

# Biology (BIOL)

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## Courses

### **BIOL 110 Nutrition for Life (2 Hours)**

Designed for students who wish to apply nutrition information to their lives, this course explores how food selection affects body size, body composition, performance, disease resistance, impact on the environment, and longevity. Students will analyze the composition of their diets and develop a plan of action to improve their eating behaviors. This course integrates sustainability concepts.

### **BIOL 121 Introductory Biology for Non-Majors (4 Hours) †**

This course introduces non-majors to selected concepts and principles that form the foundation of an understanding of how biological systems operate. The importance of scientific methods and processes will be explored. Biological systems will be investigated at a variety of levels, from the chemical to the biosphere, and the unity of diversity of life will be examined in light of evolutionary and genetic processes. 3 hrs. lecture & 2 hrs. instructional lab/wk.

### **BIOL 125 General Botany (5 Hours)**

This is a survey of the life, growth and structure of plants. Divisions of the plant kingdom will be presented with emphasis on life cycles, anatomy, physiology and ecology of major groups. Students will do microscopic and macroscopic analysis of the major division.

### **BIOL 125H HON: General Botany\* (1 Hour)**

**Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

### **BIOL 127 General Zoology (5 Hours)**

This is a survey of the life, structure, and growth of animals. Students will concentrate on identifying animals by their structural characteristics and looking at the role adaptation plays in anatomical and physiological features. Students will do dissections and microscopic analysis of the major phyla.

### **BIOL 130H HON: Environmental Science\* (1 Hour)**

**Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

### **BIOL 132 Introduction to Public Health (3 Hours)**

This is an introductory course in public health. It provides a background in many areas of public health with an emphasis on the health system and understanding and measuring health, disease and illness. Epidemiology, food safety and animal health will also be examined. Public health emergency preparedness, the public health workforce and public health administration will also be studied. Students will learn about public health nursing, public health education and the role of law and government in public health. Students will also examine environmental and occupational health. The different types of public health professional occupations and future challenges for public health will be examined.

### **BIOL 132H HON: Introduction to Public Health\* (1 Hour)**

**Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

### **BIOL 135 Principles of Cell and Molecular Biology (4 Hours) †**

This course is for biology majors and students planning to take additional courses in the life sciences. Subjects covered include the nature of science; the levels of organization and emergent properties of life; basic biochemistry and bioenergetics; cell structure and function; cellular reproduction; Mendelian and molecular genetics and their relationships to the principles of evolution; basic laboratory skills; and experimentation. The lab activities allow for application of the topics presented in the lecture.

### **BIOL 135H HON: Principles of Cell and Molecular Biology\* (1 Hour)**

**Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

### **BIOL 140 Human Anatomy (4 Hours) †**

Students will study gross and microscopic aspects of cells, tissues and organ systems of the human body. They will concentrate on a detailed analysis of the structure of each body system.

**BIOL 140H HON: Human Anatomy\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 144 Human Anatomy and Physiology\* (5 Hours) †****Prerequisites** : (RDG 096 or RDG 126) or College Reading Readiness.

This course provides basic knowledge on human structures and their function. Students will study the relationship of structures to function in the organ systems of the human body. Emphasis will be on the identification of the anatomical features and their functions.

**BIOL 144H HON: Human Anatomy and Physiology\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 145 Human Anatomy and Physiology Dissection\* (1 Hour)****Prerequisites** : BIOL 144 and department approval.

Students will dissect the cat and study the relationship of structures to function in the organ systems of the cat. In this laboratory course, they will also dissect the cow kidney, heart, brain and eye. Students will compare and contrast these structures and functions with the organ systems of the human body.

**BIOL 150 Biology of Organisms\* (5 Hours) †****Prerequisites** : (RDG 096 or RDG 126 or College Reading Readiness) and (BIOL 125 or BIOL 127 or BIOL 135) or department approval.

This is a survey of the three domains of life. Archaea, bacteria, and eukaryotes will be presented, with emphasis on life cycles, anatomy, physiology, evolution, and ecology of the major groups.

**BIOL 150H HON: Biology of Organisms\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 161 Introduction to Biotechnology\* (4 Hours)****Prerequisites** : CHEM 122 with a grade of "C" or higher or (CHEM 124 with a grade of "C" or higher and CHEM 125 with a grade of "C" or higher).**Prerequisites or corequisites**: BIOL 135 with a grade of "C" or higher.

This course is an introduction to biotechnology, including career exploration, history and applications of DNA/RNA technology, molecular biology, and bioethics. General manufacturing practice will be utilized throughout the course and students will use and develop Standard Operating Procedures for biotechnology related protocols. Students will learn the history and ethical uses of biotechnology and be expected to communicate topics related to biotechnology to the general public.

**BIOL 205 General Genetics\* (4 Hours)****Prerequisites** : BIOL 135 with a grade of "C" or higher.

This introductory course emphasizes human heredity using concepts from classical and modern genetics. Themes of advancing technologies and bioethical issues are interwoven in the basic background fabric of the course.

**BIOL 214 Introduction to Teaching Math and Science I\* (1 Hour)****Prerequisites** : MATH 171 with a grade of "C" or higher or an appropriate score on the math placement test or department approval.

This course allows math and science students to explore and develop an appreciation for teaching as a career. To support their learning, students will be introduced to the theory and practice that is necessary to design and deliver quality instruction. They will plan and implement lessons of an inquiry-based curriculum in an elementary classroom during the semester. MATH 214, ASTR 214, BIOL 214, CHEM 214, GEOS 214, PHYS 214 and PSCI 214 are the same course; enroll in only one.

**BIOL 215 Introduction to Teaching Math and Science II\* (1 Hour)****Prerequisites** : ASTR 214 with a grade of "C" or higher or BIOL 214 with a grade of "C" or higher or CHEM 214 with a grade of "C" or higher or GEOS 214 with a grade of "C" or higher or MATH 214 with a grade of "C" or higher or PHYS 214 with a grade of "C" or higher or PSCI 214 with a grade of "C" or higher.

Students learn about the middle school environment and work on math and science inquiry-based lesson analysis, design and assessment. Student partners will plan and teach three inquiry-based lessons in a middle school. The course emphasizes writing 5E lesson plans with a focus on the importance of using appropriate questioning and assessment strategies throughout the lesson, as well as how to analyze and modify a lesson based on personal reflections and observer feedback. By the completion of the course, students should be able to reflect on their personal suitability/interest in teaching secondary math or science, and develop a feasible pathway to a career in teaching. MATH 215, ASTR 215, BIOL 215, CHEM 215, GEOS 215, PHYS 215 and PSCI 215 are the same course; enroll in only one.

**BIOL 225 Human Physiology\* (4 Hours) T****Prerequisites** : BIOL 140 or BIOL 144.**Prerequisites or corequisites**: CHEM 122 or (CHEM 124 and CHEM 125).

This is an introduction to the dynamic functions of the human organism, from the chemical and molecular mechanisms that sustain cellular processes through the control systems responsible for homeostasis and the influence of these systems on the cellular function of organ and systems operation. Laboratory investigation using selected biochemical and physiological preparations allows correlation of theory with experimental observations.

**BIOL 225H HON: Human Physiology\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 227 Human Pathophysiology\* (4 Hours)****Prerequisites** : BIOL 144 or BIOL 225.

This introduction to the physiology of disease covers common disorders of the body from the cellular to the systemic level. Topics include causes, symptoms, diagnostic tests and treatments of disease.

**BIOL 227H HON: Human Pathophysiology\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 230 Microbiology\* (3 Hours)****Prerequisites** : CHEM 122 or (CHEM 124 and CHEM 125) or one year of high school chemistry.

This is a general introductory course in microbiology. It provides a background in many areas of microbiology with an emphasis on medical aspects. The structure, physiology, antimicrobial agents, immunology and host-parasite relationship of microorganisms will be studied, with an emphasis on bacteria.

**BIOL 230H HON: Microbiology\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 231 Microbiology Lab\* (2 Hours)****Prerequisites or corequisites**: BIOL 230.

Students will learn aseptic techniques and apply them in the isolation of pure cultures of bacteria. Students will also perform various staining techniques and chemical tests to identify these bacteria. The response of bacteria to changes in environmental conditions will also be examined. Various life stages of medically important parasites will also be observed.

**BIOL 235 General Nutrition\* (3 Hours) T****Prerequisites** : CHEM 122 or (CHEM 124 and CHEM 125) and BIOL 144 or (BIOL 140 and pre/co-requisite: BIOL 225).

This introductory course provides a basic knowledge of human nutrition. Students will learn the sources and functions of the various nutrients. They will also explore the interaction of diet, disease prevention and treatment. Through the use of a computerized nutrition program, students will analyze their diets for nutritional deficiencies and excesses.

**BIOL 235H HON: General Nutrition\* (1 Hour)****Prerequisites** : Honors department approval.

One-credit hour honors contract is available to qualified students who have an interest in a more thorough investigation of a topic related to this subject. An honors contract may incorporate research, a paper, or project and includes individual meetings with a faculty mentor. Student must be currently enrolled in the regular section of the courses or have completed it the previous semester. Contact the Honors Program Office, COM 201, for more information.

**BIOL 240 General Pharmacology\* (3 Hours)****Prerequisites** : BIOL 225.

This course provides a basic understanding of the science of drugs-how they work and what they do. Students will study various drug concepts including mechanism of action, pharmacologic class, pharmaco-kinetics, pharmacodynamics and clinical implications.

**BIOL 291 Independent Study\* (1-7 Hour)**

**Prerequisites :** 2.0 GPA minimum and department approval.

Independent study is a directed, structured learning experience offered as an extension of the regular curriculum. It is intended to allow individual students to broaden their comprehension of the principles of and competencies associated with the discipline or program. Its purpose is to supplement existing courses with individualized, in-depth learning experiences. Such learning experiences may be undertaken independent of the traditional classroom setting, but will be appropriately directed and supervised by regular instructional staff. Total contact hours vary based on the learning experience.