Microbiology and Immunology Courses (MICR)

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

MICR:1000 First-Year Seminar 1 s.h. Small discussion class taught by a faculty member; topics chosen by instructor.

MICR:1006 Small Wonders: Microbes in Our Lives 3 s.h. What everyone should know about microbes; how bacteria, viruses, and fungi affect our lives and the lives of all other creatures; how microbes harm and benefit humans and animals; class discussions focus on YouTube and current news items about microbes. GE: Natural Sciences without Lab.

MICR:2157 General Microbiology 3 s.h. Principles of bacterial and viral diversity, structure, genetics, physiology, and metabolism in contexts of molecular biology, immunology, infectious disease, and environmental microbiology. Prerequisites: BIOL:1411.

MICR:2158 General Microbiology Laboratory 2 s.h. Practice of basic techniques commonly used today for study of easy-to-grow microorganisms; variety of individual and group lab activities that challenge students to apply observations about bacteria and viruses. Corequisites: MICR:2157, if not taken as a prerequisite.

MICR:3147 Immunology and Human Disease 3 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. Prerequisites: BIOL:1411 with a minimum grade of C and BIOL:1412 with a minimum grade of C.

MICR:3150 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. Prerequisites: MICR:2157 with a minimum grade of C. Recommendations: genetics, biochemistry, and immunology.

MICR:3159 Bacteria and Human Disease 3 s.h. Infection and replication strategies of bacteria with an emphasis on human disease; for students interested in microbiology or other biological sciences, epidemiology, and/or health-related occupations. Prerequisites: MICR:2157 with a minimum grade of C.

MICR:3160 Bacterial Physiology and Cell Biology 2 s.h. Bacterial physiology and cell biology with reference to model organisms and adaptations to extreme environments; topics include energy metabolism, growth, cell structure, macromolecular assembly, cell division, microbial development, and microbial interactions; lectures augmented with readings from primary literature to give students a strong foundation in prokaryotic biology and approaches used in modern microbiology research. Prerequisites: MICR:2157 with a minimum grade of C and (BIOL:3120 or BIOL:3110).

MICR:3164 Microbiology and Human Health 4 s.h. Microbiology for nursing, pharmacy, and pre-health professions. Prerequisites: BIOL:1411 or BIOL:1140 or BIOL:1141.

MICR:3165 Bacteria and Human Disease Laboratory and Discussion 3 s.h. Use of bacterial genetics and molecular biology techniques and methodologies to study bacteria which cause human disease; development of skills in data analysis and presentation, reading scientific literature, and writing scientific abstracts; for students interested in microbiology or other biological sciences, epidemiology, and/or health-related occupations. Prerequisites: MICR:2157 with a minimum grade of C and MICR:2158 with a minimum grade of C. Corequisites: MICR:3159 or MICR:3170, if not taken as a prerequisite.

MICR:3166 Microbiology Literature Discussion 1 s.h. Students read and discuss papers from microbiology literature that address current issues in microbiology; for students interested in microbiology or other biological sciences, epidemiology, and/or health-related occupations. Prerequisites: MICR:2157 with a minimum grade of C.

MICR:3168 Viruses and Human Disease 3 s.h. Infection and replication strategies of viruses with an emphasis on human disease; for microbiology majors as well as students interested in pre-medicine, biological sciences, epidemiology, and/or other health-related occupations. Prerequisites: BIOL:1411 with a minimum grade of C or MICR:2157 with a minimum grade of C.

MICR:3170 Microbial Genetics 2 s.h. Genetics of bacteria and bacteriophages including classical, molecular, and genome-wide approaches. Prerequisites: BIOL:2512 with a minimum grade of C or MICR:2157 with a minimum grade of C.

MICR:3177 Virology Discussion 1 s.h. Students read and discuss papers from virology literature that address current issues in virology. Prerequisites: MICR:2157 with a minimum grade of C. Corequisites: MICR:3168 (if not taken as a prerequisite).

MICR:3178 Virology Laboratory 2 s.h. Practical approaches to studying viruses; basic techniques in virology including virus detection, virus growth measurement, and virus genetics. Prerequisites: MICR:2157 with a minimum grade of C and MICR:2158 with a minimum grade of C. Corequisites: MICR:3168 (if not taken as a prerequisite).

MICR:3190 Web-Based Nursing, Pharmacy, and Allied Health Microbiology 4 s.h. Microbiology for nursing and other health sciences; principles of immunology; web-based instruction. Prerequisites: BIOL:1140 or BIOL:1411 or BIOL:1141. Recommendations: introductory biology, or pathology and general chemistry.

MICR:4161 Undergraduate Research in Microbiology 3 s.h. Experimental research under faculty supervision. Prerequisites: BIOL:1411.

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:4171 Honors Undergraduate Research in Microbiology 1 s.h. 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 related discipline, and current or prior research in a microbiology and immunology laboratory.

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 stereochemistry techniques; individualized laboratory instruction. Prerequisites: BIOL:2723. Same as ACB:5218, BIOL:5218.

MICR:5264 Directed Study in Microbiology arr.

MICR:5875 Perspectives in Biocatalysis 1-3 s.h.
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, CEE: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:6201.

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 Bacterial Physiology and Cell Biology 2 s.h.
Bacterial physiology and cell biology with reference to model organisms and adaptations to extreme environments; topics include energy metabolism, growth, cell structure, macromolecular assembly, cell division, microbial development, and microbial interactions; lectures augmented with readings from primary literature to give students a strong foundation in prokaryotic biology and approaches 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 2 s.h.
Genetics of bacteria and bacteriophages including classical, molecular, and genome-wide approaches.

MICR:7207 Advanced Topics in Immunology 3 s.h.
In-depth analysis of selected areas. Prerequisites: IMMU:6201 or IMMU:6201. Same as IMMU:7221.

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:8230 Dental Microbiology 3 s.h.