BIOM 101. Careers in Microbiology. 1 Credit. (1 Lec) F
The course introduces students to educational and career opportunities in the fields of medical, molecular, ecological, and environmental microbiology. The course introduces students to the various options in the microbiology degree program. It will emphasize the differences in the options and the employment opportunities in each once a degree has been obtained.

BIOM 103IN. Unseen Universe: Microbes. 3 Credits. (2 Lec, 1 Lab) F,S
Beneficial and harmful effects of microorganisms on individual health, public health, food and water quality; are relevant to an informed citizen of the 21st century. Current news topics and historical perspectives are emphasized. Laboratory exercises investigate microbial activity in our everyday world.

BIOM 107CS. Molecules of Life. 3 Credits. (3 Lec) S
Introduction to uses of biological molecules for improving health and agriculture. Gene therapy and DNA fingerprinting are discussed in relation to social/moral issues. Intent of course is to help students develop a rational approach to evaluate cost/benefits of biotechnology to society.

BIOM 250. Microbiology for Health Sciences: Infectious Diseases. 3 Credits. (3 Lec) F,S
Introduction to the world of microorganisms and the role of viral, bacterial, fungal and parasitic infectious agents in human health. Emphasis is on public health aspects of transmission, epidemiology, treatment and control of these diseases. Also host-pathogen interactions with regards to pathogenesis and host immune responses are considered.

BIOM 290R. Undergraduate Research. 1-6 Credits. (1 Ind; 12 cr max) F,S
Directed undergraduate research/creative activity which may culminate in a written work or other creative project. Course will address responsible conduct of research. May be repeated.

BIOM 291. Special Topics. 3 Credits. (1 Lab; 12 cr max) On Demand
PREREQUISITE: None required but some may be determined necessary by each offering department. Courses not required in any curriculum for which there is a particular one time need, or given on a trial basis to determine acceptability and demand before requesting a regular course number.

BIOM 292. Independent Study. 1-4 Credits. (1-4 Ind; 6 cr max) On Demand
PREREQUISITE: Consent of instructor and approval of instructor. Directed research and study on an individual basis.

BIOM 360. General Microbiology. 5 Credits. (3 Lec, 2 Lab) F,S
PREREQUISITE: BIOC 160 or BIOC 260. COREQUISITE: CHMY 211 or CHMY 321. An introduction to major topics and subdisciplines in microbiology including microbial diversity and classification, microbial anatomy and physiology, microbial genetics, microbial ecology, medical microbiology and immunology, epidemiology and public health, and biotechnology.

BIOM 400. Medical Microbiology. 3 Credits. (2 Lec) S
PREREQUISITE: BIOM 360. Recommended BIOL 410. Selected viral, bacterial and protozoan infections of man and domestic animals will be covered with an emphasis on disease process and immune responses.

BIOM 405. Host-Associated Microbiomes. 4 Credits. (3 Lec, 1 Lab) F
PREREQUISITES: BIOL 160 and CHMY 123 or BIOC 380 This course will introduce students to the microbial ecosystems that colonize human and animal hosts, detailing their essential roles in host nutrition, health and development. Students will also be exposed to modern molecular techniques used to study these systems.

BIOM 410. Microbial Genetics. 3 Credits. (3 Lec) F
PREREQUISITE: BIOM 360, BIOC 380. The students will become familiar with concepts in microbial genetics, including DNA replication, RNA, and protein biosynthesis. Other concepts covered in the course include bacteriophages and plasmid biology, gene regulation, mobilization, and the fundamentals of genetic engineering.

BIOM 415. Microbial Diversity, Ecology, and Evolution. 3 Credits. (3 Lec) S
alternate years, to be offered even years.
PREREQUISITE: BIOM 360, BIOC 380, or consent of instructor The diversity of prokaryotic and euukaryotic microorganisms will be explored from both classical phenotypic and contemporary genotypic perspectives. The linkage between microbial diversity, its evolutionary origins, and its ecological value will be emphasized.

BIOM 421. Concepts of Plant Pathology. 3 Credits. (2 Lec, 1 Lab) S
PREREQUISITE: BIOL 170IN. An introductory course in the study of plant diseases. Includes plant pathogens, etiology of disease, and various control strategies.

BIOM 423. Mycology. 3 Credits. (2 Lec, 1 Lab) F alternate years, to be offered even years.
PREREQUISITE: BIOL 170IN. This course surveys the immense diversity of fungi, including all major groups with emphasis on structures, life cycles, identification, and ecology. It provides a basis of knowledge for the rapidly expanding relevance of fungi in research, medicine, agriculture, biotechnology, and industry. This course is co-convened with BIOM 523.

BIOM 425. Toxicology: Science of Poisons. 3 Credits. (3 Lec) S
PREREQUISITES: CHMY 141. CHMY 143, BIOL 160 This course is appropriate for pre-med, health professional, and environmental science majors. Topics include history principles, and mechanisms of toxicology, disposition of toxicants, chemical carcinogens, target organ toxicity, clinical and environmental toxicology.

BIOM 430. Applied and Environmental Microbiology. 4 Credits. (3 Lec, 1 Lab) S
PREREQUISITE: BIOM 360. The course introduces students to complex concepts in water microbiology, food microbiology, sterilization and disinfection, the use of microorganisms in manufacturing processes and in the degradation of contaminants in the environment.

BIOM 431. Medical Bacteriology. 3 Credits. (3 Lec) S
PREREQUISITE: BIOM 360; recommend BIOL 410. This course considers the nature of the agents of bacterial infectious disease; the etiology, signs, symptoms, pathogenesis, diagnosis, therapy, epidemiology, and prevention of specific diseases. The major objective is for students to gain an understanding of bacteria that cause disease in humans.

BIOM 432. Med Bacteriology Lab. 2 Credits. (2 Lab) S
PREREQUISITE: BIOM 360. COREQUISITE: BIOM 431. Laboratory methods designed to teach techniques used in cultivating and identifying bacterial pathogens and normal flora from clinical specimens. Procedures used to test the antibiotic susceptibility of pathogenic bacteria.

BIOM 435. Virology. 3 Credits. (3 Lec) F
PREREQUISITE: BIOC 160 or BIOC 260 or BIOC 375 or BIOC 320 or BIOC 380 or BIOC 442 or BIOC 444R or BIOC 445. Fundamentals of virology with emphasis on animal viruses of medical importance. Molecular aspects of structure, replication transmission and host response to viral infection will be covered.

BIOM 441. Eukaryotic Pathogens. 4 Credits. (3 Lec, 1 Lab) S
PREREQUISITE: BIOC 380 or equivalent. The study of medically important parasite and fungal pathogens. Covers the biology, taxonomy, host/parasite relationships, pathogenesis, diagnosis and treatment of protozoan and helminth parasites; as well as of pathogenic fungi; with laboratory procedures in fungal isolation and identification.

BIOM 450. Microbial Physiology. 3 Credits. (3 Lec) F
PREREQUISITE: BIOC 380, BIOM 360. An in-depth examination of microbial cell structure and function, bioenergetics, intermediary metabolism and its control, and the orchestration and regulation of cellular functions that enable microbes to adapt to and survive in their environment.

BIOM 452. Soil & Environmental Microbiology. 3 Credits. (3 Lec) S alternate years, to be offered odd years.
PREREQUISITE: CHMY 141, CHMY 143, BIOB 160 This course is appropriate for students in the fields of soil and environmental sciences, biology, and ecology. It provides an introduction to the basics of soil biology, including microbial processes, nutrient cycling, and the impact of human activities on the soil ecosystem.

BIOM 455. Research Methods in Microbiology. 4 Credits. (3 Lec, 1 Lab) S
PREREQUISITE: BIOC 380. Fundamentals of research methodology for undergraduate and graduate students in microbiology and related disciplines. Theory and application of techniques, reagents, and instrumentation will be emphasized in the lecture and laboratory. The emphasis in the course will be on recombinant DNA methodology, and the safe and effective use of radioisotopes.

BIOM 455R. Research Methods in Microbiology. 4 Credits. (3 Lec, 1 Lab) S
PREREQUISITE: BIOC 380. Fundamentals of research methodology for undergraduate and graduate students in microbiology and related disciplines. Theory and application of techniques, reagents, and instrumentation will be emphasized in the lecture and laboratory. The emphasis in the course will be on recombinant DNA methodology, and the safe and effective use of radioisotopes.

BIOM 490R. Undergraduate Research. 1-6 Credits. (1 Ind; 12 cr max) F,S,Su
PREREQUISITE: Senior standing. Directed undergraduate research/creative activity which may culminate in a research paper, journal article, or undergraduate thesis. Course will address responsible conduct of research. May be repeated.

BIOM 491. Special Topics. 1-4 Credits. (1-4 Lec; 12 cr max) On Demand
PREREQUISITE: Course prerequisites as determined for each offering. Courses not required in any curriculum for which there is a particular one-time need, or given on a trial basis to determine acceptability and demand.
BIOM 492. Independent Study. 1-3 Credits. (1 Ind; 6 cr max) On Demand
PREREQUISITE: Junior standing, consent of instructor, and approval of department head. Directed research and study on an individual basis.

BIOM 494. Seminar/Workshop. 1 Credit. (1 Sem; 4 cr max) F.S
PREREQUISITE: BIOM 360 and junior standing. Senior capstone course. Topics offered at the upper division level which are not covered in regular courses. Students participate in preparing and presenting discussion material. When taken in the senior year, this course fulfills the senior capstone course requirement.

BIOM 497. Educational Methods: Microbiology. 2 Credits. (2 Lec) F,S,Su
PREREQUISITE: BIOM 431 and BIOM 432. Instruction and practice in effective teaching methods; practice in preparing laboratory materials, assisting a class and grading.

BIOM 523. Mycology for Graduates. 3 Credits. (2 Lec, 1 Lab) F
alternate even years PREREQUISITE: Basic Biology Course or equivalent. This course is co-convened with BIOM 423. The course surveys the incredible diversity of fungi, including major groups with emphasis on structures and identification. The recent explosion of knowledge on fungi in research, medicine, agriculture, biotech begins with basic mycology.