



# Pitt

Kenneth P. Dietrich  
School of Arts and Sciences

## Microbiology Major

[www.Biology.Pitt.edu](http://www.Biology.Pitt.edu)

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Microbiology is the study of microscopic organisms, including viruses, bacteria, archaea, fungi, and protists. Microorganisms are important for both the good that they do (nutrient cycling, production of antibiotics, bioremediation, food production) and the bad (food poisoning, infectious diseases, epidemics). Our program provides intensive training in modern microbiology, including cutting-edge research in genomics and genetic engineering.

Microbiologists pursue careers in many fields, including agricultural, environmental, food, and industrial microbiology; public health; resource management; basic research; education; and pharmaceuticals. Jobs in all of these fields are available at the BS level as well as the MS and PhD levels. The microbiology major also incorporates the requirements expected for admission to medical, dental, and other health professional schools, and to graduate schools in microbiology, molecular biology, biochemistry, and related disciplines.

### Required courses for the Microbiology major

#### Biological Science courses

BIOSC 0150 Foundations of Biology 1  
BIOSC 005X Foundations of Biology Lab 1  
BIOSC 0160 Foundations of Biology 2  
BIOSC 006X Foundations of Biology Lab 2  
BIOSC 0350 Genetics  
BIOSC 0370 Ecology or BIOSC 1130 Evolution  
BIOSC 1000 Biochemistry\*  
BIOSC 1570 Microbiology Seminar  
BIOSC 1850 Microbiology  
BIOSC 1860 Microbiology Laboratory  
BIOSC 1865 Microbial Physiology  
BIOSC 1291 or 1571 or 1741 or 1861 (Writ)

\* Students may choose the alternate sequence BIOSC 1810 Macromolecular Structure and Function and 1820 Metabolic Pathways in lieu of BIOSC 1000. In this case, students take four BIOSC elective credits rather than seven as specified.

#### Chemistry courses

CHEM 0110 General Chemistry 1  
CHEM 0120 General Chemistry 2  
CHEM 0310 Organic Chemistry 1  
CHEM 0320 Organic Chemistry 2  
CHEM 0345 Organic Chemistry Lab

#### Mathematics courses

MATH 0220 Analytic Geometry and Calculus 1  
MATH 0230 Analytic Geometry and Calculus 2 or  
STAT 1000 Applied Statistical Methods

#### Physics course; choose one of the following pairs of courses

PHYS 0110 Introduction to Physics 1  
PHYS 0111 Introduction to Physics 2

PHYS 0174 Basic Physics for Science & Engineering 1  
PHYS 0175 Basic Physics for Science & Engineering 2

**Note:** While not required for the major, PHYS 0212 Introduction to Laboratory Physics or PHYS 0219 Basic Laboratory Physics for Science & Engineering is useful for graduate study in certain sciences and is required for admission to many medical and dental schools.

#### Elective courses

Seven BIOSC credits, including at least one lab or field course, from the following lists.

#### Lecture courses

BIOSC 1120 Biostatistics  
BIOSC 1275 Genomics  
BIOSC 1280 Microbial Genetic Engineering  
BIOSC 1500 Cell Biology  
BIOSC 1540 Computational Biology  
BIOSC 1545 Mathematics of Biology  
BIOSC 1730 Virology  
BIOSC 1760 Immunology  
BIOSC 1820 Metabolic Pathways and Regulation (with 1810)  
BIOSC 1940 Molecular Biology  
BIOSC 1999 Medical Microbiology  
CHEM 1830 Synthetic Biology

#### Lab courses

BIOSC 0352 Introduction to Molecular Genetics Lab  
BIOSC 0390 Ecology Lab  
BIOSC 1005 Introduction to Biochemistry Lab  
BIOSC 1285 Genomics Lab  
BIOSC 1290 Experimental Genetic Engineering  
BIOSC 1510 Cell Biology Lab  
BIOSC 1740 Virology Lab  
BIOSC 1950 Molecular Genetics Lab

#### Field courses

BIOSC 1360 Microbial Ecology  
BIOSC 1400 Disease Ecology

**Note:** Any University Honors College (UHC) equivalents to required courses or elective courses are acceptable.

#### Higher-level course

Students MUST take one higher level BIOSC elective course as part of their BIOSC electives. The higher-level course is automatically satisfied in this major by BIOSC 1865.

#### Lab requirement

Students must complete at least two BIOSC labs for the major and at least one of them must be taken at the Pittsburgh Campus. BIOSC labs are satisfied in this major by BIOSC 1860 and BIOSC 0352, 0390, 1005, 1260, 1285, 1290, 1360, 1400, 1510, 1740, or 1950.

## Writing (W) requirement

Students must complete at least one W-course in the major.

## Grade requirements

BIOSC Courses: Each required BIOSC course for the major must be completed with a grade of 'C' or better. The elective courses for the major must also be completed with a grade of 'C' or better. A minimum GPA of 2.0 in all departmental courses taken is required for graduation. If a 'C-' or lower is earned in an elective course for the major but is not repeated, the course will be used to calculate the departmental GPA but will not be counted toward the 32 credits required for the major.

## Co-requisite courses

Students must also earn a minimum GPA of 2.0 in the co-requisite Chemistry, Mathematics, and Physics courses. A passing grade of C- or lower in a co-requisite course can be accepted, except for CHEM 0110 and CHEM 0120, if balanced by a higher grade in another co-requisite course so that the co-requisite GPA is 2.0 or higher. Students must pass CHEM 0110 and CHEM 0120 with a grade of C (not C-) or better for the major.

## Satisfactory/No Credit option

One BIOSC course can be taken on an S/NC basis.

## Advising

The Biological Sciences Departmental Advisors are located in A258 Langley Hall. You are encouraged to stop by to peruse handouts or meet with an advisor even before declaring a major. They love visitors! Students will officially be advised by the Biological Sciences Advising office after declaring a major offered in the department.

## Advisors

### Available year round

Christine Berliner	Kevin Wu
LANGY A258	LANGY A258
412-624-4819	412-624-4273

### Available during the academic year

Ellen Kelsey	Jessica Wandelt	Dan Wetzel
LANGY A258	LANGY A258	LANGY A258
412-624-0421	412-624-7192	412-648-4286

Advising e-mail: [BioAdv@Pitt.edu](mailto:BioAdv@Pitt.edu)

Declaring the Major: Before students officially declare the Microbiology major, they must have completed BIOSC 0150, 0160 and CHEM 0110, 0120 with a grade of 'C' (not 'C-') or better.

Transfer students who have finished these requirements prior to admission to the University of Pittsburgh are asked to complete one term of course work, including at least one BIOSC course that counts toward the major, before declaring.

Other Biological Sciences major options

Biological Sciences	Computational Biology
Ecology and Evolution	Molecular Biology

## Checklist for the Microbiology major

### Biological Science courses

\_\_\_\_\_ BIOSC 0150 or 0715 (UHC)  
\_\_\_\_\_ BIOSC 005X  
\_\_\_\_\_ BIOSC 0160 or 0716 (UHC)  
\_\_\_\_\_ BIOSC 006X  
\_\_\_\_\_ BIOSC 0350  
\_\_\_\_\_ BIOSC 0370 or 1130  
\_\_\_\_\_ BIOSC 1000 or (1810 and 1820)  
\_\_\_\_\_ BIOSC 1570  
\_\_\_\_\_ BIOSC 1850  
\_\_\_\_\_ BIOSC 1860  
\_\_\_\_\_ BIOSC 1865  
\_\_\_\_\_ BIOSC 1291 or 1571 or 1741 or 1861 (Writ)

### Elective courses

\_\_\_\_\_ BIOSC \_\_\_\_\_  
\_\_\_\_\_ BIOSC \_\_\_\_\_  
\_\_\_\_\_ BIOSC \_\_\_\_\_ lab or field course

### Chemistry courses

\_\_\_\_\_ CHEM 0110 or 0710 (UHC)  
\_\_\_\_\_ CHEM 0120 or 0720 (UHC)  
\_\_\_\_\_ CHEM 0310 or 0730 (UHC)  
\_\_\_\_\_ CHEM 0320 or 0740 (UHC)  
\_\_\_\_\_ CHEM 0345

### Mathematics courses

\_\_\_\_\_ MATH 0220  
\_\_\_\_\_ MATH 0230 or MATH 0235 or STAT 1000

### Physics courses

\_\_\_\_\_ PHYS 0110 or 0174 or 0475  
\_\_\_\_\_ PHYS 0111 or 0175 or 0476