

# Biology (BIO)

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## Courses

### **BIO-101. Anatomy and Physiology I. 4 Credits.**

RECI 15 hrs LECT 45 hrs LAB 45 hrs

The structure and function of the human organism are 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 integumentary, 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 MAT-016 or MAT-026

**Additional Fees:** Course fee applies.

### **BIO-102. Anatomy and Physiology II. 4 Credits.**

LECT 45 hrs LAB 45 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 45 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 45 hrs LAB 45 hrs

This course is an introduction to the biological sciences, which will explore foundational principles of biology, such as the fundamentals of chemistry, cell structure and function, metabolism, cellular reproduction, DNA replication, gene expression and genetics.

**Prerequisites:** Placement basis or MAT-016 or MAT-026

**Corequisites:** ENG-111 or ENG-111CL or ENG-111CW

**Additional Fees:** Course fee applies.

### **BIO-122. General Biology II. 4 Credits.**

LECT 45 hrs LAB 45 hrs

This course is a continuation of General Biology I. Topics include evolution, biological diversity, plant structure and function, animal systems, development, and reproduction and concepts of ecology. Dissection is required as part of the laboratory.

**Prerequisites:** BIO-121 or BIO-180 (Minimum grade of C)

**Additional Fees:** Course fee applies.

### **BIO-127. Biology of Environmental Concerns. 4 Credits.**

LECT 45 hrs LAB 45 hrs

Designed for the non-science major. A survey of environmental 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 non-renewable 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, worldviews, ethics, and the environment. This course fulfills the general education laboratory science requirement. This course requires field exercises that may include moderate physical activity.

**Additional Fees:** Course fee applies.

### **BIO-129. Introduction to Botany. 4 Credits.**

LECT 45 hrs LAB 30 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 45 hrs LAB 45 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.

**Additional Fees:** Course fee applies.

### **BIO-133. Human Biology. 4 Credits.**

LECT 45 hrs LAB 45 hrs

Designed for the non-science majors or for those students enrolled in Curriculum 2160, Nutrition Track. It is an introduction to the body systems and the factors that affect human physiology. Lectures include 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.

**Corequisites:** ENG-111 or ENG-111CL or ENG-111CW

**Additional Fees:** Course fee applies.

**BIO-177. Biology of Environmental Concerns Honors. 4 Credits.**

LECT 45 hrs LAB 45 hrs

Designed for the non-science major. A survey of environmental 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 non-renewable 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, worldviews, ethics, and the environment. This course fulfills the general education laboratory science requirement. This course requires field exercises that may include moderate physical activity. GPA of 3.3 or higher, CCM Honors student, or permission of CCM Honors is required to take this course.

**Prerequisites:** Permission of department chair**Additional Fees:** Course fee applies.**BIO-180. General Biology I - Honors. 4 Credits.**

LECT 45 hrs LAB 45 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 or MAT-026 and a petition granted by CCM Honors is needed to register for this course.

**Corequisites:** ENG-111 or ENG-111CL or ENG-111CW**Additional Fees:** Course fee applies.**BIO-181. General Biology II - Honors. 4 Credits.**

LECT 45 hrs LAB 45 hrs

Spring Semester only. A continuation of BIO-180 General Biology I Honors. Topics include homeostasis, animal reproduction, embryonic development, animal physiology, genetics, ecology and evolution. Dissection is required as part of the laboratory syllabus. All remedial courses must be completed prior to taking this course. GPA of 3.3 or higher, CCM Honors student, or permission of CCM Honors is required to take this course.

**Prerequisites:** BIO-180 or BIO-121 and a petition granted by CCM Honors is needed to register for this course.

**Additional Fees:** Course fee applies.**BIO-201. Genetics. 4 Credits.**

LECT 45 hrs LAB 45 hrs

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 45 hrs LAB 45 hrs

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. This course requires field exercises that may include moderate physical activity.

**Prerequisites:** Minimum grade of C required for BIO-121 and BIO-122 or BIO-180 and BIO-181

**Additional Fees:** Course fee applies.**BIO-215. Microbiology. 4 Credits.**

LECT 45 hrs LAB 45 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:** BIO-101 or BIO-121 or BIO-180 (minimum grade of C) and CHM-117 or CHM-125 (minimum grade of C)

**Corequisites:** ENG-111 or ENG-111CL or ENG-111CW**Additional Fees:** Course fee applies.**BIO-223. Cell and Molecular Biology. 4 Credits.**

LECT 45 hrs LAB 45 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 Minimum grade of C required for all prerequisites

**Additional Fees:** Course fee applies.**BIO-228. Internship Work Experience - Biology. 3 Credits.**

COOP 135 hrs

This comprehensive course provides selected students enrolled in the Biology Major with job-oriented laboratory training and practical work experience in a paid or unpaid work environment prior to career employment. The course requires a detailed description of the proposed internship, workplace attendance, regular communication with the faculty advisor, an oral presentation, a written final report, and a closing interview describing the student's work experience. 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. This course is treated as a free elective for Biology majors.

**Prerequisites:** Permission of department chair.

**BIO-229. Internship Work Experience. 2 Credits.**

COOP 90 hrs

This intermediate-level course is a free elective for Biology majors providing pre-professional work experience and laboratory training in a paid or unpaid work environment. Students work a minimum of 90 hours. Course completion requires a detailed description of the proposed internship, workplace attendance, frequent communication with the faculty advisor, a written final report, and a closing interview describing the student's work experience. Students should inquire with the department chairperson by the end of their second semester for registration.

**Prerequisites:** Permission of department chair.

**BIO-230. Internship Work Experience - Biology Internship 1 Credit. 1 Credit.**

COOP 45 hrs

This introductory course provides Biology Majors with career-oriented work experience and laboratory training and in a paid or unpaid work environment prior to career employment. The course requires a detailed description of the proposed internship, workplace attendance, frequent communication with the faculty advisor, and a written final report describing the student's work experience. Students desiring to participate in this free elective should make their interest known to the department chairperson by the end of their second semester. Students work a minimum of 45 hours.

**Prerequisites:** Permission of department chair.

**BIO-233. Independent Study in Biology. 3 Credits.**

LECT 45 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 45 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 45 hrs LAB 30 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.