MIC-Microbiology

Courses

MIC 150. Current Topics In Immunology. 1 Hour.
The goal of this seminar course is to present basic concepts in immunology as they relate to important current issues. The importance of the immune system in health and disease will be highlighted.

MIC 210. Special Topics in Immunology. 1-3 Hour.
This course covers introductory topics that are related to immunology and host defense.
Prerequisites: BY 123 [Min Grade: C] and BY 124 [Min Grade: C]

MIC 250. Seminars in Immunology. 1 Hour.
This seminar will feature a 30-minute introduction of a new basic concept in immunology followed by a 15-minute presentation from an individual faculty member who does research on that basic concept and a 15-minute discussion session.

MIC 275. Introduction to the Immune System. 3 Hours.
This course will provide a general overview of the immune system in protecting against microbial pathogens. The components of the immune system will be introduced, including the cells and tissues important for mediating immunity.
Prerequisites: BY 123 [Min Grade: C]

MIC 310. Special Topics in Immunology. 1-3 Hour.
This course covers topics related to immunology and host defense.
Prerequisites: BY 123 [Min Grade: C] and BY 124 [Min Grade: C] and MIC 275 [Min Grade: C]

MIC 325. Immunity to Emerging Infectious Disease. 3 Hours.
This course will: 1) discuss the cellular and molecular mechanisms employed by the immune system to provide protection against infectious microbial pathogens; 2) compare endemic versus emerging pathogens; 3) cover immunological principles important for detection of infectious organisms and infection; and 4) explain the development of vaccines, monoclonal antibodies, and anti-microbials, and their importance in providing protection against infectious diseases.
Prerequisites: MIC 275 [Min Grade: C]

MIC 350. Immunology and Human Health. 3 Hours.
This course will describe diseases that occur as a result of a breakdown in immune function (e.g. immunodeficiency) or loss of immune regulation (e.g. autoimmunity) and discuss how components of the immune system have been harnessed to generate diagnostics to detect disease and immunotherapeutics that can fight disease through targeted approaches.
Prerequisites: MIC 275 [Min Grade: C]

MIC 398. Undergraduate Research in Immunology & Host Defense. 0-6 Hours.
Research project under the supervision of a faculty sponsor. May be repeated for a total of 9 semester hours of credit. Students must have completed 12 semester hours of BY or MIC with a GPA of 3.0 and must receive permission of the instructor.
Prerequisites: PSDO 200 [Min Grade: C]

MIC 400. The Microbiome in Health and Immunity. 3 Hours.
This course will review the functions of the immune system and discuss the role of the microbiome in health and disease. This course will use a personal microbiome analysis project to develop information literacy, critical thinking, and communication skills while investigating the interplay between the microbiota and immune system components. Additional topics including the role of the microbiome in maintaining gut health, influencing the gut-brain axis, and nutrient synthesis will also be discussed.
Prerequisites: MIC 275 [Min Grade: C]

MIC 401. Foundations in Immunology: The Innate Immune System. 3 Hours.
This course will introduce the cells, receptors, signaling pathways and soluble mediators associated with the innate immune response. The basic components of the innate immune system will then be discussed in the context of their role in the physical, physiological, phagocytic and inflammatory barriers that comprise the innate immune system. Importantly, emphasis will be placed on the molecular and cellular mechanisms that are used by the innate immune system to detect and respond to microbial pathogens to provide the first line of defense.
Prerequisites: MIC 275 [Min Grade: C]

MIC 402. Foundations in Immunology: The Adaptive Immune System. 3 Hours.
This course will provide an in-depth analysis of the cells (T, B and antigen presenting cells), tissues (primary and secondary) and soluble factors (cytokines and chemokines) that comprise the adaptive humoral immune response. The course will examine how cells of the adaptive immune system discriminate self from non-self, including the nature of antigen receptors, the types of antigens recognized and the signals involved in the generation of effector cells that mediate the response.
Prerequisites: MIC 275 [Min Grade: C]

MIC 403. Foundations in Immunology: Microbial Pathogen-Immune System Interaction. 3 Hours.
This course will provide an overview of major concepts related to virulence mechanisms utilized by microbial pathogens and their effect on the host immune response. Emphasis will be placed on important virulence factors/mechanisms associated with bacterial, viral and fungal pathogens and how these alter various components of the innate and adaptive immune responses to allow escape of the pathogen and its survival. This course will introduce the concept of emerging infectious diseases and how their spread is related to their ability to escape detection by the immune system.
Prerequisites: MIC 401 [Min Grade: C] and MIC 402 [Min Grade: C]

MIC 404. Foundations in Immunology: Immunologically-Mediated Diseases. 3 Hours.
This course will focus on the role of the immune system, including the molecular and cellular processes, that contribute to morbidity and mortality associated with immunodeficiency (congenital and acquired), asthma/allergy, autoimmunity (systemic and organ-specific), transplantation and inflammatory syndromes associated with heart disease, cancer, chronic neurological disease and diabetes.
Prerequisites: MIC 401 [Min Grade: C] and MIC 402 [Min Grade: C]

MIC 410. Special Topics in Immunology. 1-3 Hour.
This course covers advanced topics related to immunology and host defense.
Prerequisites: MIC 401 [Min Grade: C] and MIC 402 [Min Grade: C]

MIC 450. Current Topics in Immunology. 1 Hour.
The goal of this seminar course is to present advanced concepts in immunology as they relate to important current issues. The importance of the immune system in health and disease will be highlighted.
Prerequisites: MIC 401 [Min Grade: C] and MIC 402 [Min Grade: C]

MIC 451. Seminar in Immunology Research. 1 Hour.
This seminar will feature a 30 minute introduction of a new advanced concept/technology in immunology followed by a 15 minute presentation from an individual faculty member who does research on that advanced concept/technology and a 15 minute discussion.
Prerequisites: MIC 401 [Min Grade: C] and MIC 402 [Min Grade: C]

MIC 490. Immunology Thesis. 0 Hours.
Students in the Undergraduate Immunology Program will submit documents and complete assessments required for graduation.

MIC 492. Undergraduate Research Seminar in Immunology and Host Defense. 3 Hours.
Elective course for non-Immunology Honors students who have completed at least one semester (3 credit hours) of MIC 398. Over the course of the semester, students will conduct research and learn how to develop and complete a paper or thesis on their research work while working closely with a supervising faculty member. In addition, the course will prepare them to present their research findings in a seminar format. Through these activities, students will develop effective skills in both written and oral scientific communication. Students will present a formal seminar on their research at the end of the course. Can be taken as a Capstone course (Immunology majors).

MIC 498. Honors Research in Immunology and Host Defense. 0-6 Hours.
Independent research under the supervision of a faculty mentor for students participating in the Immunology Honors Program. May be repeated for a total of 9 semester hour credits. Students must have completed 12 semester hours of BY or MIC with a GPA of 3.0 and must receive permission of the instructor.
Prerequisites: PSDO 200 [Min Grade: C]

MIC 499. Honors Research Seminar in Immunology and Host Defense. 3 Hours.
All Immunology Honors students are required to take this weekly course. Over the course of the semester, students will conduct research and learn how to develop and complete a paper or thesis on their research work while working closely with a supervising faculty member. In addition, the course will prepare them to present their research findings in a seminar format. Through these activities, students will develop effective skills in both written and oral scientific communication. Students will present a formal seminar on their research at the end of the course. This course can be taken the first semester following the completion of Honors Research in Immunology and Host Defense (MIC 498, minimum of 3 credit hours). Can be taken as a Capstone course (Immunology majors).