

Sample Four-Year Degree Plan

B.S. MOLECULAR GENETICS

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

FIRST YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
BIOL 131	Introductory Ecology and Evolution	3	BIOL 133	Introductory Cell and Molecular Biology	3
BIOL 132	Introductory Ecology and Evolution Lab	1	BIOL 134	Introductory Cell and Molecular Biology Lab	1
BIOL 100	Studying For Success	1	CHEM 116	General Chemistry Lecture II	3
CHEM 115	General Chemistry Lecture I	3	CHEM 126	General Chemistry Lab II	1
CHEM 125	General Chemistry Lab I	1	MATH 121	Survey of Calculus I OR	3
MATH 120	Survey of Calculus I OR	3	MATH 123	University Calculus I	
MATH 122	University Calculus I		CCC	Foreign Language	3
CCC	Basic Written Communication	3			
		TOTAL			15
					14

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SECOND YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
BIOL 237	Genetics	3	BIOL 243	Organismal Biology	3
BIOL 238	Genetics Lab	1	CHEM 216	Organic Chemistry Lecture II	3
CHEM 215	Organic Chemistry Lecture I	3	CHEM 226	Organic Chemistry Lab II	1
CHEM 225	Organic Chemistry Lab I	1		General Elective	3
CCC	Art	3	CCC	Humanities	3
CCC	General Elective	3	CCC	Social Science	3
		TOTAL			14
					16

The B.S. Molecular Genetics degree prepares students for a variety of career goals involving molecular biology. Graduates of the program are prepared for graduate school or professional programs (medicine, dentistry, veterinary medicine, or other health professions); for research and technical positions in biotechnology, the health care industry and forensics laboratories; and for positions as genetic counselors.

THIRD YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
BIOL 333	Biochemistry	3	BIOL 437	Molecular Genetics Lab	2
BIOL 334	Biochemistry Lab	1	PHYS 122	Physics II	3
BIOL 380	Cell and Molecular Biology	3	PHYS 124	Physics Lab II	1
BIOL 381	Cell and Molecular Biology Lab	1	CCC	American History	3
PHYS 121	Physics I	3	CCC	Social Science	3
PHYS 123	Physics Lab I	1		General Elective	3
CCC	General Elective	3			
		TOTAL			15
					15

FOURTH YEAR					
Fall Semester			Spring Semester		
Course		Credits	Course		Credits
BIOL 435	Development Biology Lecture and Lab	3	BIOL 338	Microbiology	3
	BIOL Major Elective (300-400 Level)	3	BIOL 491	Senior Capstone OR	3
	BIOL Major Elective (300-400 Level)	3	BIOL 492	Senior Capstone OR	
CCC	Western Civilization	3	BIOL 493	Senior Capstone	
	General Elective	3		BIOL Major Elective (300-400 Level)	3
	General Elective	1		BIOL Major Elective (300-400 Level)	3
			CCC	Other Western Civilizations	3
		TOTAL			16
					15
					120

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.