
MI Microbiology and Immunology

- MI 494G IMMUNOBIOLOGY. (3)**
A survey of theories and mechanisms of immunity, including: nature of antigens and antibodies, antigen-antibody reactions, immunocompetent cells, immunogenetics, allergic reactions, tumor immunology and transplantation immunology. Prereq: BCH 401G (may be taken concurrently) and BIO 208 or BIO 308 or consent of instructor. (Same as BIO 494G.)
- MI 495G BACTERIAL PATHOGENESIS. (3)**
This course will examine the pathogenic mechanisms used by bacteria to cause human disease. Bacterial virulence factors and host susceptibility factors will be discussed, with an emphasis on understanding the techniques that can be used to identify these traits in newly emerging pathogens. Prereq: BIO 308, BIO 315, BCH 401 recommended. Or permission of instructor. (Same as BIO 495G.)
- MI 582 VIROLOGY. (3)**
Physical, chemical and biological properties of viruses. Modes of replication and control of gene product formation displayed by representative plant, animal, and bacterial viruses. Prereq: BIO 304 and biochemistry or equivalent strongly recommended, or consent of instructor. (Same as BIO 582.)
- MI 595 IMMUNOBIOLOGY LABORATORY. (2)**
Laboratory in immunology and serology. Preparation, standardization, and uses of biological products; serology. Laboratory; four hours. Prereq: BIO/MI 494G or concurrently; or consent of instructor. (Same as BIO 595.)
- MI 598 CLINICAL MICROBIOLOGY. (3)**
An introduction to the concepts of clinical microbiology through a survey of the microbial diseases of man using an organ system approach. Prereq: BIO 208 and 209, BIO 476G recommended, CHE 230 or 236, or consent of instructor. (Same as PAT 598.)
- MI 601 SPECIAL TOPICS IN MOLECULAR AND CELLULAR GENETICS. (1)**
Each semester five distinguished scientists visit the UK campus to deliver a series of three formal lectures each and participate in numerous informal contacts with graduate students. The emphasis is on the presentation of the most current advances (often unpublished) in selected topics in molecular and cellular genetics. May be repeated to a maximum of six credits. (Same as BCH/BIO/PLS/PPA 601.)
- MI 615 MOLECULAR BIOLOGY. (3)**
This course will develop the student's ability to critically read and evaluate the primary literature in selected areas of molecular biology; various experimental systems and techniques are discussed. While there is some lecture, the time will be predominately spent in class discussions of the primary literature. Prereq: An advanced course in molecular biology and genetics (e.g. IBS 602) or consent of instructor. (Same as BCH/BIO 615.)
- MI 616 BIOLOGY AND THERAPY OF CANCER. (3)**
Biology of cancer will be discussed at the molecular, cellular and organismic level. Emphasis will be placed on cellular signaling, apoptosis and cell cycle unique to cancer cells, which affects tumor cell behavior and its interactions with the host immune system. The biology of hematopoietic cells will also be included. Clinicians active in treatment and research of various types of cancer will be invited to participate in the lectures. Prereq: BCH 502, 502, BIO 685. (Same as MED/PHA 616.)
- MI 685 IMMUNOBIOLOGY, INFECTION AND INFLAMMATION. (3)**
An introductory level graduate course surveying current trends in immunology including the organization of the immune system, cells important for immunity and inflammation; types of immune responses, cellular immunology, molecular immunology, self-nonself discrimination, vaccines and immune mediated diseases. Prereq: BCH 401G, or BCH 501 or 502, IBS 501 or equivalent or consent of the course director. (Same as BIO 685.)
- MI 707 CONTEMPORARY TOPICS IN IMMUNOLOGY. (3)**
This course will deal with controversial and evolving areas of immunology. Lectures in a given topic will be accompanied by student discussion of contemporary literature. Prereq: MI 685 or equivalent or consent of instructor. (Same as BIO 707.)
- MI 710 SPECIAL TOPICS IN MICROBIOLOGY. (2)**
A variety of topics relating to modern molecular and cell biology. Prereq: Consent of instructor.

MI Microbiology and Immunology

- MI 720 MICROBIAL STRUCTURE AND FUNCTION. (3)**
Molecular basis of structure and function in unicellular microbes. Molecular genetic and structural approaches to the analysis of bacterial architecture growth, division, and differentiation. Prereq: (to reflect appropriate IBS course). (Same as BIO 720 and OBI 720).
- MI 725 MECHANISMS OF MICROBIAL PATHOGENESIS. (3)**
Mechanisms of Microbial Pathogenesis is designed to cover major pathogenic mechanisms of bacteria, protozoa, fungi and viruses. Since it is impossible to include every possible pathogen, we instead focus on selected pathogens that illustrate particular lifestyles and pathogenic strategies. Emphasis is given to covering host mechanisms that combat the different weapons and lifestyles of the disease causing microbes. Students will gain an understanding of the interplay between pathogen and host and appreciate the myriad ways in which microbes have learned to subvert host pathways and evade the immune system. The course starts with an introduction to pathogenic concepts and immune responses, and then proceeds to the selected pathogens, including *Listeria*, *Chlamydia*, *Mycobacterium*, *Toxoplasma*, *Ebola*, *Influenza*, and *HIV*. The course is a mixture of lecture and discussion. Students will read current literature, assigned by their instructors, and participate in classroom discussions of the papers. Prereq: MI 720 or MI 495G.
- MI 748 MASTER'S THESIS RESEARCH. (0)**
Half-time to full-time work on thesis. May be repeated to a maximum of six semesters. Prereq: All course work toward the degree must be completed.
- MI 749 DISSERTATION RESEARCH. (0)**
Half-time to full-time work on dissertation. May be repeated to a maximum of six semesters. Prereq: Registration for two full-time semesters of 769 residence credit following the successful completion of the qualifying exams. (Same as MB 749.)
- MI 767 DISSERTATION RESIDENCY CREDIT. (2)**
Residency credit for dissertation research after the qualifying examination. Students may register for this course in the semester of the qualifying examination. A minimum of two semesters are required as well as continuous enrollment (Fall and Spring) until the dissertation is completed and defended.
- MI 768 RESIDENCE CREDIT FOR MASTER'S DEGREE. (1-6)**
May be repeated to a maximum of 12 hours. (Same as MB 768.)
- MI 769 RESIDENCE CREDIT FOR THE DOCTOR'S DEGREE. (1-12)**
May be repeated indefinitely. (Same as MB 769.)
- MI 772 SEMINAR IN MICROBIOLOGY. (0-1)**
Review of current literature in microbiology; presentation of papers on work in progress in the department or on assigned topics; reports on meetings of national and international scientific and professional societies and symposia. Required of all graduate students. Two hours per week. May be repeated nine times for a maximum of 10 credits. (Same as BIO 772.)
- MI 798 RESEARCH IN MICROBIOLOGY. (1-9)**
May be repeated to a maximum of 24 credits. Prereq: Consent of instructor. (Same as BIO 798.)
- MI 815 FIRST-YEAR ELECTIVE, MEDICAL MICROBIOLOGY AND IMMUNOLOGY. (1-3)**
With the advice and approval of his or her faculty adviser, the first-year student may choose approved electives offered by the Department of Medical Microbiology and Immunology. The intent is to provide the student an opportunity for exploration and study in an area which supplements and/or complements required course work in the first-year curriculum. Pass-fail only. Prereq: Admission to first year, College of Medicine.
- MI 816 CELLULAR STRUCTURE AND FUNCTION/GENETICS. (4)**
The course combines small group meetings, lecture, clinical correlations, problem-based learning, and problem-solving sessions in providing an understanding of the relationship of human genetics to human health and disease. Close integration with biochemistry topics provides a better picture of how biochemistry, genetics and molecular biology contribute to normal human development and medicine. Lecture, 20 hours per week. Prereq: Admission to Medical School (first year).

