



B.S. Biology: Molecular/Micro/Cell Requirements

The Molecular Biology/Microbiology/Cell Biology Track at Kutztown University is designed to help students prepare for research and laboratory work in a variety of fields. In addition to seeking employment following graduation, many of our students who have completed this track have also gone on to earn master's and/or doctoral degrees in Microbiology, Molecular and Cell biology and related fields.

Note that all students must achieve 120 undergraduate credits and a minimum 2.0 overall GPA to graduate. The final GPA requirement for Biology: Molecular/Micro/Cell is 2.0. At least four courses in the major program must be at the 300- or 400-level. Students must earn a C or better in BIOL 104.

Required Biology Core Courses – 23 credits

BIOL 104 Principles of Biology (4 credits)
BIOL 106 Introduction to Zoology (4 credits)
BIOL 108 Introduction to Botany (4 credits)
BIOL 216 Genetics (3 credits)
BIOL 224 Applied Environmental Microbiology (3 credits)
BIOL 270 Research Methods (3 credits)
BIOL 380 Senior Seminar (2 credits)

Required Molecular/Micro/Cell Core Courses – 9 to 10 credits

BIOL 252 Cell Physiology & Metabolism (3 credits) *or* CHEM 312 Biochemistry II (4 credits)
BIOL 346 Molecular Biology (3 credits)
BIOL 350 Cell Biology (3 credits)

Biology: Molecular/Micro/Cell Major Electives – 12 to 13 credits

Select three elective courses and one Biology Field Elective:

BIOL 122 Anatomy & Physiology II (3 credits) *or* BIOL 235 General Physiology (4 credits)
BIOL 232 Plant Physiology (3 credits)
BIOL 236 Introduction to Plant Pathology (3 credits)
BIOL 306 Food Microbiology (3 credits)
BIOL 330 Histology (3 credits)
BIOL 334 Medical Parasitology (3 credits)
BIOL 336 Medical Microbiology (3 credits)
BIOL 354 Developmental Biology (3 credits)
BIOL 356 Immunology (3 credits)
BIOL 357 Virology (3 credits)
BIOL 370 Research (3 credits) *or* BIOL 390 Internship (3 credits)
BIOL 460 Cancer Biology (3 credits)

Biology Field Elective

Select one course:

BIOL 218 Vertebrate Biology (3 credits)
BIOL/EVSC 222 Environmental Biology (3 credits)
BIOL/MRSC 226 Marine Biology (3 credits)
BIOL 230 Taxonomy of Vascular Plants (3 credits)
BIOL 244 Ecology (4 credits)
BIOL 302 Entomology (3 credits)

BIOL 308 Ornithology (3 credits)
BIOL 314 Animal Behavior (3 credits)
BIOL 322 Population and Community Ecology (3 credits)
BIOL 324 Plant Ecology (3 credits)
BIOL 342 Herpetology (3 credits)
BIOL 332 Aquatic Ecology (3 credits)
BIOL 358 Conservation Biology (3 credits)
Biology courses offered at Chincoteague Field Station (200-level or above)

Other Required Courses – 15 to 16 credits

Note that CHEM 100 General Chemistry I and CHEM 102 General Chemistry II are included as part of Directed General Education requirements listed below.

CHEM 214 Organic Chemistry (4 credits)
CHEM 216 Organic Chemistry II (4 credits)
CHEM 310 Biochemistry I (4 credits)
MATH 106 Trigonometry (3 credits) or MATH 115 Precalculus (3 credits) or MATH 181 Calculus (4 credits)

Directed General Education Courses – 12 credits

These courses are required for the major and satisfy the general education requirement “Understanding Science and Technology.”

CHEM 100 General Chemistry I – Category C1 (4 credits)
CHEM 102 General Chemistry II – Category C2 (4 credits).
PHYS 40 General Physics I (4 credits) or PHYS 100 Physics I – Category C3 (4 credits)

University Electives – 13 to 16 credits

Program Plan Code: BS_BIOL_MOLM

Effective Date: Spring 2020



B.S. Biology: Molecular/Micro/Cell Major Check Sheet

Student Name:

Student ID Number:

This check sheet provides a mechanism for students and advisors to keep track of a student's progress in the program. Please refer to the program requirements for more details regarding options.

Note that all students must achieve 120 undergraduate credits and a minimum 2.0 overall GPA to graduate. The final GPA requirement for Biology: Molecular/Micro/Cell is 2.0. At least four courses in the major program must be at the 300- or 400-level. Students must earn a C or better in BIOL 104.

Required Biology Core Courses – 23 credits

BIOL 104 Principles of Biology (<i>must earn a C or better</i>)	4 credits	Grade:
BIOL 106 Introduction to Zoology	4 credits	Grade:
BIOL 108 Introduction to Botany	4 credits	Grade:
BIOL 216 Genetics	3 credits	Grade:
BIOL 224 Applied Environmental Microbiology	3 credits	Grade:
BIOL 270 Research Methods	3 credits	Grade:
BIOL 380 Senior Seminar	2 credits	Grade:
Total Credits	23 total credits	

Required Molecular/Micro/Cell Core Courses – 9 to 10 credits

BIOL 252 Cell Physiology & Metabolism (3 credits) or CHEM 312 Biochemistry II (4 credits)	credits	Grade:
BIOL 346 Molecular Biology	3 credits	Grade:
BIOL 350 Cell Biology	3 credits	Grade:
Total Credits	9-10 total credits	

Biology: Molecular/Micro/Cell Major Electives – 12 to 13 credits

BIOL Elective:	credits	Grade:
BIOL Elective:	credits	Grade:
BIOL Elective:	credits	Grade:
Biology Field Elective:	credits	Grade:
Total Credits	12-13 total credits	

Other Required Courses – 15 to 16 credits

CHEM 100, CHEM 102, and PHYS are required and are included as part of Directed General Education.

CHEM 214 Organic Chemistry	4 credits	Grade:
CHEM 216 Organic Chemistry II	4 credits	Grade:
CHEM 310 Biochemistry I	4 credits	Grade:
MATH 106 Trigonometry or MATH 115 Precalculus or MATH 181 Calculus	3-4 credits	
Total Credits	15-16 total credits	

Directed General Education Courses

These courses are required for the major and satisfy the general education requirement "Understanding Science and Technology."

CHEM 100 General Chemistry I (Category C1)	4 credits	Grade:
CHEM 102 General Chemistry II (Category C2)	4 credits	Grade:
PHYS 40 General Physics I or PHYS 100 Physics I (Cat C3)	4 credits	Grade:

University Electives – 13 to 16 credits

Course 1:	credits	Grade:
Course 2:	credits	Grade:
Course 3:	credits	Grade:
Course 4:	credits	Grade:
Total Credits	13-16 total credits	

Summary of Graduation Requirements

Total credits from major courses	59
Total credits from general education program	45
Total credits from university electives	16
Minimum total credits to graduate	120
Minimum overall GPA	2.0
Minimum GPA in major program	2.0

Program Plan Code: BS_BIOL_MOLM

Effective Date: Spring 2020



B.S. Biology: Molecular/Micro/Cell Track

8-Semester Planner

Student Name:

Student ID Number:

Each semester listed below provides information including course categories, typical credit hours (CH.), and space to add specific course selections. This planner is a suggested path. Consult with your advisor regarding your unique plans and interests as you make choices about your schedule.

First Semester Plan

Gen Ed	FYSM 100	3 CH.	Selection: FYSM100 -
Gen Ed	CHEM 100 (Category C1)	4 CH.	Selection:
Major	Required MATH course ^{1, 2}	3 CH.	Selection:
Major	BIOL 104	4 CH.	Selection:
Total		14 CH.	

Second Semester Plan

Gen Ed	Category A1	3 CH.	Selection:
Gen Ed	Category B	3 CH.	Selection:
Gen Ed	CHEM 102 (Category C2)	4 CH.	Selection:
Major	BIOL 106	4 CH.	Selection:
Total		14 CH.	

Third Semester Plan

Gen Ed	Category A3	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	CHEM 214	4 CH.	Selection:
Major	BIOL 108	4 CH.	Selection:
Major	BIOL 224	3 CH.	Selection:
Total		17 CH.	

Fourth Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	CHEM 216	4 CH.	Selection:
Major	BIOL 216	3 CH.	Selection:
Major	BIOL 270	3 CH.	Selection:
Total		16 CH.	

Fifth Semester Plan

Gen Ed	Category A2	3 CH.	Selection:
Gen Ed	PHYS 40 or PHYS 100 (Category C3)	4 CH.	Selection:
Major	BIOL Elective	3 CH.	Selection:
Major	BIOL 346 Molecular Biology	3 CH.	Selection:
Total		16 CH.	

Sixth Semester Plan

Gen Ed	Category A4	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3-4 CH.	Selection:
Major	BIOL Elective	3 CH.	Selection:
Major	BIOL 350	3 CH.	Selection:
Total		15-16 CH.	

Seventh Semester Plan

Gen Ed	Category B	3 CH.	Selection:
Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	BIOL Elective	3 CH.	Selection:
Major	CHEM 310	4 CH.	Selection:
Total		16 CH.	

Eighth Semester Plan

Gen Ed	Category D	3 CH.	Selection:
Elective	University Elective	3 CH.	Selection:
Major	BIOL Field Elective	3 CH.	Selection:
Major	BIOL 252 or CHEM 312	3-4 CH.	Selection:
Major	BIOL 380	2 CH.	Selection:
Total		14-15 CH.	

Additional Notes:

1. MATH 105 or Math placement score greater than 60 is a prerequisite for MATH 106, MATH 140, and MATH 150.
2. Elective courses should be chosen in consultation with the student's academic advisor.
3. No single course can count toward more than one category. At least four BIOL courses must be at 300-400 level.

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Effective Date: Spring 2020