# Microbiology and Immunology Courses (MICR)

This is a list of microbiology and immunology courses. For more information, see Microbiology and Immunology.

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Prerequisites</th>
<th>Corequisites</th>
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<tr>
<td>MICR:1000</td>
<td>First-Year Seminar</td>
<td>1 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C or MICR:2157 with a minimum grade of C.</td>
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<tr>
<td>MICR:1006</td>
<td>Small Wonders: Microbes in Our Lives</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C and MICR:2157 with a minimum grade of C.</td>
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<tr>
<td>MICR:2157</td>
<td>General Microbiology</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3147</td>
<td>Immunology and Human Disease</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3150</td>
<td>Eukaryotic Pathogens and Human Disease</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:3158</td>
<td>General Microbiology Laboratory</td>
<td>2 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3159</td>
<td>Bacteria and Human Disease</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:3160</td>
<td>Molecular Microbiology</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:3164</td>
<td>Microbiology and Human Health</td>
<td>4 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3165</td>
<td>Bacteria and Human Disease Laboratory and Discussion</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3166</td>
<td>Microbiology Literature Discussion</td>
<td>1 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:3168</td>
<td>Viruses and Human Disease</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3170</td>
<td>Microbial Genetics</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:3175</td>
<td>Molecular Microbiology and Genetics Laboratory</td>
<td>3 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3177</td>
<td>Virology Discussion</td>
<td>1 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<tr>
<td>MICR:3178</td>
<td>Virology Laboratory</td>
<td>2 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:3190</td>
<td>Web-Based Nursing, Pharmacy, and Allied Health Microbiology</td>
<td>4 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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<td>MICR:4161</td>
<td>Undergraduate Research in Microbiologyyarr</td>
<td>1 s.h.</td>
<td>BIOL:1140 or BIOL:1411 with a minimum grade of C.</td>
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*Microbiology and Immunology Courses (MICR)*
MICR:4163 Seminar: Microbiology 2 s.h.
Current topics in microbiology, immunology, and virology.
Prerequisites: 2 of the following are required: MICR:3147 with a minimum grade of C, MICR:3159 with a minimum grade of C, MICR:3160 with a minimum grade of C, MICR:3168 with a minimum grade of C, MICR:3170 with a minimum grade of C. Requirements: senior standing.

MICR:4169 Topics in Viral Biology and Pathogenesis 1 s.h.
Topics include viral life cycles, immune response, antiviral treatments, potential for vaccine, animal models; lectures introducing subject matter; discussion of literature relevant to each week's topic. Prerequisites: MICR:3168 with a minimum grade of C.

MICR:4171 Honors Undergraduate Research in Microbiology arr.
Experimental research under faculty supervision. Prerequisites: BIOL:1411. Requirements: microbiology major, junior or senior standing, 3.33 overall g.p.a., and 3.33 g.p.a. in microbiology courses.

MICR:4175 Topics in Parasitism 1 s.h.
Molecular and immunologic mechanisms by which bacteria, viruses, and protozoa cause human diseases; based on manuscript readings and/or student presentations. Requirements: junior or higher standing in microbiology, or graduate standing.

MICR:5218 Microscopy for Biomedical Research arr.
Basic microscopy methods for research including optics, preparation, and analysis of biomedical specimens; light, fluorescence, confocal, transmitting electron, scanning electron, atomic force microscopes, elemental analysis; immunochemistry and stereo techniques; individualized laboratory instruction. Prerequisites: BIOL:2723. Same as ACB:5218, BIOL:5218.

MICR:5264 Directed Study in Microbiology arr.
Applied enzymology, protein design, structure-activity relationships, biosensor technology, microbial transformations, biodegradation of environmental pollutants. Requirements: graduate standing in a participating department supported by the Predoctoral Training Program in Biotechnology. Same as BIOC:5875, CBE:5875, CHEM:5875, PHAR:5875.

MICR:6201 Graduate Immunology 3 s.h.
Ontogeny, activation, and function of T lymphocytes and B lymphocytes; innate immune effector mechanisms; major histocompatibility complex; antigen presentation; thymocyte positive and negative selection; signaling of T lymphocytes, B lymphocytes; emphasis on experimental methods for analysis of these processes. Prerequisites: MICR:3147. Requirements: for IMMU:6201—college biology, general chemistry, and introductory immunology courses; for MICR:6201—courses in college biology, genetics, general chemistry, and introductory immunology. Recommendations: for IMMU:6201—courses in biochemistry and genetics; for MICR:6201—biochemistry course. Same as IMMU:7201.

MICR:6240 Graduate Eukaryotic Pathogens and Human Disease 2 s.h.
Foundational understanding of the lifecycle, epidemiology, pathogenesis, diagnosis, and treatment of major eukaryotic pathogens/parasites that cause human disease. Recommendations: genetics, biochemistry, and immunology.

MICR:6247 Graduate Immunology and Human Disease 4 s.h.
Important principles and key concepts in immunology with a focus on the involvement of the immune system in disease pathogenesis; overview of innate and adaptive immune systems and their functions at cellular and molecular levels; learning enhanced by case-based, small-group discussion and writing exercises. Same as IMMU:6247.

MICR:6250 Mechanisms of Parasitism Journal Club 1 s.h.
Reviews of recent publications in molecular parasitology, research and thesis research by training grant or journal club students. Same as MMED:6250.

MICR:6255 Graduate Experimental Approaches to Molecular Microbiology 2 s.h.
Exposure to common experimental approaches through examination of primary literature and facilitated discussions on application of those approaches to advance scientific inquiry. Requirements: microbiology graduate standing.

MICR:6259 Graduate Bacteria and Human Disease 3 s.h.
Infection and replication strategies of bacteria with an emphasis on human disease; discussion focuses on experimental approaches used to study mechanisms of disease.

MICR:6260 Graduate Molecular Microbiology 3 s.h.
Microbes colonize a wide range of diverse environments from deep sea thermal vents to ice covered arctic lakes to the human body; students explore the genetics, molecular, and cell biology of a range of microorganisms including microbial cell organization, macromolecular assembly, molecular structure and function, cell division and DNA replication, fundamentals of gene regulation, bacterial differentiation, antibiotic resistance, and microbial interactions; the course provides a strong foundation in molecular microbiology with an emphasis on familiarizing students with the techniques commonly used in modern microbiology research.

MICR:6265 Principles of Writing a Scientific Proposal 2 s.h.
How to think and write like scientists and become familiar with the elements of a research proposal; writing a grant proposal modeled on a National Institutes of Health Exploratory/Developmental Research Grant Award (NIH R21); students critique proposals written by other students; faculty read proposals and provide constructive criticism; lectures describe elements of a grant proposal and strategies for effective writing. Requirements: enrollment in microbiology graduate program.

MICR:6267 Graduate Viruses and Human Disease 4 s.h.
Infection and replication strategies of viruses with an emphasis on human disease; discussion focuses on topics and techniques used in primary literature and development of specific aims for a mini-proposal.

MICR:6268 Biology and Pathogenesis of Viruses 2 s.h.
Molecular biology of animal DNA and RNA viruses, viral immunology and pathogenesis, and interaction of these viruses with eucaryotic cells; mechanisms of viral latency, persistence, cellular transformation, oncogenesis; virology literature. Prerequisites: MICR:3168 or MICR:6267.

MICR:6270 Graduate Microbial Genetics 3 s.h.
Genetics of bacteria, bacteriophages.

MICR:7207 Advanced Topics in Immunology 3 s.h.
In-depth analysis of selected areas. Prerequisites: IMMU:6201 or MICR:6201. Same as IMMU:7221.
MICR:7217 Integrated Topics in Infectious Diseases 1 s.h.
Clinical cases used to raise questions in host-microbe interactions; case/scientific exposés followed by related journal club discussions at next class session. Same as IMMU:7217.

MICR:7221 Advanced Topics in Prokaryotic Biology Module 1 1-2 s.h.
Development of critical thinking, experimental approach and design, writing, and oral presentation skills through primary literature and course specific assignments (proposal writing, writing manuscript reviews, oral presentations, small group discussions). Requirements: graduate standing in microbiology.

MICR:7222 Advanced Topics in Prokaryotic Biology Module 2 1-2 s.h.
Development of critical thinking, experimental approach and design, writing, and oral presentation skills through exposure to primary literature and assignments (proposal writing, writing manuscript reviews, oral presentations, small group discussions). Requirements: graduate standing in microbiology.

MICR:7223 Advanced Topics in Prokaryotic Biology Module 3 1-2 s.h.
Development of critical thinking, experimental approach and design, writing, and oral presentation skills through exposure to selected topics in microbiology and assignments (proposal writing, writing manuscript reviews, oral presentations, small group discussions). Requirements: graduate standing in microbiology.

MICR:7224 Advanced Topics in Prokaryotic Biology Module 4 1-2 s.h.
Development of critical thinking, experimental approach and design, writing, and oral presentation skills through exposure to selected topics in microbiology and assignments (proposal writing, writing manuscript reviews, oral presentations, small group discussions). Requirements: graduate standing in microbiology.

MICR:7226 Advanced Topics in Prokaryotic Biology Module 6 1-2 s.h.
Development of critical thinking, experimental approach and design, writing, and oral presentation skills through exposure to selected topics in microbiology and assignments (proposal writing, writing manuscript reviews, oral presentations, small group discussions). Requirements: graduate standing in microbiology.

MICR:7261 Graduate Research in Microbiology arr.
Requirements: microbiology graduate standing.

MICR:7263 Graduate Student Research Seminar 1 s.h.
Presentation of thesis work in progress. Requirements: microbiology graduate standing.

MICR:7265 Topics in Virology Literature 1 s.h.
Papers of current interest in primary virology literature.

MICR:7269 Graduate Topics in Viral Biology and Pathogenesis 1 s.h.
Topics include viral life cycles, immune response, antiviral treatments, potential for vaccine, animal models; lectures introducing subject matter; discussion of literature relevant to each week's topic. Prerequisites: MICR:6267.

MICR:8230 Dental Microbiology 3 s.h.