

# BIOLOGICAL SCIENCE LEC/LA (BSCC)

## BSCC 1005 Fundamentals of Biology

**Credit Hours:** 4

**Prerequisites:** Appropriate test score in reading or exemption from placement testing

**General Education Category:** Natural Science CORE COURSE

**Lab Fee:** Yes

Meets General Education requirement. This is a single-semester general biology course for students who do not intend to pursue a degree in the natural sciences or a related field. Rather, the course is designed to fulfill the requirements for the Natural Science credits in the General Education (AA) plan. This course covers a broad array of biology topics at a fundamental level, including: biochemistry, cell biology, cell metabolism, genetics, evolution, plant and animal diversity, the basics of ecology, and essential human physiology. This course is a state designated core course.

## BSCC 1010 General Biology 1

**Credit Hours:** 4

**Prerequisites:** Appropriate test score in reading or exemption from placement testing

**General Education Category:** Natural Science CORE COURSE

**Lab Fee:** Yes

An introduction to principles of biology to include a study of cell structure, function and reproduction; inheritance; development; metabolism; photosynthesis; evolution; and DNA technology. Three hours of lecture and two hours of lab per week.

## BSCC 1010H General Biology 1 Honors

**Credit Hours:** 4

**Prerequisites:** Appropriate test score in reading or exemption from placement testing and admission to the EFSC Honors Program

**General Education Category:** Natural Science CORE COURSE

**Lab Fee:** Yes

Meets General Education requirement. This course is an introduction to the principles of biology including the study of cell structure and function, reproduction, inheritance, development, metabolism, photosynthesis, evolution, and DNA technology. In addition to the regular BSCC1010 course content, students will complete a biological research project. Three hours of lecture and two hours of lab per week. This course is a state-designated core course.

## BSCC 1011 General Biology 2

**Credit Hours:** 4

**Prerequisites:** BSCC 1010 or BSCC 1010H with a grade of "C" or higher

**General Education Category:** Science Gen Ed

**Lab Fee:** Yes

Meets General Education requirement. A continuation of BSCC 1010 General Biology 1. An analysis of biological systems at the organism and supraorganism levels: unity and diversity of life, organism structure and function and ecology. Three hours of lecture and three hours of lab per week.

## BSCC 1011H General Biology 2 Honors

**Credit Hours:** 4

**Prerequisites:** BSCC 1010 or BSCC 1010H with a grade of "C" or higher and admission to the EFSC Honors Program

**General Education Category:** Science Gen Ed

**Lab Fee:** Yes

Meets General Education requirement. A continuation of BSCC 1010 General Biology 1 or BSCC 1010H General Biology 1 Honors. This course is an analysis of biological systems at the organism and supraorganism levels, including unity and diversity of life, organism structure and function, and ecology. In addition to the regular BSCC 1011 course content, students will complete a biological research project. Three hours of lecture and three hours of lab per week.

## BSCC 1084 Survey of Human Anatomy and Physiology

**Credit Hours:** 4

**Prerequisites:** Appropriate test score in reading or exemption from placement testing

**General Education Category:** Science Gen Ed

**Lab Fee:** Yes

Meets General Education requirement. One semester course of human anatomy and physiology. Includes terminology; chemistry; cell biology and cellular respiration; tissues; survey of all organ systems. May be used for some Health Science programs and to meet the Biological Science requirement for graduation. This course is recommended for non-science majors and does not substitute for BSCC 1010 as the prerequisite for advanced science courses. Six hours of combined lecture and lab per week.

## BSCC 1362 Tropical Ecology

**Credit Hours:** 4

**Prerequisites:** BSCC 1005 or higher with a grade of "C" or higher and consent of instructor

Meets General Education requirement. This international field course is designed primarily for majors in biology, natural science, and related fields, yet is open to students of all majors. It is an intensive, eight-week course that includes a two-week field component in a tropical environment. The course introduces students to the general principles of tropical ecology, emphasizing forest and marine ecology, conservation, biodiversity concepts, plant and animal interactions and adaptations, effects of human disturbance on native flora and fauna, and field research techniques. Students are expected to develop and apply skills in field research and in utilizing the scientific method.

## BSCC 1426 Introduction to Biotechnology Methods

**Credit Hours:** 4

**Prerequisites:** BSCC 1010 or equivalent with a grade of "C" or higher

**Lab Fee:** Yes

This course is an introduction to biotechnology, including the scientific basis of technologies necessary to work effectively in a biotechnology laboratory, with an emphasis on current applications in medicine, agriculture, forensics, and the environment. Ethical, legal, and social issues raised by biotechnology will be discussed. Basic skills will include: following procedures and keeping records; laboratory safety procedures for biological, chemical, and radiological hazards; laboratory mathematics and measuring; preparing solutions; the separation/manipulation of biomolecules; vector construction/transformation; and bacterial culture in its relation to the production of transgenics.

### **BSCC 1427 Introduction to Biotechnology Methods 2**

**Credit Hours:** 4

**Prerequisites:** BSCC 1426 with a grade of "C" or higher

**Lab Fee:** Yes

The course provides an advanced view into various aspects of biotechnology, including the scientific basis of these technologies and emphasizing current applications in medicine, agriculture, forensics and the environment. Ethical, legal and social issues raised by biotechnology, as well as bioprocessing and quality management issues, will be discussed. Topics include genomics and gene expression, nanotechnology, gene therapy, biology of cancer, aging, and immune technologies. Advanced concepts and use of basic biotech lab instruments necessary for recombinant DNA, RNA and protein work will be stressed. Skills include: following procedures and keeping records; laboratory safety procedures for biological, chemical, and radiological hazards; laboratory mathematics and measuring; preparing solutions; and the separation/manipulation of biomolecules, in particular RNA and protein.

### **BSCC 2093 Human Anatomy and Physiology 1**

**Credit Hours:** 4

**Prerequisites:** BSCC 1010 or BSCC 1010H with a grade of "C" or higher

**General Education Category:** Science Gen Ed

**Lab Fee:** Yes

Meets General Education requirement. First of a two-semester human anatomy and physiology sequence emphasizing terminology; chemistry; cell biology; tissues; and the integumentary; skeletal, muscular, respiratory, and reproductive systems. Six hours of combined lecture and lab per week.

### **BSCC 2094 Human Anatomy and Physiology 2**

**Credit Hours:** 4

**Prerequisites:** BSCC 2093 with a grade of "C" or higher or consent of instructor

**General Education Category:** Science Gen Ed

**Lab Fee:** Yes

Meets General Education requirement. Second of a two-semester human anatomy and physiology sequence emphasizing terminology; nervous, sensory, cardiovascular, endocrine, lymphatic, digestive, and urinary systems. Three hours of lecture and three hours of lab per week.

### **BSCC 2910 Biological Research**

**Credit Hours:** 4

**Prerequisites:** BSCC 1005, BSCC 1010 or BSCC 1010H with a grade of "C" or higher

**Lab Fee:** Yes

This course will introduce students to the general principles and practical implementation of biological research. Students will conduct research under the guidance of the instructor and may work individually or in a group. Skills to be learned include, but are not limited to: forming testable hypotheses; researching and critiquing literature; designing and conducting scientific experiments; collecting and organizing data; analyzing data and making appropriate conclusions; and presenting research results.

### **BSCC 2948 Service-Learning Field Studies 1**

**Credit Hours:** 1

This course gives students opportunity to understand the relationship of theory to practice through participation in a service-learning experience. Students are required to complete 20 hours of volunteer work, a service-learning contract, and an oral and written reflection of the experience.

### **BSCC 4422 Methods and Applications in Biotechnology 2**

**Credit Hours:** 4

**Prerequisites:** BSCC 1427 - with a grade of "C" or higher

**Lab Fee:** Yes

The course provides an advanced view into various aspects of biotechnology, including the scientific basis of these technologies and emphasizing current applications in research. Ethical, legal and social issues raised by biotechnology, as well as bioprocessing and quality management issues, will be discussed. Topics include genomics and gene expression, plant and animal transgenesis, infectious disease, and biowarfare. Advanced concepts and use of basic biotech lab instruments necessary for recombinant DNA, RNA, and protein work will be stressed. Skills include: following procedures and keeping records; laboratory safety procedures for biological, chemical, and radiological hazards; laboratory mathematics and measuring; preparing solutions; and the separation/manipulation of biomolecules, in particular DNA, RNA, and protein.