

# BIOMEDICAL SCIENCES (MEDICAL GENOMICS AND COUNSELING)

## Bachelor of Science (BS)

This degree map is based on the 2023-24 Academic Catalog and is subject to change. Students should meet with their academic advisor each semester and use Degree Works to monitor their individual progress toward degree completion. The time it takes to earn a degree will vary based on several factors including summer/winter enrollment, dual enrollment and number of courses successfully completed each semester. We recommend taking a minimum of 15 credits each fall and spring semester.

### 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
CHEM 121 General Chemistry 1	4	CHEM 122 General Chemistry 2	4
MATH 118 or MATH 140 or MATH 150	3	WRIT 103	3
PSYC 101 Introduction to Psychology	3	General Education	3
Semester Total	14	Semester Total	14
Second Year			
Fall Courses	Credits	Spring Courses	Credits
BIOL 180 Anatomy & Physiology 1	4	BIOL 181 Anatomy & Physiology 2	4
BIOL 208 Human Genetics	3	BIOL 211 Cell Biology	4
STAT 141 Introduction to Statistics	3	PSYC 212 Lifespan Development	3
PHIL 205 Medical Ethics	3	General Education	3
General Education	3		
Semester Total	16	Semester Total	14
Third Year			
Fall Courses	Credits	Spring Courses	Credits
BIOL 209 Genetics	3	BIOL 466 Bioinformatics	3
BIOL 201 Genetics Lab	1	CHEM 231 Condensed Organic Chemistry	4
BIOL 340 Microbiology	4	BIOL 310 Biomedical Sciences Seminar	1
General Education	3	General Education	3
General Education	3	General Education	3
Semester Total	17	Semester Total	14
Fourth Year			
Fall Courses	Credits	Spring Courses	Credits
BIOL 465 Medical Genomics	3	BIOL 443 Molecular Biology	3
CHEM 351 Biochemistry	4	Biology elective	3
BIOL 493 Research or BIOL 498 Internship	3	Biology elective	3
Biology Elective	3	Free Elective	3
Free Elective	3	Free Elective	3
Semester Total	16	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.

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## Curriculum Checklist

### **Biology Core Requirements (41 credits)**

- \_\_\_ BIOL 110 Principles of Biology 1 (4)
- \_\_\_ BIOL 111 Principles of Biology 2 (4)
- \_\_\_ BIOL 180 Anatomy and Physiology 1 (4)
- \_\_\_ BIOL 181 Anatomy and Physiology 2 (4)
- \_\_\_ BIOL 208 Human Genetics (3)
- \_\_\_ BIOL 209 Genetics (3)
- \_\_\_ BIOL 210 Genetics Laboratory (1)
- \_\_\_ BIOL 211 Cell Biology (4)
- \_\_\_ BIOL 310 Biomedical Sci Seminar (1)
- \_\_\_ BIOL 340 Microbiology (4)
- \_\_\_ BIOL 443 Molecular Biology (3)
- \_\_\_ BIOL 465 Medical Genomics (3)
- \_\_\_ BIOL 466 Bioinformatics (3)

### **Related Core Requirements (31 credits)**

- \_\_\_ CHEM 121 General Chemistry 1 (4)
- \_\_\_ CHEM 122 General Chemistry 2 (4)
- \_\_\_ CHEM 231 Condensed Organic Chemistry (4)
- \_\_\_ CHEM 351 Biochemistry (4)
- \_\_\_ MATH 118 College Algebra (3) OR MATH 120 Math for the Health Sciences (3) OR MATH 140 Pre-Calculus (3) OR MATH 150 Essentials of Calculus (3)
- \_\_\_ STAT 141 Introduction to Statistics (3)
- \_\_\_ PHIL 205 Medical Ethics (3)
- \_\_\_ PSYC 101 Introduction to Psychology (3)
- \_\_\_ PSYC 212 Lifespan Development (3)

### **Electives (9 credits)**

**At least 3 credits must be from BLOCK A: Physiology. At least 3 credits must be from BLOCK B: Practical Application. Up to 3 Credits can come from Free Electives (BLOCK C)**

### **BLOCK A Physiology Courses**

- \_\_\_ BIOL 474 Human Physiology (3)
- \_\_\_ BIOL 475 Animal Cell Physiology (3)
- \_\_\_ BIOL 476 Neurophysiology (3)
- \_\_\_ BIOL 477 Plant Physiology (3)
- \_\_\_ BIOL 479 Comparative Animal Physio (3)

### **BLOCK B Practical Application**

- \_\_\_ BIOL 493 Independent Research (1-6 crs)
- \_\_\_ BIOL 498 Internship in Biology (3-6 crs)

### **BLOCK C Free Elective**

- \_\_\_ BIOL 206 Botany (3)
- \_\_\_ BIOL 207 Zoology (3)
- \_\_\_ BIOL 213 Intro to Parasitology (3)
- \_\_\_ BIOL 215 Investigations in Genetics and Molecular Biology
- \_\_\_ BIOL 301 Ecology (4)
- \_\_\_ BIOL 314 Comparative Bio of Inverts (3)
- \_\_\_ BIOL 315 Comparative Vert. Anat. (3)
- \_\_\_ BIOL 316 Vertebrate Histology (3)
- \_\_\_ BIOL 337 Basic Virology (3)
- \_\_\_ BIOL 354 Medical Microbiology (3)
- \_\_\_ BIOL 350 Plant Pathology (3)
- \_\_\_ BIOL 400 Dendrology (3)
- \_\_\_ BIOL 401 Entomology (3)
- \_\_\_ BIOL 430 Evolution (3)
- \_\_\_ BIOL 431 Mycology (3)
- \_\_\_ BIOL 432 Ornithology (3)
- \_\_\_ BIOL 433 Ichthyology (3)
- \_\_\_ BIOL 434 Herpetology (3)
- \_\_\_ BIOL 435 Conservation Genetics (3)
- \_\_\_ BIOL 442 Advanced Virology (3)
- \_\_\_ BIOL 444 Molecular Biology lab (1)
- \_\_\_ BIOL 445 Pharmacology (3)
- \_\_\_ BIOL 446 Immunology (3)
- \_\_\_ BIOL 447 Immunology Lab (1)
- \_\_\_ BIOL 448 Advanced Parasitology (3)
- \_\_\_ BIOL 450 Developmental Biology (3)

### **BLOCK C Free Elective cont.**

- \_\_\_ BIOL 451 Conservation Biology (3)
- \_\_\_ BIOL 452 Freshwater Ecology (3)
- \_\_\_ BIOL 453 Freshwater Entomology (3)
- \_\_\_ BIOL 454 Algae of Freshwater Eco (3)
- \_\_\_ BIOL 455 Community Ecology (3)
- \_\_\_ BIOL 456 Enviro Toxicology (3)
- \_\_\_ BIOL 461 Animal Behavior (3)
- \_\_\_ BIOL 462 Cancer Biology (3)
- \_\_\_ BIOL 470 Tissue Culture (1)
- \_\_\_ BIOL 480 Integrated Physiology lab (1)
- \_\_\_ BIOL 485 Senior Seminar (1)
- \_\_\_ BIOL 486 Analysis & Comm of Bio Data (3)
- \_\_\_ BIOL 489 Special Topics in Biology (3)

## 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)
  - STAT 141 (3)
- Interconnections (9 credits)
- Citizenship & Responsibility (6 credits from at least two goals)
  - Directed Gen Ed, if applicable
- Natural World & Technologies (9 credits)
  - BIOL 110 Principles of Biology 1 (4)
  - BIOL 180 Anatomy and Physiology 1 (4)
  - CHEM 121 General Chemistry 1 (4)
- Creativity & Expression (6 credits)

## Degree Requirements

All students must obtain a minimum of 120 credits, 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.*

## Campus Locations

<b>Bloomsburg</b>	<input checked="" type="checkbox"/> Online; <input checked="" type="checkbox"/> In-person; <input checked="" type="checkbox"/> Blended
<b>Lock Haven</b>	<input checked="" type="checkbox"/> Online; <input checked="" type="checkbox"/> In-person; <input checked="" type="checkbox"/> Blended
<b>Mansfield</b>	<input checked="" type="checkbox"/> Online; <input checked="" type="checkbox"/> In-person; <input checked="" type="checkbox"/> Blended
<b>Clearfield</b>	<input type="checkbox"/> Online; <input type="checkbox"/> In-person; <input type="checkbox"/> Blended

*Revised April, 2023*