MICROBIOLOGY (MCRO)

MCRO 251. Introductory Medical Microbiology. 4 Credits.
Required preparation, one semester of a basic undergraduate science class. An introductory course in microbiology that focuses on the structure, biology, and genetics of microbes in relation to human disease and the immune system. For students planning careers in pharmacy, nursing, dental hygiene, and related fields. A laboratory is required.

Rules & Requirements
Grading Status: Letter grade.

MCRO 291. Undergraduate Learning Apprentice. 1 Credits.
Permission required. Experience includes preparations, demonstrations, assistance, and attendance at weekly meetings. Apprentices will not be involved in any aspects of grading.

Rules & Requirements
IDEAs in Action Gen Ed: HI-LEARNTA.
Making Connections Gen Ed: EE - Undergraduate Learning Assistant, ULA.
Requisites: Prerequisite, MCRO 251; a grade of B or better in MCRO 251 is required.
Repeat Rules: May be repeated for credit. 3 total credits. 3 total completions.
Grading Status: Pass/Fail.

MCRO 292. Undergraduate Learning Assistant. 2 Credits.
Permission required. Experience includes preparations, demonstrations, assistance, and attendance in weekly meetings.

Rules & Requirements
IDEAs in Action Gen Ed: HI-LEARNTA.
Making Connections Gen Ed: EE - Undergraduate Learning Assistant, ULA.
Requisites: Prerequisite, MCRO 251; a grade of B or better in MCRO 251 is required.
Repeat Rules: May be repeated for credit. 4 total credits. 2 total completions.
Grading Status: Pass/Fail.

MCRO 449. Introduction to Immunology. 3 Credits.
This course provides a general overview of the evolution, organization, and function of the immune system. Instruction will be inquiry-based with extensive use of informational and instructional technology tools.

Rules & Requirements
Requisites: Prerequisites, BIOL 205; or BIOL 103, BIOL 104, and BIOL 240; or permission of the instructor for students lacking the prerequisites.
Grading Status: Letter grade.
Same as: BIOL 449.

MCRO 614. Immunobiology. 3 Credits.
A strong background in molecular biology, eukaryotic genetics, and biochemistry is required. Advanced survey course with topics that include molecular recognition, genetic mechanisms of host resistance, development of cells and cell interactions; hypersensitivity, autoimmunity, and resistance to infection. Course material from textbook and primary literature.

Rules & Requirements
Grading Status: Letter grade.

MCRO 630. Virology. 3 Credits.
Required preparation, coursework in molecular biology and cell biology. Current concepts of the chemistry, structure, replication, genetics, and the natural history of animal viruses and their host cells.

Rules & Requirements
Grading Status: Letter grade.

MCRO 631. Advanced Molecular Biology I. 3 Credits.
Required preparation for undergraduates, at least one undergraduate course in both biochemistry and genetics. DNA structure, function, and interactions in prokaryotic and eukaryotic systems, including chromosome structure, replication, recombination, repair, and genome fluidity. Three lecture hours a week.

Rules & Requirements
Grading Status: Letter grade.
Same as: GNET 631, BIOC 631, BIOL 631.

MCRO 632. Advanced Molecular Biology II. 3 Credits.
Required preparation for undergraduates, at least one undergraduate course in both biochemistry and genetics. The purpose of this course is to provide historical, basic, and current information about the flow and regulation of genetic information from DNA to RNA in a variety of biological systems. Three lecture hours a week.

Rules & Requirements
Grading Status: Letter grade.
Same as: GNET 632, BIOC 632, BIOL 632.

MCRO 635. Microbial Pathogenesis I. 3 Credits.
Permission of the instructor. Required preparation, coursework in molecular biology and genetics. Topics will include aspects of basic bacteriology as well as bacterial and fungal pathogens and mechanisms of disease.

Rules & Requirements
Grading Status: Letter grade.

MCRO 640. Microbial Pathogenesis II. 3 Credits.
Permission of the instructor or a fundamental understanding of molecular virology and immunology. Molecular pathogenesis, with a primary focus on viral pathogens. Additional topics include vaccines and genetics of host-pathogen interactions.

Rules & Requirements
Grading Status: Letter grade.

MCRO 690. Special Topics in Microbiology or Immunology. 1-15 Credits.
Permission of the department except for department majors. Designed to introduce the student to research methods. Minor investigative problems are conducted with advice and guidance of the staff. Hours and credit to be arranged, any term. May be repeated for credit two or more semesters.

Rules & Requirements
Repeat Rules: May be repeated for credit; may be repeated in the same term for different topics; 15 total credits. 5 total completions.
Grading Status: Letter grade.

MCRO 701. Seminar in Microbiology and Immunology. 1 Credits.
Faculty and student seminars on current research in microbiology and immunology.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.
MCRO 702. Seminar in Microbiology. 1 Credits.
Seminar on selected topics in microbiology.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 705. Data and Molecular Visualization for Biomedical Research. 2 Credits.
This is an introductory course focused on methods to visualize scientific data and molecular structures. The course will include: R to visualize various biomedical data and generate multiple publication-ready figures and tables, phylogenetic analysis using R and other tools, and PyMol to visualize and analyze molecular structures and create images for publication. This course will also include a large codebase on using R and state-of-art packages to summarize and visualize various data types.

Rules & Requirements
Requisites: Prerequisites, Knowledge of introductory biochemistry and molecular biology is required; Previous experiences with R and PyMol are NOT necessary for attending this class; Personal computer with 1GB RAM (4GB recommended) and three-button mouse required.
Grading Status: Letter grade.

MCRO 710. Seminar/Tutorial in Bacterial and Eukaryotic Microbes. 1-15 Credits.
One or two faculty and a small number of students will consider current research of importance in depth. Emphasis is on current literature, invited speakers, etc., rather than textbooks.

Rules & Requirements
Repeat Rules: May be repeated for credit. 15 total credits. 15 total completions.
Grading Status: Letter grade.

MCRO 711. Seminar/Tutorial in Animal Virology. 1-15 Credits.
One or two faculty and a small number of students consider current research of importance in depth. Emphasis is on current literature, invited speakers, etc., rather than textbooks.

Rules & Requirements
Repeat Rules: May be repeated for credit. 15 total credits. 99 total completions.
Grading Status: Letter grade.

MCRO 712. Seminar/Tutorial in Immunology. 1-15 Credits.
One or two faculty and a small number of students consider current research of importance in depth. Emphasis is on current literature, invited speakers, etc., rather than textbooks.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 721. Refresher Training in the Responsible Conduct of Research. 1 Credits.
MCRO 721 is a modular course that meets the requirements of the National Institutes of Health for refresher training in the Responsible Conduct of Research. The course involves a mixture of assigned readings, formal presentations by department faculty who are active in research, and small group discussions. The course grade is based on attendance and participation.

Rules & Requirements
Grading Status: Letter grade.

MCRO 790. Directed Readings in Prokaryotic Molecular Biology. 1 Credits.
Permission of the instructor or one prior prokaryotic molecular biology course. Directed readings in prokaryotic molecular biology under the direction of a member of the graduate faculty. May be repeated for credit.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 791. Directed Readings in Virology. 1 Credits.
Permission of the instructor or one prior virology course. Directed readings in virology under the direction of a member of the graduate faculty. May be repeated for credit.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 792. Directed Readings in Immunology. 1 Credits.
Permission of the instructor or one prior immunology course. Directed readings in immunology under the direction of a member of the graduate faculty. May be repeated for credit.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 795. Research Concepts. 2 Credits.
Permission of the instructor. This course will provide multiple opportunities for the student to write parts of hypothesis-based proposals, receive substantial feedback, and to rewrite the text. There will be approximately twelve single-page writing assignments.

Rules & Requirements
Grading Status: Letter grade.

MCRO 901. Research in Microbiology or Immunology. 1-15 Credits.
Permission of the department. Designed to introduce the student to research methods and special techniques. Short-term problems are conducted with the advice and guidance of the staff. May be repeated for credit.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 993. Master's Research and Thesis. 3 Credits.

Rules & Requirements
Repeat Rules: May be repeated for credit.
Grading Status: Letter grade.

MCRO 994. Doctoral Research and Dissertation. 3 Credits.

Rules & Requirements
Repeat Rules: May be repeated for credit.