MOLECULAR & MEDICAL MICROBIOLOGY, BACHELOR OF SCIENCE

College of Biological Sciences

The department of Microbiology & Molecular Genetics offers the major in Molecular & Medical Microbiology.

Molecular & Medical Microbiology B.S.

The Major Program

Microbiology is the branch of biology that deals with bacteria, yeasts and other fungi, algae, protozoa, and viruses. These microorganisms are ubiquitous in nature and play a crucial role in areas such as agriculture, biotechnology, ecology, medicine, and veterinary science. The field of microbiology contributes to areas of fundamental inquiry such as biochemistry, cell biology, evolution, genetics, molecular biology, pathogenesis, and physiology. The ease and power of simultaneous genetic and biochemical analysis of microbes led to the emergence of the new disciplines of molecular biology & molecular genetics, and spawned the new industry of biotechnology.

The Program

The Molecular & Medical Microbiology Undergraduate Program offers Bachelor of Science and Bachelor of Arts degrees in the College of Biological Sciences. Both degrees are designed to provide students with quantitative skills and knowledge across the breadth of Biological Sciences, while maintaining a focus on the biology of microorganisms. The B.S. degree offers more training in mathematics, biochemistry and laboratory methodology; the A.B. degree incorporates more exposure to the liberal arts. The choice of a major program and its suitability for particular career options should be discussed with a Biology Academic Success Center (BASC) advisor.

Career Alternatives

A bachelor’s degree in Molecular & Medical Microbiology serves as the foundation for advanced study in microbiology, entry into the professional schools of all health sciences, or immediate employment in biotechnology, health care and food science industries.

Graduate Study

The Graduate Group in Microbiology offers programs of study and research leading to M.S. and Ph.D. degrees.

Strong preference is given to doctoral applicants. The group offers study in general microbiology, microbial physiology, microbial genetics, molecular mechanisms of microbial regulation, molecular mechanisms of microbial pathogenesis, immunology, virology, and recombinant DNA technology. For information on the graduate study and undergraduate preparation for the program contact a graduate advisor or the Chairperson of the Group.

Related Courses


Faculty of the Department of Microbiology & Molecular Genetics also teach or participate in the following courses: BIS 002A, BIS 101, BIS 104 and BIS 181.

Faculty Advisor

Rebecca Parales, Ph.D.

Honors & Honors Program

Rebecca Parales, Ph.D.

Teaching Credential Subject Representative

Rebecca Parales, Ph.D.; see the Teaching Credential/M.A. Program (https://education.ucdavis.edu/teaching-credentialma/).

Advising

Biology Academic Success Center (BASC) (https://basc.biology.ucdavis.edu/) in 1023 Sciences Laboratory Building; 530-752-0410.

Please Note: MIC courses are in the process of transitioning to MMG courses within the year.

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>Biological Science</td>
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<td>CHE 118A &amp; CHE 118B &amp; CHE 118C</td>
<td>Organic Chemistry for Health &amp; Life Sciences and Organic Chemistry for Health &amp; Life Sciences and Organic Chemistry for Health &amp; Life Sciences</td>
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<td>Mathematics</td>
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MAT 017A & MAT 017B & MAT 017C
Calculus for Biology & Medicine
Calculus for Biology & Medicine
Calculus for Biology & Medicine

OR
MAT 021A & MAT 021B & MAT 021C
Calculus
Calculus
Calculus (Recommended)

Physics
PHY 007A & PHY 007B & PHY 007C
General Physics
General Physics
General Physics

Microbiology
MIC 091 or MIC 191
Introduction to Research
Introduction to Research for Advanced Undergraduates

Subtotal
60-70

Depth Subject Matter

Biological Science
BIS 101
Genes & Gene Expression
4
BIS 105 or BIS 102 & BIS 103
Biomolecules & Metabolism
Structure & Function of Biomolecules
and Bioenergetics & Metabolism
3-6

Statistics
STA 100
Applied Statistics for Biological Sciences
4

Microbiology
MIC 102
Introductory Microbiology
3
MIC 104L
General Microbiology Laboratory
3
MIC 105
Microbial Diversity
3
MIC 105L
Microbial Diversity Laboratory
3
MIC 111
Human Microbiology
3

Areas of Study
Choose at least one course from each of the areas of study below:

1. Molecular Microbiology
   MIC 115
   Recombinant DNA Cloning & Analysis
   MIC 150
   Genomes of Pathogenic Bacteria
   MIC 170
   Yeast Molecular Genetics

2. Virology
   MIC 162
   General Virology
   PMI 128
   Biology of Animal Viruses

3. Immunology
   MMI 188A
   Human Immunology
   or MMI 188B
   Human Immunology
   PMI 126
   Fundamentals of Immunology

Choose additional course work from the list below, to achieve a total of 45 or more units. Upper division Microbiology courses not used in satisfaction of any other requirement; or:

BIS 181
Comparative Genomics
BIS 183
Functional Genomics
FST 104
Food Microbiology
MCB 121
Advanced Molecular Biology
MCB 182
Principles of Genomics
MIC 117
Analysis of Molecular Genetic Circuits
MIC 120
Microbial Ecology

MIC 172
Host-Parasite Interactions
MIC 175
Cancer Biology
PLP 130
Fungal Biology & Disease
SSC 111
Soil Microbiology

Upper division courses in related fields, relevant to the student's interest and chosen in consultation with the advisor.

No more than 3 units of variable-unit courses (numbered 192, 198, or 199) may be used for credit in this category.

Note: Although a course may be listed in more than one category, that course may satisfy only one requirement in the entire major.

Depth Subject Matter Subtotal
45
Total Units
105-115

1 With BASC advisor approval, these combination also satisfies the General Chemistry requirement: CHE 004A-CHE 002A (3 units w/no lab)-CHE 002B-CHE 002C or CHE 004A-CHE 004B-CHE 002C.

2 With BASC advisor approval, this combination also satisfies the Organic Chemistry requirement: CHE 118A-CHE 008B.

3 With BASC advisor approval, this combination also satisfies the Mathematics requirement: MAT 021A-MAT 017B-MAT 017C; MAT 017A-MAT 021B.