College of Health, Science and Technology
Department of Biological and Health Sciences

Bloomsburg LOCK HAVEN MANSFIELD
COMMONWEALTH UNIVERSITY

CELLULAR BIOLOGY AND MOLECULAR GENOMICS

Bachelor of Science (BS) - Biology

This degree map is based on the current Academic Catalog and is subject to change. Please note that the degree map is designed to give you a sense of roughly how courses might be distributed over a 4-year degree. Your exact schedule will differ depending on a range of factors though we recommend taking a minimum of 15 credits each fall and spring semester. Regular consultation with your academic advisor is the best way to make sure that you are taking the courses you need in the right order to ensure efficient progress through your degree program.

Sample 4-Year Plan

First Year			
Fall Courses	**Credits**	**Spring Courses**	**Credits**
BIOL 110 Principles of Biology 1	4	BIOL 111 Principles of Biology 2	4
MATH 150 Essentials of Calculus	3	CHEM 121 General Chemistry 1	4
FYS 100 First year seminar	3	STAT 141 Introduction to Statistics	3
General Education	3	WRIT 103 Foundations in Composition	3
General Education	3		
Semester Total	16	Semester Total	14

Second Year			
Fall Courses	**Credits**	**Spring Courses**	**Credits**
BIOL 201 Introduction to Research Methods	3	BIOL 209 Genetics	3
BIOL 211 Cell Biology	4	BIOL 210 Genetics Lab	1
CHEM 122 General Chemistry 2	4	CHEM 231 Condensed Organic Chemistry	4
General Education	3	General Education	3
General Education	3	General Education	3
Semester Total	17	Semester Total	14

Third Year			
Fall Courses	**Credits**	**Spring Courses**	**Credits**
BIOL 301 Ecology (FALL ONLY)	4	CHEM 351 Biochemistry	4
BIOL 443 Molecular Biology	3	Biology elective	3
BIOL 444 Molecular Biology lab	1	Biology elective	3
Biology elective	3	General education	3
General Education	3	Free elective	3
Semester Total	14	Semester Total	16

Fourth Year			
Fall Courses	**Credits**	**Spring Courses**	**Credits**
BIOL 493 Research in Biology OR BIOL 498 Internship	3	Biology elective	3
PHYS 208 Introduction to Physics 1	4	Biology elective	3
Biology elective	3	Free elective	3
Free elective	3	Free elective	3
Free elective	1	Free elective	3
Semester Total	14	Semester Total	15

Winter/Summer College - Optional

While not required, Winter and Summer sessions are offered each year and may help you stay on track or get ahead. You may take up to seven (7) credits during Winter College and up to 14 credits during Summer College.

Revised February 2025

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Curriculum Checklist

Biology Core Requirements (33 credits)

___ BIOL 110 Principles of Biology 1 (4)
___ BIOL 111 Principles of Biology 2 (4)
___ BIOL 201 Intro to Bio Research (3)*
___ BIOL 209 Genetics (3)*
___ BIOL 210 Genetics lab (1)*
___ BIOL 211 Cell Biology (4)*
___ BIOL 301 Ecology (4)*
___ BIOL 443 Molecular Biology (3)*
___ BIOL 444 Molecular Biology lab (1)*
___ BIOL 493 Undergrad Res. In Bio OR BIOL 498 Internship in Biology (3)*

Related Core Requirements (26 credits)

___ CHEM 121 General Chemistry 1 (4)^
___ CHEM 122 General Chemistry 2 (4)*
___ CHEM 231 Condensed Organic Chem (4)*
___ CHEM 351 Biochemistry (4)*
___ PHYS 208 Intro to Physics 1 (4)
___ STAT 141 Intro to Statistics (3)
___ MATH 150 Essentials of Calculus (3)^

Electives (19 credits)

One course from each of three blocks: Organismal/Physiology; Microbiology and Immunology; Genetics and Research Analysis (9-10 credits total). 9-10 credits from any courses on the approved elective list (Blocks A, B, C and D)

BLOCK A Organismal/Physiology

___ BIOL 206 Botany (3)*
___ BIOL 207 Zoology (3)
___ BIOL 400 Dendrology (3)*
___ BIOL 401 Entomology (3)*
___ BIOL 450 Developmental Biology (3)*
___ BIOL 432 Ornithology (3)*
___ BIOL 433 Ichthyology (3)*
___ BIOL 434 Herpetology (3)*
___ BIOL 453 Freshwater Entomology (3)*
___ BIOL 473 Environmental Physiology (3)*
___ BIOL 474 Human Physiology (3)*
___ BIOL 475 Animal Cell Physiology (3)*
___ BIOL 476 Neurophysiology (3)*
___ BIOL 477 Plant Physiology (3)*
___ BIOL 479 Comparative Animal Phys (3)*
___ BIOL 480 Integrated Phys Lab (1)*

BLOCK B Micro & Immuno

___ BIOL 337 Basic Virology (3)*
___ BIOL 340 Microbiology (4)*
___ BIOL 354 Medical Microbiology (3)*
___ BIOL 431 Mycology (3)*
___ BIOL 442 Advanced Virology (3)*
___ BIOL 446 Immunology (3)*
___ BIOL 447 Immunology Laboratory (1)*
___ BIOL 448 Adv Parasitology (3)*

BLOCK C Genetics & Res. Analysis

___ BIOL 435 Conservation Genetics (3)*
___ BIOL 465 Medical Genomics (3)*
___ BIOL 466 Bioinformatics (3)*
___ BIOL 448 Adv Parasitology (3)*

BLOCK D Free Elective

___ BIOL 213 Intro to Parasitology (3)
___ BIOL 215 Investigations in Genetics and Molecular Biology (2)
___ BIOL 314 Comparative Bio of Inverts (3)*
___ BIOL 315 Comparative Vert Anatomy (3)*
___ BIOL 316 Vertebrae Histology (3)*
___ BIOL 350 Plant Pathology (3)*
___ BIOL 419 Ecosystems (3)*
___ BIOL 420 Global Change Bio (3)*
___ BIOL 430 Evolution (3)*
___ BIOL 438 Environmental Policies (3)*
___ BIOL 439 Hum Dim in Fisheries Mg (3)*

BLOCK D Free Elective cont.

___ BIOL 445 Pharmacology (3)*
___ BIOL 451 Conservation Biology (3)*
___ BIOL 452 Freshwater Ecology (3)*
___ BIOL 454 Algae of Freshwater Eco (3)*
___ BIOL 455 Community Ecology (3)*
___ BIOL 456 Enviro Toxicology (3)*
___ BIOL 460 Plants, Animals, Nat. His. Of PA (3)*
___ BIOL 461 Animal Behavior (3)*
___ BIOL 462 Cancer Biology (3)*
___ BIOL 470 Tissue Culture (1)*
___ BIOL 485 Senior Seminar (1)*
___ BIOL 489 Special Topics in Biology (3)*

^ Enrollment in course is contingent on an ALEKS math placement score >61 or successful completion of MATH118 College Algebra with a grade of C or better.

Note: Progression through the sequence of all chemistry courses requires achievement of a minimum grade of C in pre-requisite courses.

General Education Requirements (45 credits)

Note: Some requirements may be fulfilled by coursework in your major program including directed Gen Ed courses noted below

- Foundations (15 credits)
  - MATH 150; STAT 141 (3)
- Interconnections (9 credits)
- Citizenship & Responsibility
  (6 credits from at least two goals)
- Natural World & Technologies (9 credits)
  - BIOL110 Principles of Biology I (4)
  - CHEM 121 General Chemistry 1 (4)
  - PHYS208 Intro to Physics I (4)
- Creativity & Expression (6 credits)

Degree Requirements

All students must obtain a minimum of 120 credits (a minimum of 42 credits must be advanced coursework), complete all General Education requirements, and all requirements for the selected major. Meet with your advisor and consult Degree Works to monitor your progress and for all graduation requirements.

A minimum GPA of 2.0 in the major and overall are required.

*Denotes advanced coursework
Students must take a minimum of 42 credits of advanced coursework. Advanced coursework can be met in major courses, minor courses, free elective courses, and general education courses. Courses that meet this requirement are designated in Banner.

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