MICROBIOLOGY

DEPARTMENT OF BIOLOGICAL SCIENCES
AT EASTERN ILLINOIS UNIVERSITY

E NUMBER	
CATALOG	
AS/AA/ASA DEGREE	
TRANSFER HOURS	

F17

Microbiology is the study of microorganisms and their interactions with humans, animals, plants, and the environment. Microorganisms are single-celled organisms often too small to be seen by the unaided eye and include bacteria, archaea, viruses, and eukaryotes like yeasts, protozoa and algae. Microorganisms impact all life on our planet and contribute to all manner of chemical and physical processes. Because microbial activities are so diverse, the field of microbiology is multidisciplinary, requiring skills and knowledge of individuals specializing in many different areas of life science, environmental science, and engineering. Microbiology involves such scientific and medical disciplines as bacteriology, virology, public health, clinical microbiology, immunology, parasitology, and vaccinology.

Microbiologists work in basic and applied research, clinical settings, manufacturing of food and other goods, public health, and environmental protection, to name a few. You may not encounter any microbiologists in your everyday activities or even know of anyone who works as a microbiologist. But the efforts of thousands of these scientists to better understand our planet's microscopic inhabitants impact our lives in many ways every day.

- Microbiologists' research helps keep your food from making you sick and your drinking water clean and safe.
- They track down the culprits behind mysterious new illnesses and harness microbes' abilities to make medicines, industrial enzymes, food ingredients, and many other useful products.
- Microbiologists work behind the scenes in hospital labs to pinpoint the microorganism making you sick so your doctor can prescribe the right treatment, and they figure out the basic workings of infectious microbial cells so that drug makers can devise potent new medicines.
- They solve environmental problems by using microbes in bioremediation, and they explore oceans, caves, deserts, and even Antarctica's ice to learn how microbes affect the workings of our planet.
- You might expect to find microbiologists working at research universities or in the sprawling complexes of pharmaceutical companies. But microbiologists also work in the food industry, water treatment, agriculture, pollution control, biotechnology, energy development, museum preservation, and many other disciplines. Microbiologists also find jobs in government agencies and labs, such as the National Institutes of Health and Environmental Protection Agency.

Interested? Check out the following courses at EIU that provide a strong foundation towards a career in microbiology!

GENERAL REQUIREMENTS: 40-42 HRS

LANGUAGE: 9 HRS

Course	Hours	Grade	Semester
ENG 1001G	3		
ENG 1001G	3		
CMN 1310G	3		

Grade of "C" or better is required

SCIENCE AWARENESS: 7HRS

Completed in major.

MATHEMATICS: 3-5 HRS

Completed in major.

HUMANITIES/FINE ARTS: 9 HRS

Area	Hours	Grade	Semester
Humanities	3		
Fine Arts	3		
Humanities/Fine Arts	3		

SOCIAL/BEHAVIORAL SCIENCES*: 9 HRS

Must be from two different disciplines.

Course	Hours	Grade	Semester
ECN 2800G	3		
	3		
	3		

** One course must meet Cultural Diversity requirement.*

SENIOR SEMINAR: 3 HRS

Course	Hours	Grade	Semester
EIU _____	3		

Except: EIU 4101G, 4111G, 4118G, 4131G, 4169G, 4290G

FOREIGN LANGUAGE: 0-8 HRS

EXEMPT? ❑ YES ❑ NO

Exempt if 2yrs in high school of a single foreign language with average grade of "C" or better.

Course	Hours	Grade	Semester

CONTACT INFORMATION:

BIOLOGICAL SCIENCES
Eastern Illinois University
Life Science Building
600 Lincoln Avenue
Charleston, IL 61920
Phone: 217-581-3126
Email: *biosci@eiu.edu*

BE PREPARED: UPDATE THIS FORM BEFORE MEETING WITH YOUR ADVISOR

MAJOR ELECTIVES: 21-23 HRS

The specific courses listed below are recommended for students interested in pursuing a career in microbiology, but not specifically required for the Biological Sciences major. A minimum of 21 hours of course work in Biological Sciences, (excluding BIO 3400, workshops, and courses designed for General Education), Mathematics or Physical Sciences courses above 2000 (with the exception of general education and CHM 2310) are required in the major. A minimum of 15 hours must be taken in Biological Sciences.

Course	*Hours*	*Grade*	*Semester*

BIO 3300 (4) General Microbiology
BIO 3451 (1-3) Undergraduate Research
BIO 4818 (4) Environmental Microbiology
BIO 4836 (4) Pathogenic Microbiology
Choose One (3)
BIO 3210 (3) Immunology
BIO 4751 (3) Advanced Molecular & Cell Biology
Choose One (3)
BIO 3300 (3) Survey of Biochemistry
CHEM 3450/3455 (5) Biochem I with Lab

SCIENCE CORE: 58-61 HRS

Biology Courses	*Hours*	*Grade*	*Semester*
BIO 1500 General Biology I	4		
BIO 1150 Biology Forum	1		
BIO 1550G* General Biology II	4		
BIO 3120* Mol & Cell Biology	4		
BIO 3200* Genetics	4		
BIO 3510 Plant Physiology **OR 3520*** Animal Physiology	4		
BIO 3180* Ecology and Evolution	4		
Chemistry Courses	*Hours*	*Grade*	*Semester*
CHM 1310G General Chemistry I	3		
CHM 1315G General Chemistry I Lab	1		
CHM 1410* General Chemistry II	3		
CHM 1415* General Chemistry II Lab	1		
CHM 2430 Survey Organic Chemistry	3		
CHM 2435 Survey Organic Chemistry Lab	1		
For students who are planning to enter the job market upon graduation, the above three courses and labs would complete your chemistry requirements. However, for students who are seriously considering a post-baccalaureate Graduate program, it is strongly recommended that the a two semester organic chemistry sequence is taken:			
CHM 2440 Organic Chemistry I	3		
CHM 2445 Organic Chemistry I Lab	1		
CHM 2840 Organic Chemistry II	3		
CHM 2845 Organic Chemistry II Lab	1		
Physics Courses	*Hours*	*Grade*	*Semester*
PHY 1151G Principles Physics I	3		
PHY 1152G Principles Physics I Lab	1		
PHY 1161G Principles Physics II	3		
PHY 1162G Principles Physics II Lab	1		
Math Courses	*Hours*	*Grade*	*Semester*
MAT 2110G Brief Calculus **OR MAT 1441G*** Calculus I	3-5		
BIO 4750* Statistic Anly of Sci Data **OR MAT 2250G*** Elementary Statistics	3-4		

*Additional prerequisite classes may be required. See Undergraduate Catalog

WHETHER YOU ARE PLANNING TO LOOK FOR A JOB IN MICROBIOLOGY OR TO CONTINUE YOUR ACADEMIC TRAINING IN MICROBIOLOGY AFTER GRADUATION, WHAT WILL INDIVIDUALS INVOLVED IN DECIDING THE NEXT STEP OF YOUR CAREER BE LOOKING FOR IN YOU?

Today's successful graduates typically possess many of the following qualities:

- Strong Oral and Written Communication Skills
- Solid Competence in Research Methodologies
- Solid Internship/Independent Study Experience
- Critical and Analytical Thinking Skills
- Ability to Work Effectively in Teams and with People from Diverse Cultural Backgrounds
- Statistics Math Background
- Excellent Planning Skills
- Volunteer and Extracurricular Activities
- Fluency in a Second Language
- Can Adapt to Change Easily/Flexible
- Proficient Computer Skills

Notes: