

# Drexel University

Catalog 2005 / 2006

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- Nursing and Health
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## 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 Superintendant 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.



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## 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 Education](#)

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.



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### Prospective Students

### Apply Online

## Elementary Education Certification

*Bachelor of Science Degree: 180.0 Credits*

### Degree Requirements

General education requirements		Credits
<a href="#">COM 111</a>	Techniques of Speaking	3.0
<a href="#">SOC 335</a>	Sociology of Education	3.0
<a href="#">ECON 201</a>	Economics I	4.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 101</a>	Introduction to Analysis I	4.0
<a href="#">MATH 102</a>	Introduction to Analysis II	4.0
<a href="#">EDUC 475</a>	Special Studies in Teacher Education: Analysis	3.0
<a href="#">PSY 101</a>	General Psychology	3.0
<a href="#">PSY 320</a>	Educational Psychology	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	2.0
	English elective course between 200-329	3.0
	Art or music elective	3.0
	Nutrition elective*	3.0
	Professional or free electives	36.0

\*NFS 101 is the recommended Nutrition elective.

### One of the following courses 3.0

<a href="#">HIST 201</a>	U.S. History to 1815
<a href="#">HIST 202</a>	U.S. History 1815 -1900
<a href="#">HIST 203</a>	The United States Since 1900

### Science requirements Credits

<a href="#">BIO 102</a>	Bioscience I	4.0
<a href="#">BIO 104</a>	Bioscience II	4.0
<a href="#">CHEM 111</a>	General Chemistry I	
or		
<a href="#">PHYS 103</a>	General Physics I	4.0

<a href="#">CHEM 112</a>	General Chemistry II	
or		
<a href="#">PHYS 104</a>	General Physics II	4.0
<a href="#">ENVR 260</a>	Environmental Science and Society	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
<a href="#">NFS 101</a>	Introduction to Nutrition and Foods	3.0

Education requirements		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	3.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 205</a>	Sophomore Seminar	3.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">EDUC 305</a>	Junior Seminar	2.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">EDUC 405</a>	Senior Seminar	2.0
<b>Student teaching experience</b>		
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0

### Suggested Professional Electives

Bioscience		Credits
<a href="#">BIO 201</a>	Human Physiology I	4.0
<a href="#">BIO 203</a>	Human Physiology II	4.0
<a href="#">BIO 221</a>	Microbiology	5.0
<a href="#">BIO 244</a>	Genetics I	3.0
<a href="#">BIO 254</a>	Invertebrate Morphology and Physiology	5.0
<a href="#">BIO 256</a>	Vertebrate Morphology and Physiology	5.0
<a href="#">BIO 260</a>	Plant Biology I: Evolution and Diversity	4.0
<a href="#">BIO 262</a>	Plant Biology II: Morphology and Physiology	4.0
<a href="#">BIO 235</a>	Terrestrial Ecology	5.0

Chemistry		Credits
<a href="#">CHEM 103</a>	General Chemistry III	5.0

<a href="#">CHEM 230</a>	<b>Quantitative Analysis</b>	3.0
<a href="#">CHEM 231 WI</a>	<b>Quantitative Analysis Laboratory</b>	2.0
<a href="#">CHEM 241</a>	<b>Organic Chemistry I</b>	4.0
<a href="#">CHEM 242</a>	<b>Organic Chemistry II</b>	4.0

<b>Nutrition and foods</b>		<b>Credits</b>
<a href="#">NFS 200 WI</a>	<b>Nutrition I: Principles of Nutrition</b>	4.0

<b>Physics</b>		<b>Credits</b>
<a href="#">PHEV 141 WI</a>	<b>Atmospheric Science I: Climate and Global Change</b>	3.0
<a href="#">PHEV 143</a>	<b>Atmospheric Science II: Weather and Forecasting</b>	3.0
<a href="#">PHYS 106 WI</a>	<b>The Physics of High Fidelity</b>	3.0

#### *Writing-Intensive Course Requirements*

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## Recommended Plan of Study

### BS Education

#### Elementary Education Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 101</a>	Introduction to Math Analysis I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		15.0
Term 2		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 102</a>	Introduction to Math Analysis II	4.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<a href="#">HIST 201</a>	US History to 1815	3.0
or		
<a href="#">HIST 202</a>	US History, 1815-1900	3.0
or		
<a href="#">HIST 203</a>	US History Since 1900	3.0
<i>Term credits</i>		15.0
Term 3		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">EDUC 475</a>	Special Studies in Teacher Education: Analysis	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
	Art or Music elective	3.0
<i>Term credits</i>		16.0
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">NFS 101</a>	Introduction to Nutrition and Foods	3.0
	Elective	3.0
<i>Term credits</i>		17.0
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
	English course between 200-329	3.0
<i>Term credits</i>		14.0
Term 6		Credits
<a href="#">COM 111</a>	Introduction to Corporate Communication	3.0



<a href="#">ECON 201</a>	Economics I	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">PSY 320</a>	Educational Psychology	3.0
	Two electives	6.0
<i>Term credits</i>		<i>17.0</i>
<b>Term 7</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
	Elective	3.0
<a href="#">CHEM 111</a>	General Chemistry I	4.0
or		
<a href="#">PHYS 103</a>	General Physics I	4.0
<i>Term credits</i>		<i>14.0</i>
<b>Term 8</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">ENVR 260</a>	Environmental Science and Society I	3.0
<a href="#">SOC 335</a>	Sociology of Education	3.0
<a href="#">CHEM 112</a>	General Chemistry II	4.0
or		
<a href="#">PHYS 104</a>	General Physics II	4.0
<i>Term credits</i>		<i>15.0</i>
<b>Term 9</b>		<b>Credits</b>
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<i>Term credits</i>		<i>15.0</i>
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
	Three electives	9.0
<i>Term credits</i>		<i>14.0</i>
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
<i>Term credits</i>		<i>12.0</i>
<b>Term 12</b>		<b>Credits</b>
<a href="#">EDUC 405</a>	Senior Seminar	1.0
	Electives	15.0
<i>Term credits</i>		<i>16.0</i>
<b>Total credits (minimum)</b>		<b>180.0</b>



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## Biology Certification

*Bachelor of Science: 185.5 credits*

*Certification is for grades 7 - 12*

### Degree Requirements

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

Science requirements		Credits
<a href="#">BIO 121</a>	Physiology and Nutrition	4.5
<a href="#">BIO 122</a>	Cells and Genetics	4.5
<a href="#">BIO 123</a>	Organismal Diversity and Ecology	4.5
<a href="#">BIO 201</a>	Human Psychology I	4.0
<a href="#">BIO 214</a>	Principles of Cell Biology	3.0
<a href="#">BIO 215</a>	Techniques of Cell Biology	2.5
<a href="#">BIO 218</a>	Principles of Molecular Biology	3.0
<a href="#">BIO 219</a>	Techniques of Molecular Biology	2.5
<a href="#">BIO 270</a>	Developmental Biology	3.0
<a href="#">BIO 271</a>	Developmental Biology Laboratory	2.0
<a href="#">BIO 404</a>	Structure and Function of Biomolecules	4.0
<a href="#">BIO 306</a>	Biochemistry Laboratory	2.0
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">CHEM 102</a>	General Chemistry II	4.0

<a href="#">CHEM 241</a>	Organic Chemistry I	4.0
<a href="#">CHEM 242</a>	Organic Chemistry II	4.0
<a href="#">CHEM 244</a>	Organic Chemistry I Laboratory	3.0
<a href="#">CHEM 245</a>	Organic Chemistry Laboratory II	3.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<a href="#">ENVR 460</a>	Evolution	3.0
<a href="#">PHYS 152</a>	Physics for Life Sciences I	4.5
<a href="#">PHYS 153</a>	Physics for Life Sciences II	4.5

Education requirements		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	3.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0

#### Student teaching experience

<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
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#### *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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#### Biology Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		15.0
Term 2		Credits
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		16.0
Term 3		Credits
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
<i>Term credits</i>		15.0
Term 4		Credits
<a href="#">CHEM 241</a>	Organic Chemistry I	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">BIO 121</a>	Physiology of Nutrition	4.5
<i>Term credits</i>		15.5
Term 5		Credits
<a href="#">CHEM 242</a>	Organic Chemistry II	4.0
<a href="#">CHEM 244</a>	Organic Chemistry Lab I	3.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">BIO 122</a>	Cells and Genetics	4.5
<i>Term credits</i>		18.5
Term 6		Credits
<a href="#">CHEM 245</a>	Organic Chemistry Lab II	3.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">PHIL 251</a>	Ethics	3.0
<a href="#">PSY 320</a>	Educational Psychology	3.0
<a href="#">BIO 123</a>	Organismal Diversity and Ecology	4.5

<i>Term credits</i>		14.5
<b>Term 7</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">BIO 218</a>	Principles of Molecular Biology	3.0
<a href="#">BIO 219</a>	Techniques in Molecular Biology	2.5
<a href="#">PHYS 152</a>	Physics for Life Science I	4.5
<i>Term credits</i>		14.0
<b>Term 8</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">PHYS 153</a>	Physics for Life Science II	4.5
<a href="#">BIO 214</a>	Principles of Cell Biology	3.0
<a href="#">BIO 215</a>	Techniques in Cell Biology	2.5
	English course between 200-329	3.0
<i>Term credits</i>		18.0
<b>Term 9</b>		<b>Credits</b>
<a href="#">BIO 201</a>	Human Physiology I	4.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">BIO 270</a>	Developmental Biology	3.0
<a href="#">BIO 271</a>	Developmental Biology Laboratory	2.0
<i>Term credits</i>		18.0
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">BIO 306</a>	Biochemistry Laboratory	2.0
<a href="#">BIO 404</a>	Structure and Function of Biomolecules	4.0
<i>Term credits</i>		14.0
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
<i>Term credits</i>		12.0
<b>Term 12</b>		<b>Credits</b>
<a href="#">BIO 460</a>	Evolution	3.0
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<i>Term credits</i>		15.0
<b>Total credits (minimum)</b>		<b>185.5</b>



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### Prospective Students

### Apply Online

## Chemistry Certification

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

### Degree Requirements

#### General education requirements

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

#### Science requirements

<a href="#">BIO 102</a> Bioscience I	4.0
<a href="#">BIO 104</a> Bioscience II	4.0
<a href="#">BIO 404</a> Structure and Function of Biomolecules	4.0
<a href="#">BIO 306</a> Biochemistry Laboratory	2.0
<a href="#">CHEM 101</a> General Chemistry I	4.0
<a href="#">CHEM 102</a> General Chemistry II	4.0
<a href="#">CHEM 103</a> General Chemistry III	5.0
<a href="#">CHEM 230</a> Quantitative Analysis	3.0
<a href="#">CHEM 231</a> Quantitative Analysis Laboratory	2.0
<a href="#">CHEM 241</a> Organic Chemistry	4.0
<a href="#">CHEM 242</a> Organic Chemistry II	4.0
<a href="#">CHEM 243</a> Organic Chemistry III	3.0
<a href="#">CHEM 244</a> Organic Chemistry Laboratory I	3.0
<a href="#">CHEM 245</a> Organic Chemistry Laboratory	3.0
<a href="#">CHEM 251</a> Physical Chemistry I	3.0

<a href="#">CHEC 352</a>	Physical Chemistry and Applications II	4.0
<a href="#">CHEM 357</a>	Physical Chemistry II Laboratory	2.5
<a href="#">CHEM 421</a>	Inorganic Chemistry I	3.0
<a href="#">CHEM 430</a>	Analytical Chemistry I	4.0
<a href="#">ENVR 401</a>	Chemistry of the Environmental	3.0
<a href="#">PHYS 111</a>	Physics I	4.5
<a href="#">PHYS 112</a>	Physics II	4.5
<a href="#">PHYS 131 WI</a>	Survey of the Universe	
or		
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0

Education requirements		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	3.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 205</a>	Sophomore Seminar	3.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">EDUC 305</a>	Junior Seminar	2.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">EDUC 405</a>	Senior Seminar	2.0
<b>Student teaching experience</b>		
<a href="#">EDUC 412 WI</a>	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.



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## Recommended Plan of Study

### BS Education

#### Chemistry Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		15.0
Term 2		Credits
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">PHYS 111</a>	Physics I	4.5
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		17.5
Term 3		Credits
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
<a href="#">PHYS 112</a>	Physics II	4.5
<i>Term credits</i>		19.5
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">CHEM 103</a>	General Chemistry III	5.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<i>Term credits</i>		16.0
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<i>Term credits</i>		14.0
Term 6		Credits
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">MATH 200</a>	Calculus IV	4.0
<a href="#">PHIL 251</a>	Ethics	3.0
<a href="#">PSY 320</a>	Educational Psychology	3.0



<a href="#">BIO 306</a>	Biochemistry Laboratory	2.0
<a href="#">BIO 404</a>	Structure and Function of Biomolecules	4.0
<i>Term credits</i>		<b>20.0</b>
<b>Term 7</b>		<b>Credits</b>
<a href="#">CHEM 230</a>	Quantitative Analysis	3.0
<a href="#">CHEM 231 WI</a>	Quantitative Analysis Lab	2.0
<a href="#">CHEM 241</a>	Organic Chemistry I	4.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
or		
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0
<i>Term credits</i>		<b>16.0</b>
<b>Term 8</b>		<b>Credits</b>
<a href="#">CHEM 242</a>	Organic Chemistry II	4.0
<a href="#">CHEM 244</a>	Organic Chemistry Lab I	3.0
<a href="#">CHEM 356</a>	Physical Chemistry Lab	2.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<i>Term credits</i>		<b>14.0</b>
<b>Term 9</b>		<b>Credits</b>
<a href="#">CHEC 352</a>	Physical Chemistry and Applications II	4.0
<a href="#">CHEM 245</a>	Organic Chemistry Lab II	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<i>Term credits</i>		<b>16.0</b>
<b>Term 10</b>		<b>Credits</b>
<a href="#">CHEM 421</a>	Inorganic Chemistry I	3.0
<a href="#">CHEM 430</a>	Analytical Chemistry I	3.0
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
	English course between 200-329	3.0
<i>Term credits</i>		<b>14.0</b>
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
<i>Term credits</i>		<b>12.0</b>
<b>Term 12</b>		<b>Credits</b>
<a href="#">CHEM 243</a>	Organic Chemistry III	3.0
<a href="#">CHEM 357 WI</a>	Physical Chemistry Lab I	2.5
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<i>Term credits</i>		<b>12.5</b>
<b>Total credits (minimum)</b>		<b>186.5</b>



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### Prospective Students

### Apply Online

## Earth and Space Science Certification

*Bachelor of Science: 186.0 credits*  
*(Certification is for grades 7 - 12)*

### Degree Requirements

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

Science requirements		Credits
<a href="#">BIO 102</a>	Bioscience I	4.0
<a href="#">BIO 104</a>	Bioscience II	4.0
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">ENVR 272</a>	Physical Geology	4.0
<a href="#">ENVR 270</a>	History of Life on Earth	4.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<a href="#">ENVR 286 WI</a>	Ecology II: Communities and Ecosystems	5.0
<a href="#">ENVR 260</a>	Environmental Science and Society	3.0
<a href="#">ENVR 261</a>	Environmental Science and Society Laboratory	1.0
<a href="#">ENVR 310</a>	Environmental Data Analysis	3.0

<a href="#">ENVR 330</a>	<b>Aquatic Ecology</b>	3.0
<a href="#">ENVR 390</a>	<b>Marine Ecology</b>	3.0
<a href="#">PHEV 141 WI</a>	<b>Atmospheric Science I: Climate and Global Change</b>	3.0
<a href="#">PHEV 142 WI</a>	<b>Atmospheric Science I Laboratory</b>	1.0
<a href="#">PHEV 143</a>	<b>Atmospheric Science II</b>	3.0
<a href="#">PHEV 144 WI</a>	<b>Atmospheric Science II Laboratory</b>	1.0
<a href="#">PHEV 441</a>	<b>Issues in Global Change I: Seminar</b>	2.0
<a href="#">PHYS 111</a>	<b>Physics I</b>	4.5
<a href="#">PHYS 112</a>	<b>Physics II</b>	4.5
<a href="#">PHYS 131 WI</a>	<b>Survey of the Universe</b>	3.0

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

#### **Student teaching experience**

<a href="#">EDUC 412 WI</a>	<b>Student Teaching</b>	12.0
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#### *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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### BS Education

#### Earth and Space Science Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>15.0</b>
Term 2		Credits
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>16.0</b>
Term 3		Credits
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
<i>Term credits</i>		<b>18.0</b>
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">PHYS 111</a>	Physics I	4.5
<i>Term credits</i>		<b>15.5</b>
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">ENVR 260</a>	Environmental Science and Society I	3.0
<a href="#">PHYS 112</a>	Physics II	4.5
<a href="#">ENVR 261</a>	Environmental Science and Society I Lab	1.0
<i>Term credits</i>		<b>16.5</b>
Term 6		Credits
<a href="#">ECON 201</a>	Economics I	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">PSY 320</a>	Educational Psychology	3.0

English course between 200-329		3.0
<i>Term credits</i>		14.0
<b>Term 7</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<a href="#">PHEV 142 WI</a>	Atmospheric Science I Laboratory	1.0
<a href="#">PHIL 251</a>	Ethics	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0
<i>Term credits</i>		19.0
<b>Term 8</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">ENVR 286 WI</a>	Ecology II: Communities and Ecosystems	5.0
<a href="#">PHEV 143</a>	Atmospheric Science II	3.0
<a href="#">PHEV 144 WI</a>	Atmospheric Science II Laboratory	1.0
<a href="#">ENVR 272</a>	Physical Geology	4.0
<i>Term credits</i>		18.0
<b>Term 9</b>		<b>Credits</b>
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<i>Term credits</i>		15.0
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 330</a>	Aquatic Ecology	3.0
<a href="#">PHEV 441</a>	Issues in Global Change I: Seminar	2.0
<a href="#">ENVR 310</a>	Environmental Data Analysis	3.0
<i>Term credits</i>		13.0
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
<i>Term credits</i>		12.0
<b>Term 12</b>		<b>Credits</b>
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 390</a>	Marine Ecology	3.0
<a href="#">HIST 285</a>	Technology in Historical Perspective	3.0
<a href="#">ENVR 270</a>	History of Life on Earth	4.0
	Elective	3.0
<i>Term credits</i>		14.0
<b>Total credits (minimum)</b>		<b>186.0</b>



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## Environmental Education Certification

*Bachelor of Science: 186.0 credits*

*(Certification is for grades K - 12)*

### Degree Requirements

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

Science requirements		Credits
<a href="#">BIO 102</a>	Bioscience I	4.0
<a href="#">BIO 104</a>	Bioscience II	4.0
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">ENVR 272</a>	Physical Geology	4.0
<a href="#">ENVR 270</a>	History of Life on Earth	4.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<a href="#">ENVR 286 WI</a>	Ecology II: Communities and Ecosystems	5.0
<a href="#">ENVR 260</a>	Environmental Science and Society	3.0
<a href="#">ENVR 261</a>	Environmental Science and Society Laboratory	1.0

<a href="#">ENVR 310</a>	Environmental Data Analysis	3.0
<a href="#">ENVR 330</a>	Aquatic Ecology	3.0
<a href="#">ENVR 390</a>	Marine Ecology	3.0
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0
<a href="#">PHEV 142 WI</a>	Atmospheric Science I Laboratory	1.0
<a href="#">PHEV 143</a>	Atmospheric Science II	3.0
<a href="#">PHEV 144 WI</a>	Atmospheric Science II Laboratory	1.0
<a href="#">PHEV 441</a>	Issues in Global Change I: Seminar	2.0
<a href="#">PHYS 111</a>	Physics I	4.5
<a href="#">PHYS 112</a>	Physics II	4.5
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0

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

#### Student teaching experience

<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
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#### *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.



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## Recommended Plan of Study

### BS Education

#### Environmental Education Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>15.0</b>
Term 2		Credits
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>16.0</b>
Term 3		Credits
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
<i>Term credits</i>		<b>18.0</b>
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">PHYS 111</a>	Physics I	4.5
<i>Term credits</i>		<b>15.5</b>
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">ENVR 260</a>	Environmental Science and Society I	3.0
<a href="#">PHYS 112</a>	Physics II	4.5
<a href="#">ENVR 261</a>	Environmental Science and Society I Lab	1.0
<i>Term credits</i>		<b>16.5</b>
Term 6		Credits
<a href="#">ECON 201</a>	Economics I	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">PSY 320</a>	Educational Psychology	3.0



English course between 200-329		3.0
<i>Term credits</i>		14.0
<b>Term 7</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<a href="#">PHEV 142 WI</a>	Atmospheric Science I Laboratory	1.0
<a href="#">PHIL 251</a>	Ethics	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0
<i>Term credits</i>		19.0
<b>Term 8</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">ENVR 286 WI</a>	Ecology II: Communities and Ecosystems	5.0
<a href="#">PHEV 143</a>	Atmospheric Science II	3.0
<a href="#">PHEV 144 WI</a>	Atmospheric Science II Laboratory	1.0
<a href="#">ENVR 272</a>	Physical Geology	4.0
<i>Term credits</i>		18.0
<b>Term 9</b>		<b>Credits</b>
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<i>Term credits</i>		15.0
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 330</a>	Aquatic Ecology	3.0
<a href="#">PHEV 441</a>	Issues in Global Change I: Seminar	2.0
<a href="#">ENVR 310</a>	Environmental Data Analysis	3.0
<i>Term credits</i>		13.0
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
<i>Term credits</i>		12.0
<b>Term 12</b>		<b>Credits</b>
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 390</a>	Marine Ecology	3.0
<a href="#">HIST 285</a>	Technology in Historical Perspective	3.0
<a href="#">ENVR 270</a>	History of Life on Earth	4.0
	Elective	3.0
<i>Term credits</i>		14.0
<b>Total credits (minimum)</b>		<b>186.0</b>



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### Prospective Students

### Apply Online

## General Science Certification

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

### Degree Requirements

#### General education requirements

	Credits
<a href="#">ENGL 101</a> Expository Writing and Reading	3.0
<a href="#">ENGL 102</a> Persuasive Writing and Reading	3.0
<a href="#">ENGL 103</a> Analytical Writing and Reading	3.0
<a href="#">MATH 121</a> Calculus I	4.0
<a href="#">MATH 122</a> Calculus II	4.0
<a href="#">MATH 123</a> Calculus III	4.0
<a href="#">PHIL 251</a> Ethics	3.0
<a href="#">PSY 101</a> General Psychology	3.0
<a href="#">PSY 320</a> Educational Psychology	3.0
<a href="#">UNIV 101</a> The Drexel Experience	2.0
<a href="#">HIST 280</a> 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

<a href="#">BIO 102</a> Bioscience I	4.0
<a href="#">BIO 104</a> Bioscience II	4.0
<a href="#">CHEM 101</a> General Chemistry I	4.0
<a href="#">CHEM 102</a> General Chemistry II	4.0
<a href="#">CHEM 103</a> General Chemistry III	5.0
<a href="#">ENVR 272</a> Physical Geology	4.0
<a href="#">ENVR 270</a> History of Life on Earth	4.0
<a href="#">ENVR 284 WI</a> Ecology I: Physiological and Population Ecology	5.0
<a href="#">ENVR 286 WI</a> Ecology II: Communities and Ecosystems	5.0
<a href="#">ENVR 390</a> Marine Ecology	3.0
<a href="#">PHEV 141 WI</a> Atmospheric Science I: Climate and Global Change	3.0
<a href="#">PHYS 111</a> Physics I	4.5

<a href="#">PHYS 112</a>	Physics II	4.5
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0

#### Education requirements

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

#### Student teaching experience

<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
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#### *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

#### General Science Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>15.0</b>
Term 2		Credits
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>16.0</b>
Term 3		Credits
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
<i>Term credits</i>		<b>18.0</b>
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">PHYS 111</a>	Physics I	4.5
<i>Term credits</i>		<b>15.5</b>
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">PHYS 112</a>	Physics II	4.5
<i>Term credits</i>		<b>15.5</b>
Term 6		Credits
<a href="#">CHEM 103</a>	General Chemistry III	5.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
	Elective	3.0
	English course between 200-329	3.0
	Science, Technology, and Human Affairs elective <sup>1</sup>	3.0
<i>Term credits</i>		<b>15.0</b>

1	HIST 281-HIST 294.	
<b>Term 7</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">ENVR 284 WI</a>	Ecology I: Physiological and Population Ecology	5.0
<a href="#">PHIL 251</a>	Ethics	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
	Science, Technology, and Human Affairs elective <sup>1</sup>	3.0
	<i>Term credits</i>	<b>18.0</b>
1	HIST 281-HIST 294.	
<b>Term 8</b>		<b>Credits</b>
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">ENVR 286 WI</a>	Ecology II: Communities and Ecosystems	5.0
<a href="#">ENVR 272</a>	Physical Geology	4.0
	Elective	3.0
	<i>Term credits</i>	<b>17.0</b>
<b>Term 9</b>		<b>Credits</b>
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
	<i>Term credits</i>	<b>15.0</b>
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">PSY 320</a>	Educational Psychology	3.0
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0
	Two electives	6.0
	<i>Term credits</i>	<b>17.0</b>
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
	<i>Term credits</i>	<b>12.0</b>
<b>Term 12</b>		<b>Credits</b>
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 390</a>	Marine Ecology	3.0
<a href="#">ENVR 270</a>	History of Life on Earth	4.0
	Two electives	6.0
	<i>Term credits</i>	<b>14.0</b>
<b>Total credits (minimum)</b>		<b>188.0</b>



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### Prospective Students

### Apply Online

## Mathematics Certification

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

### Degree Requirements

#### General education requirements

	Credits
<a href="#">ECON 201</a> Principles of Economics I	4.0
<a href="#">HIST 280</a> History of Science I	3.0
<a href="#">INFO 108</a> Foundations of Software	4.0
<a href="#">ENGL 101</a> Expository Writing and Reading	3.0
<a href="#">ENGL 102</a> Persuasive Writing and Reading	3.0
<a href="#">ENGL 103</a> Analytical Writing and Reading	3.0
<a href="#">PHIL 251</a> Ethics	3.0
<a href="#">PSY 101</a> General Psychology I	3.0
<a href="#">PSY 320</a> Educational Psychology	3.0
<a href="#">UNIV 101</a> The Drexel Experience	2.0
English elective course between 200-329	3.0
Electives	9.0

#### Mathematics requirements

<a href="#">EDUC 428</a> Cultural and Historical Significance of Math	3.0
<a href="#">MATH 121</a> Calculus I	4.0
<a href="#">MATH 122</a> Calculus II	4.0
<a href="#">MATH 123</a> Calculus III	4.0
<a href="#">MATH 200</a> Calculus IV	4.0
<a href="#">MATH 201</a> Linear Algebra	4.0
<a href="#">MATH 210</a> Differential Equations	4.0
<a href="#">MATH 220</a> Techniques of Mathematical Proof	3.0
<a href="#">MATH 221</a> Discrete Mathematics	3.0
<a href="#">MATH 311</a> Probability and Statistics I	4.0

#### Science requirements

<a href="#">BIO 102</a> Bioscience I	4.0
<a href="#">BIO 104</a> Bioscience II	4.0
<a href="#">CHEM 101</a> General Chemistry I	4.0

<a href="#">CHEM 102</a>	<b>General Chemistry II</b>	4.0
<a href="#">ENVR 260</a>	<b>Environmental Science and Society</b>	3.0
<a href="#">PHYS 111</a>	<b>Physics I</b>	4.5
<a href="#">PHYS 112</a>	<b>Physics II</b>	4.5

#### **Education requirements**

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

#### **Student teaching experience**

<a href="#">EDUC 412</a> <a href="#">WI</a>	<b>Student Teaching</b>	12.0
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#### *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.



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### BS Education

#### Mathematics Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		15.0
Term 2		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">INFO 108</a>	Foundations of Software	4.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		16.0
Term 3		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
	Elective	3.0
<i>Term credits</i>		17.0
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">MATH 200</a>	Calculus IV	4.0
<i>Term credits</i>		15.0
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">MATH 201</a>	Linear Algebra	4.0
<i>Term credits</i>		15.0
Term 6		Credits
<a href="#">ECON 201</a>	Economics I	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 428</a>	Cultural and Historical Significance of Math	3.0
<a href="#">PSY 320</a>	Educational Psychology	3.0
	English course between 200-329	3.0
<i>Term credits</i>		14.0



<b>Term 7</b>		<b>Credits</b>
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">MATH 220</a>	Techniques of Proof	3.0
<a href="#">PHYS 111</a>	Physics I	4.5
	<i>Term credits</i>	<b>15.5</b>
<b>Term 8</b>		<b>Credits</b>
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">MATH 210</a>	Differential Equations	4.0
<a href="#">PHYS 112</a>	Physics II	4.5
	<i>Term credits</i>	<b>17.5</b>
<b>Term 9</b>		<b>Credits</b>
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">MATH 221</a>	Discrete Mathematics	3.0
	<i>Term credits</i>	<b>18.0</b>
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 260</a>	Environmental Science and Society I	3.0
<a href="#">MATH 311</a>	Probability and Statistics I	4.0
<a href="#">PHIL 251</a>	Ethics	3.0
	<i>Term credits</i>	<b>15.0</b>
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
	<i>Term credits</i>	<b>12.0</b>
<b>Term 12</b>		<b>Credits</b>
<a href="#">EDUC 405</a>	Senior Seminar	1.0
	Four electives	12.0
	<i>Term credits</i>	<b>13.0</b>
<b>Total credits (minimum)</b>		<b>183.0</b>



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## Physics Certification

*Bachelor of Science: 181.5 credits*  
*(Certification is for grades 7 - 12)*

### Degree Requirements

#### General education requirements

	<b>Credits</b>
<a href="#">HIST 280</a> History of Science I	3.0
<a href="#">ENGL 101</a> Expository Writing and Reading	3.0
<a href="#">ENGL 102</a> Persuasive Writing and Reading	3.0
<a href="#">ENGL 103</a> Analytical Writing and Reading	3.0
<a href="#">MATH 121</a> Calculus I	4.0
<a href="#">MATH 122</a> Calculus II	4.0
<a href="#">MATH 123</a> Calculus III	4.0
<a href="#">MATH 200</a> Calculus IV	4.0
<a href="#">MATH 201</a> Linear Algebra	4.0
<a href="#">MATH 210</a> Differential Equations	4.0
<a href="#">PHIL 251</a> Ethics	3.0
<a href="#">PSY 101</a> General Psychology	3.0
<a href="#">PSY 320</a> Educational Psychology	3.0
<a href="#">UNIV 101</a> The Drexel Experience	2.0
English elective course between 200-329	3.0

#### Science requirements

<a href="#">BIO 102</a> Bioscience I	4.0
<a href="#">BIO 104</a> Bioscience II	4.0
<a href="#">CHEM 101</a> General Chemistry I	4.0
<a href="#">CHEM 102</a> General Chemistry II	4.0
<a href="#">ENVR 260</a> Environmental Science and Society	3.0
<a href="#">PHEV 141 WI</a> Atmospheric Science I: Climate and Global Change	3.0
<a href="#">PHYS 111</a> Physics I	4.5
<a href="#">PHYS 112</a> Physics II	4.5
<a href="#">PHYS 131 WI</a> Survey of the Universe	3.0
<a href="#">PHYS 211</a> Physics III	4.5
<a href="#">PHYS 222</a> Modern Physics	4.0
<a href="#">PHYS 311</a> Classical Mechanics I	4.0

<a href="#">PHYS 312</a>	<b>Classical Mechanics II</b>	4.0
<a href="#">PHYS 316</a>	<b>Thermodynamics</b>	4.0
<a href="#">PHYS 321</a>	<b>Electromagnetic Fields I</b>	4.0
<a href="#">PHYS 326</a>	<b>Quantum Mechanics I</b>	4.0

#### **Education requirements**

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

#### **Student teaching experience**

<a href="#">EDUC 412 WI</a>	<b>Student Teaching</b>	12.0
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#### *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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### BS Education

#### Physics Certification

*Bachelor of Science Degree*

[4-yr non-co-op](#)

Term 1		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 310</a>	Computer Applications in Teaching	3.0
<a href="#">ENGL 101</a>	Expository Writing and Reading	3.0
<a href="#">MATH 121</a>	Calculus I	4.0
<a href="#">PSY 101</a>	General Psychology I	3.0
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>15.0</b>
Term 2		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 301</a>	Introduction to Personalized System of Instruction	3.0
<a href="#">ENGL 102</a>	Persuasive Writing and Reading	3.0
<a href="#">MATH 122</a>	Calculus II	4.0
<a href="#">PHYS 111</a>	Physics I	4.5
<a href="#">UNIV 101</a>	The Drexel Experience	1.0
<i>Term credits</i>		<b>16.5</b>
Term 3		Credits
<a href="#">EDUC 105</a>	Freshman Seminar	1.0
<a href="#">EDUC 112</a>	Integrative Instruction	3.0
<a href="#">EDUC 324</a>	Current Research in Curriculum and Instruction	3.0
<a href="#">ENGL 103</a>	Analytical Writing and Reading	3.0
<a href="#">MATH 123</a>	Calculus III	4.0
<a href="#">PHYS 112</a>	Physics II	4.5
<i>Term credits</i>		<b>18.5</b>
Term 4		Credits
<a href="#">BIO 102</a>	Biology I: Cells and Tissues	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 326 WI</a>	Language Arts Processes	3.0
<a href="#">HIST 280</a>	History of Science I	3.0
<a href="#">MATH 200</a>	Calculus IV	4.0
<a href="#">PHEV 141 WI</a>	Atmospheric Science I: Climate and Global Change	3.0
<i>Term credits</i>		<b>18.0</b>
Term 5		Credits
<a href="#">BIO 104</a>	Biology II: Growth and Heredity	4.0
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">EDUC 216</a>	Diversity and Today's Teacher	3.0
<a href="#">EDUC 218</a>	Math: Methods and Content	3.0
<a href="#">PHYS 211</a>	Physics III	4.5
<a href="#">MATH 201</a>	Linear Algebra	4.0
<i>Term credits</i>		<b>19.5</b>
Term 6		Credits
<a href="#">EDUC 205</a>	Sophomore Seminar	1.0
<a href="#">MATH 210</a>	Differential Equations	4.0
<a href="#">PHIL 251</a>	Ethics	3.0

<a href="#">PHYS 222</a>	Modern Physics	4.0
<a href="#">PSY 330</a>	Cognitive Psychology	3.0
<i>Term credits</i>		<i>15.0</i>
<b>Term 7</b>		<b>Credits</b>
<a href="#">CHEM 101</a>	General Chemistry I	4.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 327</a>	Learning Disabilities	3.0
<a href="#">PHYS 131 WI</a>	Survey of the Universe	3.0
English course between 200-329		3.0
<i>Term credits</i>		<i>14.0</i>
<b>Term 8</b>		<b>Credits</b>
<a href="#">CHEM 102</a>	General Chemistry II	4.0
<a href="#">EDUC 305</a>	Junior Seminar	1.0
<a href="#">EDUC 322</a>	Evaluation of Instruction	4.0
<a href="#">PHYS 321</a>	Electromagnetic Fields I	4.0
<i>Term credits</i>		<i>13.0</i>
<b>Term 9</b>		<b>Credits</b>
<a href="#">EDUC 320 WI</a>	Professional Studies in Instruction	9.0
<a href="#">EDUC 325</a>	Multimedia in Instructional Design	3.0
<a href="#">PHYS 312</a>	Classical Mechanics II	4.0
<i>Term credits</i>		<i>16.0</i>
<b>Term 10</b>		<b>Credits</b>
<a href="#">EDUC 323 WI</a>	Diagnostic Teaching	4.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">ENVR 260</a>	Environmental Science and Society I	3.0
<a href="#">PHYS 217</a>	Thermodynamics	4.0
<i>Term credits</i>		<i>12.0</i>
<b>Term 11</b>		<b>Credits</b>
<a href="#">EDUC 412 WI</a>	Student Teaching	12.0
<i>Term credits</i>		<i>12.0</i>
<b>Term 12</b>		<b>Credits</b>
<a href="#">EDUC 114</a>	Science Teaching Methods	3.0
<a href="#">EDUC 405</a>	Senior Seminar	1.0
<a href="#">PHYS 321</a>	Electromagnetic Fields I	4.0
<a href="#">PHYS 326</a>	Quantum Mechanics I	4.0
<i>Term credits</i>		<i>12.0</i>
<b>Total credits (minimum)</b>		<b>181.5</b>