BIOLOGY, B.S. - ENVIRONMENTAL BIOLOGY OPTION

Designed to prepare students either to work as environmental managers or to pursue graduate study this program gives students a strong background in basic biology and ecology. Public service or private employment in conservation, environmental management, planning and consulting, pollution abatement, public health, natural resource management, aquatic biology, and wildlife managers are some of the career areas available to students in this program. Many students in this program complete co-ops (https://www.millersville.edu/elcm/) and/or independent research projects as part of their education.

Major in Biology, BS

Code	Title	Hours
CORE COURSES (C- or higher required)		24
Foundations of Biology - See Appendix 1		
BIOL 211	Concepts of Zoology	
BIOL 221	Concepts of Botany	
BIOL 343	Principles of Ecology & Evolution	
BIOL 362	Cell and Developmental Biology	
BIOL 364	Foundations of Genetics & Molecular Biology	
Option in Environmental Biology - See separate block		
Total Hours		**24**

Appendix 1. Foundations of Biology

Code	Title	Hours
Foundations of Biology C- or Higher		4
BIOL 101	Foundations of Biology	

Concentration in Environmental Biology

Code	Title	Hours
REQUIRED ENVIRONMENTAL BIOLOGY COURSES		
BIOL 344	Population Community Ecology	3
BIOL 446	Ecosystems	3
Seminar in Environmental Biology		2
BIOL 472	Seminar In Biology	
DIRECTED ELECTIVES IN ADVANCED ECOLOGY		
undefined - Choose 2 of the following:		6
BIOL 325	Plant Systematics	
BIOL 329	Plant-Insect Interactions	
BIOL 442	Wildlife Ecology & Management	
BIOL 443	Conservation Biology	
BIOL 445	Aquatic Biology	
BIOL 486	Behavioral Ecology	
BIOL 325 is recommended as one of your directed electives in advanced ecology.		
ORGANISMAL BIOLOGY		
undefined - Choose 1 of the following:		3-4
BIOL 346	Ornithology	
BIOL 396	Ichthyology	
BIOL 415	Mammalogy	
BIOL 416	Entomology	
BIOL 418	Aquatic Entomology	
BIOL 424	Mycology	
BIOL 361	Microbiology	
PRACTICAL EXPERIENCE IN ENVIRONMENTAL BIOLOGY		
undefined - Choose 1 of the following:		4-15
BIOL 300	Co-Op Ed Experience in Biol	
BIOL 489	Honors Course	
BIOL 498	Independent Study	
BIOL 499	Departmental Honors	
Choose one of the above for a minimum of 1 credit. Co-op must involve research approved by advisor and result in co-op/ internship and scientific research papers.		
ELECTIVES		
undefined - Choose 1 hour from:		1
Any 3-level BIOL course(s)		
Any 4-level BIOL course(s)		
Note: This requirement may not be satisfied with BIOL 340 or BIOL 390.		
In consultation with your advisor, choose additional courses that would count towards the Biology Major to bring total to 46 minimum credits in the major. Note: BIOL 375 may NOT be used as an elective if used to fulfill the statistics requirement in required related courses		
Total Hours		**22-34**

Req Related for Biology, BS

Code	Title	Hours
For Biology Majors the G2 block of the Liberal Arts Core will be fulfilled by your required related coursework.		
CHEMISTRY		
A C- or higher in CHEM 111 and 112 is a pre-requisite for CHEM 235. A C- or higher in CHEM 231 is a pre-requisite for CHEM 232. Students interested in graduate or professional school should take CHEM 231 and 232.		
CHEM 111	Introductory Chemistry 1	4
CHEM 112	Introductory Chemistry 2	4
Organic Chemistry - Choose 1 of the following options 1-2:		4-8
Option 1. Organic Chemistry I and II		
CHEM 231	Organic Chemistry 1	
CHEM 232	Organic Chemistry 2	
Option 2. Short Course in Organic Chemistry		
CHEM 235	Organic Chemistry	
Env Chemistry I Lab		4
CHEM 375	Environmental Chemistry	
MATHEMATICS FOR ENVIRONMENTAL BIOLOGY		
Biometry (recommended) or Survey of Statistics - Choose 1 of the following:		3
BIOL 375	Biometry	
MATH 235	Survey of Statistics	
Calc for Mgmt, Calculus I or Honors Calculus - Choose 1 of the following:		4-5
MATH 151	Calculus for Management	

MATH 161	Calculus 1	
MATH 163H	Honors Calculus 1	
PHYSICS		
undefined - Choose 1 of the following options 1-2:		8-10
Option 1. Physics with Algebra		
PHYS 131	Physics 1 with Algebra	
PHYS 132	Physics 2 with Algebra	
Option 2. Physics with Calculus		
PHYS 231	Physics 1 with Calculus	
PHYS 232	Physics 2 with Calculus	
ENVIRONMENTAL SCIENCE		
undefined - Choose 2 of the following:		6-8
CHEM 265	Quantitative Analysis	
CHEM 476	Environmental Chemistry 2	
ESCI 281	GIS Applications for Earth Sci	
ESCI 322	Environmental Hydrology	
ESCI 349	Chemistry of the Atmosphere	
GEOG 227	Cities	
GEOG 281	Maps and GIS	
GEOG 295	GIS I: Vector Data Analysis	
GEOG 304	Water Resources Management	
GEOG 306	Environmental Impact Assessmnt	
GEOG 372	Urban and Regional Planning	
OSEH 220	Legal Aspects Environmental Safety	
OSEH 321	Environmental & Industrial Hygiene I - Chemical and Biological Hazards	
Students are encouraged to complete a minor in Environmental Science and to choose courses from the list above that count in the desired minor. Click here for more information on environmental minors.		
Total Hours		**37-46**