### Biology (BIO)

#### Courses

**BIO-100. Elements in Biology. 3 Credits.**
LECT 3 hrs
A foundation providing necessary skills and concepts needed to pursue the biology major. The course stresses skill development in areas such as communication, classification, inquiry, mathematical measurement, data analysis and report writing. Skills then are applied to the study of the cell cycle and diverse life processes.
Additional Fees: Course fee applies.

**BIO-101. Anatomy and Physiology I. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
The structure and function of the human organism is studied. Special emphasis is given to interrelationships of organs and organ systems. Cellular morphology and function are included for an appreciation of the adult form. The student is introduced to basic chemistry, the cell, basic tissues, the skeletal, muscular and nervous systems. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025 and MAT-016
Additional Fees: Course fee applies.

**BIO-102. Anatomy and Physiology II. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
A continuation of Anatomy and Physiology I. The circulatory, respiratory, digestive, urinary, endocrine and reproductive systems are studied. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: BIO-101 (Minimum grade of C)
Additional Fees: Course fee applies.

**BIO-118. Biomedical Ethics. 3 Credits.**
LECT 3 hrs
This course introduces students to major ethical issues in areas of biomedicine in contemporary society. The focal point of the course is a process for ethical reasoning and ethical decision making. Students identify ethical problems, assess information relevant to decisions, identify stakeholders affected by decisions, recognize competing values, consider options, make decisions and realize the consequences of decisions. The process is applied to issues in such fields as genetics, death and dying, reproduction, public policy and medical decision making. This course does not fulfill a laboratory science requirement.

**BIO-121. General Biology I. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
An introduction to the biological sciences through a study of concepts basic to the biology science major. Topics include the fundamentals of chemistry, cell structure and function, and the nature of biological molecules, bioenergetics, protein synthesis and photosynthesis. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

**BIO-122. General Biology II. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
A continuation of General Biology I. Topics include homeostasis, animal reproduction, embryonic development, genetics, ecology and evolution. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course.
Prerequisites: BIO-121 or BIO-180 (Minimum grade of C)
Additional Fees: Course fee applies.

**BIO-123. Cell Biology. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
Fall semester only. An introduction to the fundamentals of cellular biology. Topics covered are the nature of biologically important molecules, molecular synthesis, energetics, cellular structure and function, cell reproduction, heredity, and basic laboratory techniques for cellular study. All remedial courses must be completed prior to taking this course.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-025 or ENG-022
Additional Fees: Course fee applies.

**BIO-127. Biology of Environmental Concerns. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
Designed for the non-science major. A survey of ecological issues from a variety of perspectives. The course provides an awareness of environmental problems, a knowledge of cause-and-effect relationships of diverse activities on this planet and a basis for making informed judgments about the potential solutions to environmental problems. Major topics include the roots of our environmental problems, introductory concepts in ecology, human population dynamics and control, food resources and world hunger, renewable and nonrenewable energy resources, mineral resources and solid waste, wild plant and animal resources, water resources, air pollution, water pollution, pesticides and pest control, economics, politics and the environment, world views, and ethics and the environment. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025
Additional Fees: Course fee applies.

**BIO-129. Introduction to Botany. 4 Credits.**
LECT 3 hrs, LAB 2 hrs
Botany includes studying the effects of the environment on plant growth and development, plant morphology and physiology, and plant classification. Students apply theory by propagating, maintaining and studying plants using the Landscape and Horticultural Technology laboratories and greenhouse facilities.
Additional Fees: Course fee applies.

**BIO-132. Concepts in Biology. 4 Credits.**
LECT 3 hrs, LAB 3 hrs
Designed for the non-science major. A basic introduction to the study of biological science. Topics include the hierarchy of organization, life processes, cell theory, human genetics, theories of evolution, biochemistry and some principles of ecology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025
Additional Fees: Course fee applies.
BIO-133. Human Biology. 4 Credits.
LECT 3 hrs, LAB 3 hrs
Designed for the non-science major. An introduction to the body systems and the factors which affect human physiology. Lectures include the basic anatomy and physiology of the major systems plus discussion topics emphasizing nutrition, exercise, sexuality, genetic engineering and recent advances in biotechnology. This course fulfills the general education laboratory science requirement.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025
Additional Fees: Course fee applies.

BIO-180. General Biology I - Honors. 4 Credits.
LECT 3 hrs, LAB 3 hrs
Fall Semester only. This is an introduction to the biological sciences through a study of principles and concepts basic to the major discipline of biology. Topics include fundamentals of chemistry, cell structure and function, the nature of biological molecules, energetics, synthesis and the morphology and physiology of animals and plants. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach which will emphasize both written and oral communication skills.
Prerequisites: Placement basis or MAT-016 and ENG-007 or ENG-022 or ENG-025 and permission of department chair or honors advisor
Additional Fees: Course fee applies.

BIO-181. General Biology II - Honors. 4 Credits.
LECT 3 hrs, LAB 3 hrs
Spring Semester only. A continuation of BIO-180 General Biology I Honors. Topics include homeostasis, animal reproduction and embryonic development, genetics, ecology, and evolution. Dissection is required as part of the laboratory syllabus. Lecture and laboratory use an investigatory approach that emphasizes both written and oral communication skills.
Prerequisites: BIO-180 or BIO-121 and permission of honors advisor
Additional Fees: Course fee applies.

BIO-201. Genetics. 4 Credits.
LECT 3 hrs, LAB 1 hr
Spring Semester only. Provides the student with a broad knowledge of genetics from the molecular to the organismal level. Topics covered include the molecular and Mendelian concepts of heredity and their relationship to cell function, development, population changes and evolution, and biotechnology. Laboratory exercises emphasize a variety of techniques and skills used in genetic research and testing.
Prerequisites: BIO-121 and BIO-122 or BIO-180 and BIO-181 (Minimum grade of C required for all prerequisites)
Additional Fees: Course fee applies.

BIO-202. Ecology. 4 Credits.
LECT 3 hrs, LAB 3 hrs
Fall Semester only. This course introduces the basic fundamentals of ecology, the study of the interrelationships between organisms and their environment. Topics include an introduction to ecosystem structure and function, abiotic factors in ecosystems, energy flow and mineral cycling, population and evolutionary ecology, community ecology, a comprehensive survey of aquatic and terrestrial ecosystems, and human ecology. Laboratories and field trips are designed to introduce students to techniques used in basic ecological research.
Prerequisites: Minimum grade of C required for BIO-121 and BIO-122 or BIO-180 and BIO-181 or LHT-110
Additional Fees: Course fee applies.

BIO-215. Microbiology. 4 Credits.
LECT 3 hrs, LAB 3 hrs
A comprehensive study of microorganisms, including viruses, bacteria, fungi, protozoa and algae. Topics covered include microbial anatomy, physiology, genetics, ecology and methods of control. Research methods and modern immunological concepts also are discussed. Laboratory exercises in basic microbiological techniques and the study of living microorganisms are designed to supplement the theory presented.
Prerequisites: Placement basis or ENG-007 or ENG-022 or ENG-025 and BIO-101 or BIO-121 or BIO-123 or BIO-180 (minimum grade of C) and CHM-117 or CHM-125 and CHM-126 (minimum grade of C)
Additional Fees: Course fee applies.

BIO-223. Cell and Molecular Biology. 4 Credits.
LECT 3 hrs, LAB 3 hrs
A comprehensive study of biological molecules and their functions. Emphasis will be placed on the mechanism and regulation of macromolecule synthesis. Laboratory exercises will focus on instrumentation and techniques used in biological research.
Prerequisites: BIO-121 or BIO-123 and CHM-125 and CHM-126 Minimum grade of C required for all prerequisites
Additional Fees: Course fee applies.

BIO-226. Cooperative Work Experience - Biology. 3 Credits.
COOP 3 hrs
This course provides selected students enrolled in the Biotechnology or Biology Major with job-oriented laboratory training and practical work experience in a paid work environment prior to career employment. Students work a minimum of 135 hours. Students desiring to participate in this experience should make their interest known to the department chairperson by the end of their second semester. Offered Fall, Spring and Summer, day.
Prerequisites: Fourth semester status as a Biotechnology or Biology major and permission of department chair.

BIO-228. Internship Work Experience - Biology. 3 Credits.
COOP 3 hrs
This course provides selected students enrolled in the Biotechnology or Biology Major with job-oriented laboratory training and practical work experience in an unpaid work environment prior to career employment. Students work a minimum of 135 hours. Students desiring to participate in this experience should make their interest known to the department chairperson by the end of their second semester. Offered Fall, Spring and Summer, day.
Prerequisites: Fourth semester status as a Biotechnology or Biology major and permission of department chair.
BIO-233. Independent Study in Biology. 3 Credits.
LECT 3 hrs
An opportunity for selected students to participate in biological research under close supervision of the biology faculty. Interested students should make their interest known early in the prior semester to the department chair, who will familiarize the students with criteria for selection and the steps to be taken to gain entrance to this course. This course does not fulfill any of the science requirements in biology but is offered as a free elective.
Prerequisites: Permission of department chair
Additional Fees: Course fee applies.

BIO-274. Pathophysiology. 3 Credits.
LECT 3 hrs
Pathophysiology is a course which studies the physiological alterations associated with common disease processes which affect human beings across the lifespan. Common diseases of the major organ systems are covered as well as such general issues as infection, neoplasm, inflammation, fluid and electrolyte imbalance, trauma, and shock.
Prerequisites: BIO-101 and BIO-102 and CHM-117 Minimum grade of C required for all prerequisites.

BIO-295. Special Topics in Biology. 4 Credits.
LECT 4 hrs
An examination of selected topics or issues in biology. Topics may differ each time the course is offered. Students should consult the department chair for further information.
Prerequisites: An introductory course in Biology and permission of department chair
Additional Fees: Course fee applies.