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
	English (ENGL) course between 200-329	3.0
	Term Credits	*14.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
CHEM 243	Organic Chemistry III	3.0
CHEM 357	Physical Chemistry Lab I	2.5
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 405	Senior Seminar	1.0
EDUC 325	Multimedia in Instructional Design	3.0
	Term Credits	*12.5*

	Total Credits (minimum)	187.5

Earth and Space Science Certification

Bachelor of Science: 188.5 credits
(Certification is for grades 7 - 12)

Degree Requirements

General education requirements		Credits
ENGL 101	**Expository Writing and Reading**	3.0
ENGL 102	**Persuasive Writing and Reading**	3.0
ENGL 103	**Analytical Writing and Reading**	3.0
ECON 201	**Economics I**	4.0
ECON 351	**Environmental and Resource Economics**	4.0
HIST 280	**History of Science I**	3.0
HIST 285	**Technology in Historical Perspective**	3.0
MATH 121	**Calculus I**	4.0
MATH 122	**Calculus II**	4.0
MATH 123	**Calculus III**	
PHIL 251	**Ethics**	3.0
PSY 101	**General Psychology**	3.0
PSY 320	**Educational Psychology**	3.0
UNIV 101	**The Drexel Experience**	2.0
	English elective course between 200-329	3.0
	Elective	3.0

Science requirements		Credits
BIO 121	**Physiology and Nutrition**	4.5
BIO 122	**Cells and Genetics**	4.5
BIO 123	**Organismal Diversity and Ecology**	4.5
CHEM 101	**General Chemistry I**	3.5
CHEM 102	**General Chemisty II**	4.5
ENVR 260	**Environmental Science and Society**	3.0
ENVR 270	**History of Life on Earth**	4.0
ENVR 272	**Physical Geology**	4.0

ENVR 284 WI	**Ecology I: Physiological and Population Ecology**	5.0
ENVR 286 WI	**Ecology II: Communities and Ecosystems**	5.0
ENVR 310	**Environmental Data Analysis**	3.0
ENVR 330	**Aquatic Ecology**	3.0
ENVR 390	**Marine Ecology**	3.0
PHEV 145	**Weather 1: Climate and Global Change**	4.0
PHEV 146	**Weather 2: Analysis and Forecasting**	4.0
PHEV 141	**Issues in Global Change I: Seminar**	2.0
PHYS 111	**Physics I**	4.5
PHYS 112	**Physics II**	4.5
PHYS 131 WI	**Survey of the Universe**	3.0

Education requirements		**Credits**
EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience		
EDUC 412 WI	**Student Teaching**	12.0

Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Earth & Space Science

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
CHEM 101	General Chemistry I	3.5
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized Systems of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.5*

Term 3		Credits
CHEM 102	General Chemistry II	4.5
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
	Free elective	3.0
	Term Credits	*18.5*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
PHYS 111	Physics I	4.5
	Term Credits	*15.5*

Term 5		Credits
BIO 104	Biology II: Growth and Heredit	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 218	Math: Methods and Content	3.0
ENVR 260	Environmental Science & Society I	3.0
ENVR 261	Environmental Science & Society I Lab	1.0
PHYS 112	Physics II	4.5
	Term Credits	*16.5*

Term 6		Credits
ECON 201	Economics I	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
PSY 320	Educational Psychology	3.0
	English (ENGL) course between 200-329	3.0

	Term Credits	*14.0*

Term 7		Credits
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
ENVR 284	Ecology I: Physiological and Population Ecology	5.0
PHEV 145	Weather I: Climate and Global Change	4.0
PHIL 251	Ethics	3.0
PHYS 131	Survey of the Universe	3.0
	Term Credits	*19.0*

Term 8		Credits
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
ENVR 272	Physical Geology	4.0
ENVR 286	Ecology II: Communities and Ecosystems	5.0
PHEV 146	Weather II: Analysis and Forecasting	4.0
	Term Credits	*18.0*

Term 9		Credits
EDUC 114	Science Teaching Methods	3.0
EDUC 320	Professional Studies in Instruction	9.0
EDUC 325	Multimedia in Instructional Design	3.0
	Term Credits	*15.0*

Term 10		Credits
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
ENVR 310	Environmental Data Analysis	3.0
ENVR 330	Aquatic Ecology	3.0
PHEV 141	Atmospheric Science I: Climate and Global Change	3.0
	Term Credits	*14.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
EDUC 324	Current Research in Curriculum and Instruction	3.0
EDUC 405	Senior Seminar	1.0
ENVR 270	History of Life on Earth	4.0
ENVR 390	Marine Ecology	3.0
HIST 285	Technology in Historical Perspective	3.0
	Term Credits	*14.0*

Total Credits (minimum)	187.0

General Science Certification

Bachelor of Science: 188.0 credits
(Certification is for grades 7 - 12)

Degree Requirements

General education requirements		Credits
ENGL 101	**Expository Writing and Reading**	3.0
ENGL 102	**Persuasive Writing and Reading**	3.0
ENGL 103	**Analytical Writing and Reading**	3.0
MATH 121	**Calculus I**	4.0
MATH 122	**Calculus II**	4.0
MATH 123	**Calculus III**	4.0
PHIL 251	**Ethics**	3.0
PSY 101	**General Psychology**	3.0
PSY 320	**Educational Psychology**	3.0
UNIV 101	**The Drexel Experience**	2.0
HIST 280	**History of Science I**	3.0
	English elective course between 200-329	3.0
	Science, Technology, Human Affairs electives *	6.0
	Electives	18.0

*HIST 281-294.

Science requirements		
BIO 102	**Bioscience I**	4.0
BIO 104	**Bioscience II**	4.0
CHEM 101	**General Chemistry I**	3.5
CHEM 102	**General Chemistry II**	4.5
CHEM 103	**General Chemistry III**	5.0
ENVR 272	**Physical Geology**	4.0
ENVR 270	**History of Life on Earth**	4.0
ENVR 284 WI	**Ecology I: Physiological and Population Ecology**	5.0
ENVR 286 WI	**Ecology II: Communities and Ecosystems**	5.0

ENVR 390	**Marine Ecology**	3.0
PHEV 145	**Weather 1: Climate and Global Change**	4.0
PHYS 111	**Physics I**	4.5
PHYS 112	**Physics II**	4.5
PHYS 131 WI	**Survey of the Universe**	3.0

Education requirements

EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience

EDUC 412 WI	**Student Teaching**	12.0

Writing-Intensive Course Requirements

In order to graduate, all students beginning with the entering class of 2002/01 (fall, 2002) must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

A "WI" next to a course in this catalog indicates that this course can fulfill a writing-intensive requirement. Departments will designate specific sections of such courses as writing-intensive. Sections of writing-intensive courses are not indicated in this catalog. Students should check the section comments in Banner when registering. Students scheduling their courses in Banner can also conduct a search for courses with the attribute "WI" to bring up a list of all writing-intensive courses available that term. For more information on writing-intensive courses, see the Drexel University Writing Program's Writing-Intensive Course page.

Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /General Science

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
CHEM 101	General Chemistry I	3.5
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized Systems of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.5*

Term 3		Credits
CHEM 102	General Chemistry II	4.5
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
	Free elective	3.0
	Term Credits	*18.5*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
PHYS 111	Physics I	4.5
	Term Credits	*15.5*

Term 5		Credits
BIO 104	Biology II: Growth and Heredity	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 218	Math: Methods and Content	3.0
PHYS 112	Physics II	4.5
	Term Credits	*15.5*

Term 6		Credits
CHEM 103	General Chemistry III	5.0
EDUC 205	Sophomore Seminar	1.0
	English (ENGL) course between 200-329	3.0
	Free elective	3.0
	Science, Technology and Human Affairs elective	3.0
	Term Credits	*15.0*

Term 7		Credits
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
ENVR 284	Ecology I: Physiological and Population Ecology	5.0
PHIL 251	Ethics	3.0
PHYS 131	Survey of the Universe	3.0
	Science, Technology and Human Affairs elective	3.0
	Term Credits	*18.0*

Term 8		Credits
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
ENVR 272	Physical Geology	4.0
ENVR 286	Ecology II: Communities and Ecosystems	5.0
	Free elective	3.0
	Term Credits	*17.0*

Term 9		Credits
EDUC 114	Science Teaching Methods	3.0
EDUC 320	Professional Studies in Instruction	9.0
EDUC 325	Multimedia in Instructional Design	3.0
	Term Credits	*15.0*

Term 10		Credits
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
PHEV 145	Weather I: Climate and Global Change	4.0
PSY 320	Educational Psychology	3.0
	Free electives	6.0
	Term Credits	*18.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
EDUC 324	Current Research in Curriculum & Instruction	3.0
EDUC 405	Senior Seminar	1.0
ENVR 270	History of Life on Earth	4.0
ENVR 390	Marine Ecology	3.0
	Free electives	3.0
	Term Credits	*14.0*

	Total Credits (minimum)	189.0

Mathematics Certification

Bachelor of Science: 183.0 credits
(Certification is for grades 7 - 12)

Degree Requirements

General education requirements		38.0 Credits
ECON 201	Principles of Economics I	4.0
HIST 280	History of Science I	3.0
INFO 108	Foundations of Software	4.0
ENGL 101	Expository Writing and Reading	3.0
ENGL 102	Persuasive Writing and Reading	3.0
ENGL 103	Analytical Writing and Reading	3.0
PHIL 251	Ethics	3.0
PSY 101	General Psychology I	3.0
PSY 320	Educational Psychology	3.0
UNIV 101	The Drexel Experience	2.0
	English elective course between 200-329	3.0
	Elective	4.0

Mathematics requirements		48.0 Credits
EDUC 428	Cultural and Historical Significance of Math	3.0
EDUC 475	Special Topics in Education: Non-Euclidean Geometry	3.0
MATH 121	Calculus I	4.0
MATH 122	Calculus II	4.0
MATH 123	Calculus III	4.0
MATH 200	Multivariate Calculus	4.0
MATH 201	Linear Algebra	4.0
MATH 210	Differential Equations	4.0
MATH 220	Introduction to Mathematical Reasoning	3.0
MATH 221	Discrete Mathematics	3.0
MATH 311	Probability and Statistics I	4.0
MATH 312	Probability and Statistics II	4.0

MATH 331	**Abstract Algebra I**	4.0

Science requirements		**28.0 Credits**
BIO 102	**Bioscience I**	4.0
BIO 104	**Bioscience II**	4.0
CHEM 101	**General Chemistry I**	3.5
CHEM 102	**General Chemistry II**	4.5
ENVR 260	**Environmental Science and Society**	3.0
PHYS 111	**Physics I**	4.5
PHYS 112	**Physics II**	4.5

Education requirements		**69.0 Credits**
EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience

EDUC 412 WI	**Student Teaching**	12.0

Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Mathematics

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized System of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
INFO 108	Foundations of Software	4.0
MATH 122	Calculus II	4.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*16.0*

Term 3		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
	Free elective	3.0
	Term Credits	*14.0*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
MATH 200	Multivariate Calculus	4.0
	Term Credits	*15.0*

Term 5		Credits
BIO 104	Biology II: Growth and Heredity	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 218	Math: Methods and Content	3.0
MATH 201	Linear Algebra	4.0
	Term Credits	*15.0*

Term 6		Credits
ECON 201	Economics I	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 428	Cultural and Historical Significance of Mathematics	3.0
PSY 320	Educational Psychology	3.0
	English (ENGL) course between 200-329	3.0
	Term Credits	*14.0*

Term 7		Credits

CHEM 101	General Chemistry I	3.5
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
MATH 220	Introduction to Mathematical Reasoning	3.0
PHYS 111	Physics I	4.5
	Term Credits	*15.0*

Term 8		Credits
CHEM 102	General Chemistry II	4.5
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
MATH 210	Differential Equations	4.0
PHYS 112	Physics II	4.5
	Term Credits	*18.0*

Term 9		Credits
EDUC 114	Science Teaching Methods	3.0
EDUC 320	Professional Studies in Instruction	9.0
EDUC 325	Multimedia in Instructional Design	3.0
MATH 221	Discrete Mathematics	3.0
	Term Credits	*18.0*

Term 10		Credits
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
ENVR 260	Environmental Science and Society I	3.0
MATH 311	Probability and Statistics I	4.0
PHIL 251	Ethics	3.0
	Term Credits	*15.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
EDUC 324	Current Research in Curriculum and Instruction	3.0
EDUC 405	Senior Seminar	1.0
	Free electives	9.0
	Term Credits	*13.0*

	Total Credits (minimum)	180.0

Physics Certification

Bachelor of Science: 187.5 credits
(Certification is for grades 7 - 12)

Degree Requirements

General education requirements		Credits
HIST 280	**History of Science I**	3.0
ENGL 101	**Expository Writing and Reading**	3.0
ENGL 102	**Persuasive Writing and Reading**	3.0
ENGL 103	**Analytical Writing and Reading**	3.0
MATH 121	**Calculus I**	4.0
MATH 122	**Calculus II**	4.0
MATH 123	**Calculus III**	4.0
MATH 200	**Multivariate Calculus**	4.0
MATH 201	**Linear Algebra**	4.0
MATH 210	**Differential Equations**	4.0
PHIL 251	**Ethics**	3.0
PSY 101	**General Psychology**	3.0
PSY 320	**Educational Psychology**	3.0
UNIV 101	**The Drexel Experience**	2.0
	English elective course between 200-329	3.0

Science requirements		
BIO 102	**Bioscience I**	4.0
BIO 104	**Bioscience II**	4.0
CHEM 101	**General Chemistry I**	3.5
CHEM 102	**General Chemistry II**	4.5
ENVR 260	**Environmental Science and Society**	3.0
PHEV 145	**Weather 1: Climate and Global Change**	4.0
PHYS 113	**Contemporary Physics I**	5.0
PHYS 114	**Contemporary Physics II**	5.0
PHYS 115	**Contemporary Physics III**	5.0

PHYS 131 WI	**Survey of the Universe**	3.0
PHYS 211	**Physics III**	4.5
PHYS 222	**Modern Physics**	4.5
PHYS 311	**Classical Mechanics I**	4.0
PHYS 312	**Classical Mechanics II**	4.0
PHYS 316	**Thermodynamics**	4.0
PHYS 321	**Electromagnetic Fields I**	4.0
PHYS 326	**Quantum Mechanics I**	4.0

Education requirements

EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience

EDUC 412 WI	**Student Teaching**	12.0

Writing-Intensive Course Requirements
In order to graduate, all students beginning with the entering class of 2002/01 (fall, 2002) must pass three writing-intensive courses after their freshman year. Two writing-intensive courses must be in a student's major. The third can be in any discipline. Students are advised to take one writing-intensive class each year, beginning with the sophomore year, and to avoid “clustering” these courses near the end of their matriculation. Transfer students need to meet with an academic advisor to review the number of writing-intensive courses required to graduate.

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Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Physics

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized Systems of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
PHYS 111	Physics I	4.5
UNIV 101	The Drexel Experience	1.0
	Term Credits	*16.5*

Term 3		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
PHYS 112	Physics II	4.5
	Term Credits	*15.5*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
MATH 200	Multivariate Calculus	4.0
PHEV 145	Weather I: Climate and Global Change	4.0
	Term Credits	*19.0*

Term 5		Credits
BIO 104	Biology II: Growth and Heredity	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
EDUC 218	Math: Methods and Content	3.0
MATH 201	Linear Algebra	4.0
PHYS 211	Physics III	4.5
	Term Credits	*19.5*

Term 6		Credits
EDUC 205	Sophomore Seminar	1.0
MATH 210	Differential Equations	4.0
PHIL 251	Ethics	3.0
PHYS 222	Modern Physics	4.0
PSY 330	Cognitive Psychology	3.0

	Term Credits	*15.0*

Term 7		Credits
CHEM 101	General Chemistry I	3.5
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
PHYS 131	Survey of the Universe	3.0
	English (ENGL) course between 200-329	3.0
	Term Credits	*13.5*

Term 8		Credits
CHEM 102	General Chemistry II	4.5
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
PHYS 311	Classical Mechanics I	4.0
	Term Credits	*13.5*

Term 9		Credits
EDUC 320	Professional Studies in Instruction	9.0
EDUC 325	Multimedia in Instructional Design	3.0
PHYS 312	Classical Mechanics II	4.0
	Term Credits	*16.0*

Term 10		Credits
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
ENVR 260	Environmental Science and Society I	3.0
PHYS 217	Thermodynamics	4.0
	Term Credits	*12.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
EDUC 114	Science Teaching Methods	3.0
EDUC 324	Current Research in Curriculum and Instruction	3.0
EDUC 405	Senior Seminar	1.0
PHYS 321	Electromagnetic Fields I	4.0
PHYS 326	Quantum Mechanics I	4.0
	Term Credits	*15.0*

	Total Credits (minimum)	182.5

Environmental Education Certification

Bachelor of Science: 186.0 credits

(Certification is for grades K - 12)

Degree Requirements

General education requirements		Credits
ECON 201	**Economics I**	4.0
HIST 285	**Technology in Historical Perspective**	3.0
HIST 280	**History of Science I**	3.0
ENGL 101	**Expository Writing and Reading**	3.0
ENGL 102	**Persuasive Writing and Reading**	3.0
ENGL 103	**Analytical Writing and Reading**	3.0
MATH 121	**Calculus I**	4.0
MATH 122	**Calculus II**	4.0
MATH 123	**Calculus III**	
PHIL 251	**Ethics**	3.0
PSY 101	**General Psychology**	3.0
PSY 320	**Educational Psychology**	3.0
UNIV 101	**The Drexel Experience**	2.0
	English elective course between 200-329	3.0
	Elective	3.0

Science requirements		Credits
BIO 102	**Bioscience I**	4.0
BIO 104	**Bioscience II**	4.0
CHEM 101	**General Chemistry I**	3.5
CHEM 102	**General Chemisty II**	4.5
ENVR 272	**Physical Geology**	4.0
ENVR 270	**History of Life on Earth**	4.0
ENVR 284 WI	**Ecology I: Physiological and Population Ecology**	5.0
ENVR 286 WI	**Ecology II: Communities and Ecosystems**	5.0

ENVR 260	**Environmental Science and Society**	3.0
ENVR 261	**Environmental Science and Society Laboratory**	1.0
ENVR 310	**Environmental Data Analysis**	3.0
ENVR 330	**Aquatic Ecology**	3.0
ENVR 390	**Marine Ecology**	3.0
PHEV 145	**Weather 1: Climate and Global Change**	4.0
PHEV 146	**Weather 2: Analysis and Forecasting**	4.0
PHEV 441	**Issues in Global Change I: Seminar**	2.0
PHYS 111	**Physics I**	4.5
PHYS 112	**Physics II**	4.5
PHYS 131 WI	**Survey of the Universe**	3.0

Education requirements		**Credits**
EDUC 105	**Freshman Seminar**	3.0
EDUC 112	**Integrative Instruction**	3.0
EDUC 114	**Science Teaching Methods**	3.0
EDUC 205	**Sophomore Seminar**	3.0
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 218	**Math: Methods and Content**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 305	**Junior Seminar**	2.0
EDUC 310	**Computer Applications in Teaching**	3.0
EDUC 320 WI	**Professional Studies in Instruction**	9.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 326 WI	**Language Arts Processes**	3.0
EDUC 327	**Learning Disabilities**	3.0
EDUC 405	**Senior Seminar**	2.0

Student teaching experience		
EDUC 412 WI	**Student Teaching**	12.0

Recommended Plan Of Study

BS Education

4 YR UG Co-op Concentration /Environmental Education

Term 1		Credits
EDUC 105	Freshman Seminar	1.0
EDUC 310	Computer Applications in Teaching	3.0
ENGL 101	Expository Writing and Reading	3.0
MATH 121	Calculus I	4.0
PSY 101	General Psychology I	3.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.0*

Term 2		Credits
CHEM 101	General Chemistry I	3.5
EDUC 105	Freshman Seminar	1.0
EDUC 301	Introduction to Personalized Systems of Instruction	3.0
ENGL 102	Persuasive Writing and Reading	3.0
MATH 122	Calculus II	4.0
UNIV 101	The Drexel Experience	1.0
	Term Credits	*15.5*

Term 3		Credits
CHEM 102	General Chemistry II	4.5
EDUC 105	Freshman Seminar	1.0
EDUC 112	Integrative Instruction	3.0
ENGL 103	Analytical Writing and Reading	3.0
MATH 123	Calculus III	4.0
	Free elective	3.0
	Term Credits	*18.5*

Term 4		Credits
BIO 102	Biology I: Cells and Tissues	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 326	Language Arts Processes	3.0
HIST 280	History of Science I	3.0
PHYS 111	Physics I	4.5
	Term Credits	*15.5*

Term 5		Credits
BIO 104	Biology II: Growth and Heredity	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 218	Math: Methods and Content	3.0
ENVR 260	Environmental Science & Society I	3.0
ENVR 261	Environmental Science & Society I Lab	1.0
PHYS 112	Physics II	4.5
	Term Credits	*16.5*

Term 6		Credits
ECON 201	Economics I	4.0
EDUC 205	Sophomore Seminar	1.0
EDUC 216	Diversity and Today's Teacher	3.0
PSY 320	Educational Psychology	3.0
	English (ENGL) course between 200-329	3.0

	Term Credits	*14.0*

Term 7		Credits
EDUC 305	Junior Seminar	1.0
EDUC 327	Learning Disabilities	3.0
ENVR 284	Ecology I: Physiological and Population Ecology	5.0
PHEV 145	Weather I: Climate and Global Change	4.0
PHIL 251	Ethics	3.0
PHYS 131	Survey of the Universe	3.0
	Term Credits	*19.0*

Term 8		Credits
EDUC 305	Junior Seminar	1.0
EDUC 322	Evaluation of Instruction	4.0
ENVR 272	Physical Geology	4.0
ENVR 286	Ecology II: Communities and Ecosystems	5.0
PHEV 146	Weather II: Analysis and Forecasting	4.0
	Term Credits	*18.0*

Term 9		Credits
EDUC 114	Science Teaching Methods	3.0
EDUC 320	Professional Studies in Instruction	9.0
EDUC 325	Multimedia in Instructional Design	3.0
	Term Credits	*15.0*

Term 10		Credits
EDUC 323	Diagnostic Teaching	4.0
EDUC 405	Senior Seminar	1.0
ENVR 310	Environmental Data Analysis	3.0
ENVR 330	Aquatic Ecology	3.0
PHEV 141	Atmospheric Science I: Climate and Global Change	3.0
	Term Credits	*14.0*

Term 11		Credits
EDUC 412	Student Teaching	12.0
	Term Credits	*12.0*

Term 12		Credits
EDUC 324	Current Research in Curriculum	3.0
EDUC 405	Senior Seminar	1.0
ENVR 270	History of Life on Earth	4.0
ENVR 390	Marine Ecology	3.0
HIST 285	Technology in Historical Perspective	3.0
	Term Credits	*14.0*

Total Credits (minimum)	187.0

Minor in Education

The minor in Education provides a structured academic opportunity for students who wish to add a fundamental understanding of the field of education as well as practical knowledge in the art and science of teaching and learning to their undergraduate experience.

Designed for students with a strong interest in education and training, the minor will not necessarily lead to the student being recommended for a state teaching certificate. However, should a student decide to also pursue a teaching certificate as a component of his or her major—or in post-baccalaureate work— the courses required for the minor are applicable to Pennsylvania State certification.

The minor in is comprised of eight required courses totaling 26.0 credits.

Required courses		Credits
EDUC 216	**Diversity and Today's Teacher**	3.0
EDUC 301	**Introduction to Personalized System of Instruction**	3.0
EDUC 321	**Professional Studies in Instruction**	3.0
EDUC 322	**Evaluation of Instruction**	4.0
EDUC 323 WI	**Diagnostic Teaching**	4.0
EDUC 324	**Current Research in Curriculum and Instruction**	3.0
EDUC 325	**Multimedia in Instructional Design**	3.0
EDUC 327	**Learning Disabilities**	3.0