

MICROBIOLOGY (MIC & MICL)

205. General Microbiology. Credit 3 hours. Prerequisites: GBIO 151 and 153 or permission of Department Head and registration for or prior credit for Microbiology 207. A survey of the fundamental principles and concepts of the biology of microorganisms including biochemistry, cell biology, metabolism, photosynthesis, cell division, reproduction, genetics, molecular biology, development, evolution, ecology, and diversity as well as a survey of microbial infections and immunity to infectious diseases. For students majoring or minoring in Biology credit toward the degree will not be granted for both MIC 205 and 223. Three hours of lecture per week.

207. General Microbiology Laboratory. Credit 1 hour. Prerequisite: Registration for or prior credit for Microbiology 205 [105]. A survey of laboratory techniques used to study cellular morphology, growth, metabolism, and identification of bacteria. For students majoring or minoring in Biology credit toward the degree will not be granted for both Microbiology 207 and 224. Two hours of laboratory per week.

223. Medical Microbiology. Credit 3 hours. Prerequisite: GBIO 151 and BIOL 152 or permission of Department Head and registration in or prior credit for Microbiology 224. An introductory course in microbiology with emphasis on the medically important microorganisms and their relationship to disease and immunity. This course is designed primarily for students in Nursing and Allied Health curricula. For students majoring or minoring in Biology credit toward the degree will not be granted for both Microbiology 205 and 223. Additional hours will not be counted toward student's major or in cumulative GPA average. Three hours lecture per week.

224. Medical Microbiology Laboratory. Credit 1 hour. Prerequisite: Registration in or prior credit for Microbiology 223. A series of laboratory exercises designed to illustrate the material studied in Microbiology 223. For students majoring or minoring in Biology credit toward the degree will not be granted for both Microbiology 107 and 224. Two hours of laboratory per week.

313. Microbial Ecology. Credit 3 hours. Prerequisite: Microbiology 205 or permission of the Department Head. A study of the role of microorganisms in the flow of materials and energy through global ecosystems, and in transformation of organic and inorganic materials. The role of microorganisms in the major biogeochemical cycles, carbon, nitrogen, sulfur, and phosphorus will be covered. Three hours of lecture per week.

325. Advanced General Microbiology. Credit 4 hours. Prerequisite: Microbiology 205-207 or 223-224 or permission of Department Head. Advanced microbiological techniques; practices used in determinative microbiology. Two hours of lecture and four hours of laboratory per week.

423/523. Environmental Microbiology. Credit 4 hours. Prerequisite: Microbiology 205 or permission of the Department Head. A study of the application of modern microbiological concepts to water pollution, contamination of soil and atmosphere with the intent of understanding the complex microbial processes underlying environmental deterioration, its control and prevention. A major emphasis will be placed on water and wastewater management. Two hours of lecture and four hours laboratory per week.

436/536. Pathogenic Bacteria. Credit 4 hours. Prerequisite: Microbiology 205-207 or 223-224 and Junior standing or permission of the Department Head. A study of the major bacterial pathogens and their relationship to disease and immunity. The laboratory stresses techniques used in the isolation and identification of pathogenic bacteria. Two hours of lecture and four hours of laboratory per week.

438/538. Soil Microbiology. Credit 4 hours. Prerequisite: 205-207 or 223-224 and Junior standing. A study of soil microorganisms, the impact of environmental factors, and survey of the major nutrient transformations occurring in soil. Two hours of lecture and four hours of laboratory per week.

457/557. Dairy and Food Microbiology. Credit 4 hours. Prerequisite: Microbiology 325 or permission of Department Head. A study of beneficial, pathogenic and spoilage microorganisms associated with dairy and food microbiology. Two hours of lecture and four hours of laboratory per week.

460/560. Immunology. Credit 4 hours. Prerequisites: Microbiology 205-207 and GBIO 200. GBIO 312 recommended. An introduction to the biology of the immune system, including the genes, molecules, cells, and mechanisms that mediate immune recognition and response. Topics covered include innate and adaptive immunity, humoral and cellular components, lymphocyte development and activation, and immune effector mechanisms. A portion of the course will be devoted to the immune system in health and disease and will cover immune responses to infection, evasion strategies of various pathogens, vaccination, immune deficiency diseases (including AIDS), autoimmunity, and cancer. Emphasis will be placed on understanding the experimental basis of the field of immunology. Three hours of lecture and three hours of laboratory per week.

461/561. Bacterial Metabolism. Credit 4 hours. Prerequisite: Microbiology 205 or 223, or CHEM 265, and junior standing or permission of Department Head. A study of the metabolism as related to growth and energetics of eubacteria and archaeobacteria. Two hours of lecture and four hours of laboratory per week.

463/563. Virology. Credit 4 hours. Prerequisite: Microbiology 205-207, and GBIO 200. Introduction to molecular and cellular mechanisms mediating virus infection in bacteria, animals, and plants. Topics include specific virus life cycles, cellular and immune responses, evasion strategies, subviral entities, and viral evolution. Seminar component focuses on reading/discussion of classic and current virology research papers. Three hours of lecture and three hours of seminar per week.

465/565. Recombinant DNA Techniques. Credit 4 hours. Prerequisite: MIC 205 or 223, or CHEM 265, or GBIO 312, and junior standing or permission of Department Head. A study of the concepts and techniques involved in recombinant DNA research and their application to genetic analysis in bacterial model systems. Laboratories and designed to compliment and reinforce the lecture. Two hours of lecture and four hours of laboratory per week.

610. Industrial Microbiology. Credit 4 hours. Prerequisite: Microbiology 461/561 or equivalent. The use of microbes in industrial processes such as production of antibiotics, vitamins, and chemicals. Two hours of lecture and four hours of laboratory per week.

615. Determinative Microbiology. Credit 4 hours. Prerequisite: Microbiology 461/561 or consent of the Department Head. A study of the classification, identification and nomenclature of the 19 groups of bacteria. One hour of lecture and six hours of laboratory per week.

640. Microbial Physiology. Credit 4 hours. Prerequisite: Microbiology 461/561 or equivalent. A study of the relationships between structure and function of bacteria and allied organisms. Two hours of lecture and four hours of laboratory per week.

650. Microbial Genetics. Credit 3 hours. Prerequisite: Microbiology 461/561 or equivalent. The genetics of microorganisms with special emphasis on the molecular level.