

**B.S. PHYSICS**

The State University of New York at Fredonia is committed to doing our part to provide each student a clear path to graduation. This four-year degree plan is a sample map for fulfilling requirements in the major, the College Core Curriculum (CCC), and other supporting courses. The pathway that you take to your degree may differ somewhat from this illustration, depending on where you start and the detours and side trips you may take along the way. If you are committed to completing your degree in four years, we encourage you to consider signing up for the Fredonia in 4 program. For complete information about this degree program, please consult the university catalog at [fredonia.smartcatalogiq.com](http://fredonia.smartcatalogiq.com)

FIRST YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
CHEM 115	General Chemistry I	3	CHEM 116	General Chemistry Lecture II	3
CHEM 125	General Chemistry Lab I	1	CHEM 126	General Chemistry Lab II	1
MATH 122	University Calculus I	4	MATH 123	University Calculus II	4
ENGL 100	English Composition	3	PHYS 230	University Physics I	4
PHYS 199	Freshman Seminar	1	PHYS 232	University Physics Lab I	1
CCC	Social Science	3	CSIT 121	Computer Science I	3
		<b>TOTAL</b>			<b>TOTAL</b>
		<b>15</b>			<b>16</b>

**Physics**

112 Jewett Hall  
The State University  
of New York at Fredonia  
Fredonia, NY 14063

(716) 673-3301

email [physics.department@fredonia.edu](mailto:physics.department@fredonia.edu)

web [home.fredonia.edu/physics](http://home.fredonia.edu/physics)

SECOND YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
MATH 223	University Calculus III	4	MATH 224	Differential Equations	3
PHYS 231	University Physics II	4	PHYS 234	Modern Physics	4
PHYS 233	University Physics Lab II	1	PHYS 330	Thermodynamics	3
	PHYS Major Elective/Requirement	3		PHYS Major Elective/Requirement	3
	PHYS Major Elective/Requirement	3	CCC	Foreign Language	3
		<b>TOTAL</b>			<b>TOTAL</b>
		<b>15</b>			<b>16</b>

The B.S. Physics degree offers a major with several different concentrations including pre-law and pre-med in addition to more traditional programs, a minor, a major through the 3-2 Cooperative Engineering program, an initial certification to teach physics in secondary school, an interdisciplinary major in Mathematics-Physics, a major in Industrial Management, and courses to complement majors in other areas.

THIRD YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
PHYS 431	Quantum Mechanics	3		PHYS Major Elective/Requirement	3
PHYS 425	Mathematical Physics I	3		PHYS Major Elective/Requirement	3
	PHYS Major Elective/Requirement	3	CCC	Other World Civilizations	3
CCC	Humanities	3	CCC	Social Science	3
CCC	Art	3		General Elective	3
		<b>TOTAL</b>			<b>TOTAL</b>
		<b>15</b>			<b>15</b>

FOURTH YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
	PHYS Major Elective	3	PHYS 400	Seminar	1
	PHYS Major Elective	3		PHYS Major Elective	3
	MATH Elective	3		CSIT Elective	3
CCC	Western Civilization	3		General Elective	3
CCC	American History	3		General Elective	3
		<b>TOTAL</b>			<b>TOTAL</b>
		<b>15</b>			<b>13</b>
2016-2017				<b>GRAND TOTAL</b>	<b>120</b>

[fredonia.edu](http://fredonia.edu)

## Why Study the Natural Sciences at Fredonia?

The Natural Sciences at Fredonia encompass state of the art programs in pure and applied sciences that prepare you well for graduate school and professional careers. Each program gives you the opportunity to engage in meaningful research in collaboration with the faculty.

### Choose from a variety of disciplines

- Mathematical Sciences offer programs in pure and applied mathematics, as well as certification programs in mathematics education.
- Computer and Information Sciences have multiple programs including those in software development, systems management and cooperative computer engineering.
- Biology houses programs in Biology, Medical Technology, Molecular Genetics, Exercise Science and Biology Adolescence Education.
- The Department of Chemistry and Biochemistry offers programs approved by the premier accreditor, The American Chemical Society, as well as certification program in Adolescence Chemistry Education.



- Programs in the Physics Department include several concentrations in Physics (including Physics Education), as well as being the home for most Cooperative Engineering majors.
- Programs in Geology and Environmental Sciences cover all aspects of earth and planetary sciences as well as the interdisciplinary programs in environmental science and GIS.

### Thrive in state-of-the-art Science Center

- Our new \$60 million Science Center features \$5 million in cutting-edge instruments and equipment. It boasts an innovative design that maximizes student learning, facilitates student-faculty collaboration, and creates spontaneous interactions across disciplines.
- Research labs and classrooms incorporate glass walls, natural light and open spaces, allowing visitors to easily observe students and faculty learning together.

### Receive an exceptional value

- Fredonia alumni in graduate and medical schools consistently say they were better prepared than their peers at larger schools because of rigorous Fredonia courses, smaller class sizes, undergraduate research opportunities and genuine relationships with faculty mentors.
- Internships are conducted in hospital labs, physician offices, health departments, environmental agencies, and energy, biomedical and pharmaceutical companies, as well as hospitals, pharmacies, veterinary clinics and zoos.
- Health Professions Advising Program assists students pursuing careers in medicine, dentistry, optometry and veterinary medicine.
- Students perform field research in Lake Erie, its tributaries and Fredonia's 200-acre nature sanctuary.

- Numerous need- and merit-based scholarships and fellowships are available for academically talented students, including some of the biggest awards available on campus.

### Exceptional faculty

- Faculty conduct research and are recognized consistently for their efforts on local, regional, national and international levels.
- Their interests range from studying the animal behavior of bats and praying mantises, among other species, quantifying the potential natural gas held with the Marcellus Shale region, and improving the water quality of the Great Lakes.



- One professor's research spurred a national law signed by President Obama. It bans the use of plastic microbeads in beauty and exfoliating products — because a Fredonian showed they contaminate water systems.

### Alumni successes

- Many recent graduates are enrolled in medical, dental, veterinary and optometry schools.
- Alumni have gone on to become clinical scientists, high school teachers, biomedical research scientists, physicians, pharmacists, environmental scientists, venture capitalists, veterinarians, lab directors, lawyers and forensic scientists, among other professions.
- Fredonians are among the faculty at University of California at Berkeley, Penn State University, Indiana University of Pennsylvania, The Scripps Research Institute and other institutions.