

BIOLOGY - MICROBIOLOGY TRACK, BS

Introduction

The Microbiology Track studies organisms that, for the most part, are not easily visible with the naked eye, including algae, archaea, bacteria, fungi, protozoa, and viruses. Microbes are notorious for causing disease, but microbes also play critical roles in maintaining human health and supporting life on Earth. In the Microbiology track, you will explore microbes in the context of medicine, molecular biology, cell biology, genetics, immunology, biotechnology, ecology, and evolution. The Microbiology track prepares students for careers in many fields including medicine, agriculture, public health, government, environmental science, basic research, education, industrial microbiology, food microbiology, and pharmaceuticals.

Program Delivery

- This is an on-campus program.

Declaring This Major

- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#policiestext>) to go to information about declaring a major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/>)
- CU Denver Core Curriculum (<http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/>)
- College of Liberal Arts & Sciences Graduation Requirements (<http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#graduationrequirementstext>)
- Click here (<http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/>) for information about Academic Policies

Program Requirements

- Students must complete a minimum of 36 BIOL credit hours.
- Students must complete a minimum of 15 credit hours in ancillary coursework.
- Students must complete a minimum of 18 upper division (3000- level and above) BIOL credit hours.
- Students must earn a minimum grade of C- (1.7) in all courses that apply to the major and must achieve a minimum cumulative major GPA of 2.0. Courses taken using P+/P/F or S/U grading cannot apply to major requirements.
- Students must complete a minimum of 18 upper division (3000-level and above) BIOL credit hours with CU Denver faculty and at least 3 credits must be at 4000-level or higher.

Program Restrictions, Allowances and Recommendations

- Courses more than ten years old will not count automatically, but can be evaluated individually for their current relevance to the degree program through a petition process with the Department of Integrative Biology Curriculum Committee. Approval for courses older than ten years is not guaranteed so students may be required to update their knowledge by taking additional courses when past courses are outdated.
- Undergraduate students may count up to six credit hours of independent study or internship (any combination of BIOL 3840 Independent Study, BIOL 3939 Internship, BIOL 4840 Independent Study, BIOL 4880 Directed Research) toward the upper-division Biology electives requirement in the major.

Code	Title	Hours
Complete the following required biology courses:		
BIOL 2010 or BIOL 2030	Organisms to Ecosystems (Gen Bio) Honors Organisms to Ecosystems (Gen Bio)	3
BIOL 2011 or BIOL 2031	Organisms to Ecosystems Lab (Gen Bio) Honors Organisms to Ecosystems Lab (Gen Bio)	1
BIOL 2020 or BIOL 2040	Molecules to Cells (Gen Bio) Honors Molecules to Cells (Gen Bio)	3
BIOL 2021 or BIOL 2041	Molecules to Cells Lab (Gen Bio) Honors Molecules to Cells Lab (Gen Bio)	1
BIOL 3650	General Microbiology	3
BIOL 3651	General Microbiology Lab	2
BIOL 3832 or BIOL 3124	General Genetics Introduction to Molecular Biology	3
Complete the following required ancillary classes:		
CHEM 2031 or CHEM 2081	General Chemistry I Honors General Chemistry I	3
CHEM 2038 or CHEM 2039 or CHEM 2088	General Chemistry Laboratory I Majors General Chemistry I Laboratory Honors General Chemistry I Laboratory	1
CHEM 2061 or CHEM 2091	General Chemistry II Honors General Chemistry II Lecture	3
CHEM 2068 or CHEM 2069 or CHEM 2098	General Chemistry Laboratory II Majors General Chemistry II Laboratory Honors General Chemistry II Laboratory	2
Choose one quantitative class from this list:		3-4
BIOL 3763	Biostatistics	
MATH 1401	Calculus I	
MATH 4830	Applied Statistics	
Choose one writing intensive class from this list:		3
COMM 4550	Rhetorics of Medicine & Health	
ENGL 3154	Technical Writing (also satisfies CLAS Communicative Skills requirement)	
ENGL 4175	Writing in the Sciences (also satisfies CLAS Communicative Skills requirement)	
ENGL 4180	Argumentation and Logic (also satisfies CLAS Humanities requirement)	
ENGL 4280	Proposal and Grant Writing (also satisfies CLAS Humanities requirement)	

Choose at least nine credits of upper division microbiology courses from the following list (must include at least one BIOL 4000 level class taught by UCD faculty): 9

BIOL 3525	Parasitology
BIOL 3621	Introduction to Immunology
BIOL 4055	Virology
BIOL 4144	Medical Microbiology
BIOL 4410	Microbial Genomics
BIOL 4415	Applied Microbial Ecology

Choose at least 11 credits of other BIOL electives from the following list (not already taken anywhere above) to reach 36 credits in BIOL: 11

BIOL 3010	Biology Career and Professional Development Seminar
BIOL 3020	Practical Laboratory Skills
BIOL 3124	Introduction to Molecular Biology
BIOL 3134	Advanced Topics
BIOL 3137	Advanced Special Topics with Lab
BIOL 3411	Principles of Ecology
BIOL 3445	Introduction to Evolution
BIOL 3525	Parasitology
BIOL 3611	General Cell Biology
BIOL 3612	Cell Biology Laboratory
BIOL 3621	Introduction to Immunology
BIOL 3832	General Genetics
BIOL 3939	Internship (Project must have a microbiology component)
BIOL 3840	Independent Study (Project must have a microbiology component)
BIOL 4024	Introduction to Biotechnology
BIOL 4050	Advanced Biology Topics
BIOL 4053	Infectious Disease Ecology
BIOL 4055	Virology
BIOL 4064	Cell Biology of Disease
BIOL 4125	Molecular Biology Laboratory
BIOL 4126	Molecular Genetics
BIOL 4225	Genomics and Bioinformatics
BIOL 4128	Topics in Molecular Biology
BIOL 4144	Medical Microbiology
BIOL 4410	Microbial Genomics
BIOL 4415	Applied Microbial Ecology
BIOL 4460	Environmental Toxicology
BIOL 4622	Topics in Immunology
BIOL 4840	Independent Study (Project must have a microbiology component)
BIOL 4880	Directed Research (Project must have a microbiology component)

Total Hours 51-52

To review the Degree Map for this program, please visit our website (<https://www.ucdenver.edu/student/advising/undergraduate/degree-maps/clas/>).

To learn more about the Student Learning Outcomes for this program, please visit our website. (https://clas.ucdenver.edu/integrative-biology/academics/undergraduate-programs/#biology_major-73)