



# MICROBIOLOGY

## Bachelor of Science

Microbiology is the study of the smallest living organisms (bacteria, algae, fungi, and protozoa) and viruses. Because of their simplicity and rapid growth rates, microorganisms are readily amenable to study in the laboratory. Because their cellular processes closely resemble those of higher organisms they are ideally suited for fundamental studies of biological structure, physiology, metabolism, genetics and development. The Microbiology department at the University of Washington works mainly in cutting edge research in Bacteria and Viruses.

The B.S. in Microbiology is complemented by the College of Arts and Sciences general educational requirements such as English Composition, Writing, Foreign Language, Quantitative & Symbolic Reasoning, Visual Literary & Performing Arts and Individuals and Societies courses which provide a comprehensive liberal arts degree.

### **For Admission to the program, students must complete the following requirements:**

1. A minimum of 75 credits applicable to graduation, with a minimum cumulative GPA of 2.0 overall, and a minimum cumulative GPA of 2.5 in prerequisite chemistry and biology courses listed below. Most students are admitted to the major at the beginning of their junior year.
2. Completion of the following pre requisite courses:
  - BIOL 180, 200 (minimum 2.3 grade) , 220
  - CHEM 142, CHEM 152, CHEM 162 AND CHEM 223 OR CHEM 237

All students are strongly encouraged to meet with the Microbiology Adviser before declaring and at least quarterly after acceptance to go over academic progress, academic goals and department policies.

<b>Andrea Pardo</b> <b>Counseling Services</b> <b>Coordinator</b>	<b>Office: Health Sciences Building</b> <b>K-Wing 343A</b>	<b>Phone: 206-543-2572</b> <b>Email: <a href="mailto:acroz@uw.edu">acroz@uw.edu</a></b>
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### **Grade Requirements:**

1. All courses taken to fulfill requirements must be taken for a letter (numerical) grade unless the course is offered credit/no credit.
2. Students must maintain a cumulative GPA of 2.25 and a minimum grade of 1.8 in all required and elective MICROM courses used toward graduation to receive their degree.

### **Progress/Dismissal Policy:**

Students enrolled in the B.S. degree program must maintain the above mentioned GPA requirements.

A student will be placed on departmental academic probation when either of the following occurs:

1. The student's cumulative GPA in all core and distribution MICROM courses falls below a 2.25. The student is placed on probation for one quarter. If at the end of the quarter, the GPA has not improved to at least the 2.25, the student will be dropped from the major. Students who experience extraordinary circumstances may petition for one or more additional probationary quarters.
2. In a given quarter, if the student receives a grade of less than 1.8 in one or more core or distribution MICROM courses. The student remains on probation until the course is repeated with a grade of 1.8 or, in the case of a distribution course, another course in the same category is taken with a grade of at least 1.8. A student who receives a grade of less than 1.8 in any core or distribution MICROM course while on probation will be dropped from the major.



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### CHEMISTRY - Choose One Option:

1. **CHEM 142, 152, 162 (5, 5, 5) AND CHEM 223, 224 (4, 4)**
2. **CHEM 142, 152, 162 (5, 5, 5) AND CHEM 237, 238, 239 (4, 4, 4)**  
(O Chem labs are not required for the major)

### BIOCHEMISTRY: Choose One Option:

1. **BIOC 405, 406 (3, 3)**  
Intro to Biochemistry I & II
2. **BIOC 440, 441, 442 (4, 4, 4)**  
Biochemistry I, II, III

Please note that CHEM 224, 238, and 239 are not required but may be needed, depending on which BIOC series you wish to pursue and your goals for post graduate work.

### BIOLOGY

1. **BIOL 180, 200\*\*, 220 (5, 5, 5)**  
Introductory Biology I, II, III

\*BIOL 200 requires a grade of 2.3 for the major.

\*BIOL 200 requires CHEM 152 as a pre-requisite or co-requisite.

### MATHEMATICS – Choose One Option:

#### Calculus:

1. **MATH 112 (5)**  
Application of Calculus to Business and Economics
2. **MATH 124 (5)**  
Calculus with Analytic Geometry I

#### Statistics:

3. **Q SCI 381 (5)**  
Introduction to Probability and Statistics
4. **STAT 220 (5)**  
Principles of Statistical Reasoning
5. **STAT 311 (5)**  
Elements of Statistical Methods

Please note that calculus series is strongly recommended for students pursuing graduate work. MATH 124, 125, 126 (5, 5, 5)

Also acceptable QSCI 291, 292 AND Q SCI 381 (5, 5, 5)

### PHYSICS – Choose One Option:

1. **PHYS 114, 115 (4, 4)**  
General Physics I & II
2. **PHYS 121, 122 (5, 5)**  
Mechanics, Electromagnetism

Freshman Year: Typically students will complete Inorganic Chemistry and Math requirements this year along with other general education requirements.

Sophomore Year: Students should complete Introductory Biology, begin Organic Chemistry and continue general education courses.

Junior and Senior Years: Students will typically start MICROM core and distribution courses, start Physics or Biochemistry, participate in research, finish any remaining general education requirements, or graduate or professional school requirements.

Microbiology Core and Distribution Courses:



**MICROM CORE (8 Credits):**

1. **MICROM 410 (3) Fundamentals of Microbiology** *Fall*
2. **MICROM 402 (3) Fundamentals of General Microbiology Lab** *Fall, Spring*
3. **MICROM 496 (2) Library Research Paper** *all quarters*

**Distribution Courses:**

- Total of 28 Credits from the following distribution groups AND electives.
  - Choose **ONE** course from each of the **FOUR** distribution groups
  - Two courses must have a lab component
1. Medical Microbiology  
**IMMUN 441 (4) Immunology** *Fall*  
**MICROM 442 (3) Medical Bacteriology Lecture** *Winter*  
**MICROM 443 (3) Medical Bacteriology Lab** *Fall, Winter*  
**MICROM 460 (3) Medical Mycology and Parasitology Lecture** *Spring*  
**MICROM 461 (2) Medical Mycology and Parasitology Lab** *Spring*
  2. Virology  
**MICROM 445 (3) Medical Virology** *Spring*  
**MICROM 450 (3) Molecular Biology of Viruses** *Winter*
  3. Diversity and Ecology  
**MICROM 412 (3) Prokaryotic Diversity** *Spring*  
**MICROM 435 (3) Microbiology of Earth and Human (built) Systems** *Spring*
  4. Genetics and Molecular Biology  
**MICROM 411 (5) Bacterial Genetics w/ Lab** *Winter*  
**MICROM 431 (3) Prokaryotic Recombinant DNA Techniques Lab** *Winter* **PLUS**  
**GENOME 361 (3) Fundamentals of Genetics and Genomics** *all quarters* **OR**  
**GENOME 371 (5) Introductory Genetics** *Fall*

Please see the website for information on the following:

- Research Opportunities
- Department Awards and Scholarships
- Double Degree with Medical Laboratory Science
- Departmental Honors option



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### ELECTIVES:

Electives can include any of the distribution coursework not counted for distribution requirements. Students need a total of 28 credits in the distribution groups and electives.

Please note:

1. 500 level courses may require instructor permission.
2. Some of these courses may be restricted to majors only. Please check with the listed department if interested in their courses.
3. Check course pre-requisites.

MICROM 413	(1)	Special Topics in Microbiology
MICROM 482	(1-5)	Peer Teaching Assistants in Microbiology
MICROM 495	(var.)	Microbiology Undergraduate Research
MICROM 499	(var.)	Undergraduate Lab Research
MICROM 555	2.5	Advanced Clinical Microbiology
BIOL 401	(3)	Advanced Cell Biology
BIOL 405	(3)	Cellular and Molecular Biology of Human Disease
BIOL 440	(5)	General Mycology and Lab
BIOL 466	(3)	Pathobiology of Emerging Diseases
BIOL 481	(5)	Experimental Evolutionary Ecology
CHEM E 467	(3)	Biochemical Engineering
CEE 462	(3)	Applied Limnology and Pollutant Effects on Freshwater
CEE 482	(3)	Wastewater Treatment and Re-Use
CEE 540	(3)	Microbiological Process Fundamentals
CONJ 550P	(3)	Clinical Infectious Disease
ENV H 440	(3)	Water, Wastewater, and Health
ENV H 441	(3)	Food Protection
ENV H 442	(3)	Vector Controls
ENV H 444	(3)	Antibiotic Resistant Genes and Bacteria
ENV H 451	(3)	Ecology of Environmentally Transmitted Microbiological Hazards
ENV H 452	(3)	Detection & Control of Environmentally Transmitted Mbio Hazard
ESRM 404	(5)	Plant Microbiology Lab
EPI 320	(3)	Introduction to Epidemiology
GENOME 361	(3)	Fundamentals of Genetics and Genomics
GENOME 371	(5)	Introductory Genetics
GENOME 372	(5)	Genomics and Proteomics
GENOME 373	(4)	Genomic Informatics
GH 401	(1)	Introduction to Global Health
GH 402	(1)	Multidisciplinary Perspectives on Global Health
GH 410	(3)	Newly Emerging Diseases in Public Health
MEDCH 561	(4)	Immunizing & Antimicrobial Agents
BH 401	(3)	History of Modern Medicine
OCEAN 430	(4)	Biological Oceanography
OCEAN 431	(3)	Special Topics in Biological Oceanography
OCEAN 454	(3)	Hydrothermal Vents
PABIO 536	(3)	Bioinformatics and Gene sequence Analysis
PABIO 548	(3)	Molecular and Cellular Parasitology
PABIO 551	(4)	Biochemistry and Genetics of Pathogens and their Hosts