# IMMUNOLOGY
# (MD) {IMUN}

**506. (MICR506) Immune Mechanisms. (A)** Terri Laufer, M.D..Prerequisite(s): Permission of instructor. 4 h. 1 c.u. Taught Monday, Wednesday, with review session on Friday.

This is an introductory graduate course which surveys most areas of immunology. It is assumed that students have a background in biochemistry and molecular biology, and at least some familiarity with immunological concepts.

Topics covered include the major histocompatibility complex, structure of antibodies and T cell receptors, antigen-antibody interactions, the generation of diversity of immunoglobulins and B cells, antigen presentation, and immunological tolerance.

There will be two exams, both of which will require assessment and interpretation of experimental data and/or readings from the primary literature.

**507. Immunopathology. (A)** Schreiber.Prerequisite(s): MICR 100 or IMUN 506. 2 h

The relationship between basic immunology and clinical immunologic diseases is emphasized. Course lecturers represent University faculty who are established investigators in immunological research and established clinical immunologists Course topics include plasma protein systems; B cell, T cell, macrophage immunology; immunohematology; tumor immunology; benign and malignant, immunoproliferative disorders; neuro-immunology; pulmonary immunology; renal immunology; immune complex disease and immunoregulatory abnormalities.

**508. Immune Responses. (B)** Peter Felsburg, VMD., Ph.D. and Kate Sullivan, M.D., Ph.D..Prerequisite(s): IMUN 506 or equivalent and permission of instructor. Taught Monday, Wednesday & Friday, 9:00am-11:00am. 6 hours, 2 cu.

This course is designed to (1) extend the basic immunology principles addressed in 506, and (2) apply the fundamental principles of the mechanism of immune recognition and development presented in 506 to the immune response in health and disease in vivo. The course is designed as a series of minicourses which may change from year to year. Each minicourse will cover an important topic in immunology in detail. Students must take three minicourses over the Spring semester and must take at least one each from the basic and applied immunology categories (see below).

The course will be taught as formal lectures on Monday and Wednesday and a diThe minicourses will be taught as a combination of formal lectures and seminar-format discussions of relevant literature. Each minicourse will have a slightly different format. The minicourses will consist of 6 hours/week for 4 weeks. The semester will be divided into 3 sessions with between 2 to 3 minicourses offered each session. Progress in the course will be evaluated by an exam/paper at the end of each minicourse and class participation. The exams will require students to incorporate the knowledge and thinking gained from the in depth analyses of these topics.

**SM 520. Tutorials in Immunology. (A)** Randy Cron, M.D., Ph.D..Prerequisite(s): A senior undergraduate, graduate or professional school course in Immunology.

This tutorial course is designed to provide students with an in-depth knowledge of a specific branch of Immunology. The tutorial can be used to enable students to become more deeply acquainted with the literature related to their thesis projects or to expand on a topic that the student found interesting in one of their basic courses. The course is currently the only immunology elective and is, therefore, required for all Immunology Graduate Group students. It is also open as an elective to BGS students who meet the prerequisite. The tutorial course will be examined by the program director and the tutorial leader and the grade will be based on a written paper on the subject studied (5 to 10 typewritten pages) and by an oral presentation of the paper (15 to 20 minutes).

**599. Immunology Faculty Research Seminar. (C)** Dr. David Artis; Dr. Jonathan Maltzman.Prerequisite(s): Permission of Graduate Group Chair.

Mandatory attendance at weekly research presentations by graduate group faculty.

# IMMUNOLOGY
# (MD) {IMUN}

**605. Current Topics in Cellular and Molecular Immunology. (B)** Philip Scott, Ph.D., and Laurence Turka, M.D..Prerequisite(s): IMUN 506 or permission of instructor.

Recent developments in basic cellular and molecular immunology are discussed by students using the current literature as a resource. This course reinforces and expands upon concepts presented in immunology 506. Students gain experience in critically evaluating current literature and orally presenting and defending their ideas.

In the first part of the course, students presetn one or two papers relevant to a current topic in immunology. In the second part, the students each select a research topic and write and defned orally a small research proposal. Course aims are to provide more in-depth knowldege in specific and timely areas of immunologic research. In addition, the course encourages the development of oral presentation skills and the ability to critically evaluate published research and the ideas of one's peers.

**SM 607. Grant Writing. (B)** Drs. David Allman and Mike Madaio.Prerequisite(s): IMUN 506, 605, and/or permission of instructor.

This course will introduce the student to basic principles of grant writing. In this regard a primary objective of the course is to teach you how to describe your ideas and experimental objectives in a clear and concise manner within the standard NIH grant format. To accomplish this, you will be required to write an NIH, "RO1" type grant proposal based on your current laboratory project.

**609. (CAMB609) Vaccines and Immune Therapeutics. (A)** David Weiner, Ph.D., and Paul Offit, M.D..Prerequisite(s): The course is intended for graduate students or Medical Students in various MS, Ph.D. or MD/Ph.D. programs on the campus as well as local scientists and professionals in the community. As a prerequisite students should have taken biology, biochemistry or immunology courses at the advanced college level.

The goal of the Vaccines course is to expand on student s general understanding of the immune system and to focus this understanding towards the application of vaccination. Furthermore the course will give the student a sense of how these principles are applied to vaccine and immune therapeutic development. The course covers basic science as well as the Clinical, Ethical & Political implications of Modern Vaccines.

Initial lectures will review immune mechanisms believed to be responsible for vaccine induced protection from disease. Subsequent lectures build on this background to explore the science of vaccines for diverse pathogens, including agents of bioterrorism as well as vaccines for cancer. An appreciation for the application of laboratory science to the clinical development of vaccines is provided in the next section of the course along with lectures that focus on the ethical implications of vaccines in different situations. The financial implications of specific vaccines and their impact on the global community, is a specific focus of the course.

The course is lecture style and will have a required reading list prepared in advance to provide the students background for the specific topic. Students will be graded by course participation as well as by a final written exam. The course is intended for graduate students or Medical Students in various MS, Ph.D. or MD/Ph.D. programs on the campus as well as local scientists and professionals in the community. As a prerequisite students should have taken biology, biochemistry or immunology courses at the advanced college level. A final project will be graded from all students. The final project is to propose in a written report a vaccine strategy for a current pathogen of importance that does not as yet have an effective vaccine. Strategies used should build on the material presented in the class lectures. The details of the final paper will be further discussed in class.

**699. Laboratory Rotation. (C)** Various Immunology Group Faculty.Prerequisite(s): Permission of instructor and immunology chair.

Laboratory research conducted under a faculty advisor. Three different rotations covering usually the fall semester of the first year through the fall semester of the second year are required of all Immunology Ph.D. students.Students will defend the rotation research in their Preliminary Exams.

# IMMUNOLOGY
# (MD) {IMUN}

**799. Independent Study.**

**899. Predissertation Lab.**