

MICROBIAL SCIENCE (MINOR)

College of Agriculture and Life Sciences

Program Website (<https://cals.cornell.edu/microbiology/academics/undergraduate/minors/microbial-sciences-minor>)

Program Description

Microorganisms are ubiquitous components of natural and human engineered ecosystems, where they drive important processes like elemental cycling and pathogenic disease. The study of microbial biology encompasses techniques from microscopy and cultivation to high throughput genetics and computation, and in environments ranging from the human body to the entire ocean, and conditions from soils in upstate New York to liquids of the International Space Station. Microbiologists have a common interest in understanding the genomic and regulatory adaptations of microorganisms to the habitats in which they live (from within host cells to free-living bacteria in extreme environments), and the impacts of microorganisms on their surroundings. At the same time, because most elemental cycling on the planet is mediated by microorganisms, microbiologists investigate the impacts of habitat perturbations, including global climate change, on microbial function.

The minor in microbial sciences is intended for students who are either not enrolled in the Biology Major or who are taking a concentration other than Microbiology within the Biology Major.

Students graduating with the Microbial Sciences Minor will find careers in areas including but not limited to: graduate studies in microbiology, microbial ecology, virology, industrial and food microbiology, microbial biotechnology, and human and veterinary medicine, leading to positions in academic institutions, government agencies; hospitals and aquaria; industries involving microbial technologies (i.e. biotechnology); food science, including fermentative industries and food safety; and government health agencies.

Any undergraduate student at Cornell may enroll in the minor.

Academic Standards

Grade Requirements

All courses must be taken for a letter grade. Grades of S/U or SX/UX will not be accepted.

Each course must be completed with a grade of C or better to count toward the minor.

Program Information

- Minimum Credits for Minor: 15

Minor Requirements

Student must complete an Introductory Course in Microbiology to gain important background in microbiological sciences.

Code	Title	Hours
Required Courses ¹		
<i>Group A – Fundamental Biology of Microorganisms (2 courses required)</i>		
BIOMI 1100	Locker Rooms, Kitchens and Bedrooms: The Microbiology of College Life	3
BIOMI 1400	Antibiotics: Probing the Biology of Life and Death	3

BIOMI 2900	General Microbiology Lectures ²	3-4
BIOMI 2911	General Microbiology Laboratory	3
BIOMI 4850	Bacterial Genetics	2-3

Code	Title	Hours
<i>Group B – Microbial Ecology, Diversity and Environmental Microbiology (1 course required)</i>		
BIOMI 1120	Microbes, the Earth, and Everything	3
BIOMI 3500	Marine Microbes and Disease in a Changing Ocean	3
BIOMI 2970	Principles of Pharmaceutical Science	2

Code	Title	Hours
<i>Group C – Applied and Pathogenic Microbiology (1 course required)</i>		
BIOMI 2500	Public Health Microbiology	3
BIOMI 2600	Microbiology of Human Contagious Diseases	3
BIOMI 2950	Biology of Infectious Disease: From Molecules to Ecosystems	3
BIOMI 3210	The Gut Microbiome	3
BIOMS 3310	General Parasitology	2
BIOMI 3940	Applied and Food Microbiology	3
FDSC 3950	Food Microbiology Laboratory	3
BIOMI 4040	Pathogenic Bacteriology	2-3
BIOMI 4090	Principles of Virology	3
BIOMI 4310	Medical Parasitology	2
BIOMS 4340	Cellular and Molecular Microbial Pathogenesis: The Host Pathogen Interplay	3

¹ All classes taken toward the major may not count towards the minor

² BIOMI 2900 is a pre-requisite for most advanced classes in Microbiology.