BIOLOGY COURSE DESCRIPTIONS

NB 0123 (0CR)
BIOLOGICAL SCIENCE: AN INTRODUCTION

A course designed for students who have not completed the high school curricular requirement for biology. A complete course in the basic biological principles and processes.

NB 1114 (4CR)
NATURAL SCIENCE BIOLOGY (Biological Principles I)

An introductory study of broad foundations of biology including biochemistry, cell biology, genetics (transmission, population, molecular, and cellular), evolution and ecology. Emphasis in lectures is on modern understandings, theory and scientific thought. The lab emphasizes investigation and the scientific process for science majors and non−majors. Lecture 3 hours; lab 3 hours.
Prerequisite: Successful assessment based on high school record and ACT scores.

NB 1214 (4CR)
NATURAL SCIENCE BIOLOGY II (Biological Principles II)

A continuation of the study of broad foundations of biology including biodiversity of microbes, protists, fungi, plants and animals with an introduction to the study of plant and animal form and function. Emphasis in lecture is on modern understandings, theory and scientific thought. The lab emphasizes investigation and the scientific process. Intended primarily for science majors, but open to all students.
Lecture 3 hours; lab 3 hours.
Prerequisite BI 1114.

BI 1201 (1CR)
BIOLOGY I COLLOQUIUM

Facilitated discussions, discrete study groups, and collaborative problem solving provide more thorough discourse on classroom concepts and theory. Inquiry based learning techniques apply conjecture, logical reasoning, and critical thinking to support understanding and application of theory. Colloquium and core course content are based on materials covered in national standardized tests and in the Educational Testing Service (ETS). One (1) 2−hour session per week.

BI 2114 (4CR)
ZOOLOGY (Animal Diversity)

A phylogenetic survey of the animals and animal−like protists, including diversity, evolution, classification, morphology, physiology (with emphasis on vertebrates), ecology, and importance to mankind. Investigations using dissection, experimentation, and observation are emphasized in lab.
Lecture 3 hours; lab 3 hours.
Prerequisite: NB1124.

BI 2134 (4CR)
GENERAL BOTANY (Plant Diversity)

An introduction to the study of algae and plants, their structure, function, and development, including the plant cell, energetics, genetics, evolution, diversity and physiology. Higher groups are emphasized. Labs will focus on experiments and observations, with emphasis on developing critical thinking and technical skills.
Lecture 3 hours; lab 3 hours.
Prerequisite NB 1124.

BI 2214 (4CR)
COMPARATIVE VERTEBRATE ANATOMY

A phylogenetic survey of the chordates, emphasizing their evolution and morphology. The laboratory includes detailed dissections of specimens from selected species to illustrate morphological patterns.
Lecture 3 hours; lab 3 hours.
Prerequisite: BI 2114.

BI 3014 (4CR)
GENERAL MICROBIOLOGY

Diversity, classification, evolution, physiology, metabolism, ecology, and economic importance of viruses, archaea, bacteria, protista, and fungi. The laboratory emphasizes modern techniques for applying the scientific process to investigations of all taxonomic groups of microbes.
Lecture 3 hours; lab 3 hours.
Prerequisite: CH 1515, BI 2134.

BI 3104 (4CR)
HUMAN ANATOMY

A study of the human body as an adapted system of cells, tissues, organs, and organ systems, including its functional morphology. The laboratory includes a detailed dissection of the cat with reference to equivalent structure in humans.
Lecture 3 hours; lab 3 hours.
Prerequisite: BI 2114, NB 1114 for Nursing Majors.

BI 3113 (3CR)
CONCEPTS OF BIOLOGY

A lecture–demonstration course covering intermediate and advanced concepts and principles of cell structure and function, genetics, environmental science, biochemistry and microbiology. (Non–majors: BALE Program).

BI 3114 (4CR)
ENVIRONMENTAL BIOLOGY

Interactions of organisms and their environment under natural and stress conditions; impact of human and other activity on the cycling of life−−−sustaining materials within ecosystems; and environmental problems associated with population dynamics.
Lecture (3) hours; Lab 3 hours.
Prerequisite: NB 1114.

ECOLOGY

A study of the interactions of organisms with their physical and biotic environment, including individual, population, community, ecosystem, and biospheric levels. Theory and modern scientific thought are emphasized in lecture; methodology including field work, experimentation, quantitative reasoning, and scientific process are emphasized in lab.
Lecture 3 hours; lab 3 hours. Field trips required.
Prerequisites: BI 2114, BI 2134, CH 1125, MT 1323 or equivalent.

BI 3214 (4CR)
INVERTEBRATE ZOOLOGY

A phylogenetic survey of the invertebrates, including the major and minor phyla.The course emphasizes evolution, morphology, and ecology, with attention to physiology and economic importance.
The lab emphasizes investigation
and will include field trips.
Lecture 3 hours; lab 3 hours.
Prerequisite: BI 2114.

BI 3221 (1CR)
RESPONSIBLE CONDUCT IN BIOMEDICAL RESEARCH

This is a topical course in research ethics. Some key topics include Scientific Priority and Presentation, Being a Responsible Reviewer, University Policies and Procedures; Dealing with Research Misconduct, Laboratory Record Keeping−Data Ownership.
Lecture 1 hour.
Prerequisite: 8 hours of BI.

BI 3223 (3CR)
NEUROSCIENCE

This course will cover topics in neuroscience, including autonomic nervous system, sensory, motor system, hypothalamic control mechanisms, learning, memory, hippocampus, anxiety, fear/amygdala, and biological clocks/circadian rhythms/sleep−wake mechanisms.
Prerequisite: BI 2214 or BI 3104.

BI 3224 (4CR)
DEVELOPMENTAL BIOLOGY

An introduction to the biochemical, molecular, genetic, cellular and organismic level processes involved in development of higher plants and animals. The laboratory includes a detailed examination of the developmental morphology (embryology) of vertebrates and an investigative and experimental study of developmental mechanisms in a variety of taxa.
Lecture 3 hours; lab 3 hours.
Prerequisites: BI 2114, BI 2134, BI 3244, CH 3325.

BI 3234 (4CR)
GENERAL ENTOMOLOGY

An introduction to the morphology, life histories, and classification of insects. Representative forms of the major
orders of insects are studied in the laboratory. Students are required to make collections.
Lecture 3 hours; lab 3 hours
Prerequisites: BI 2114 or equivalent.

BI 3243 (3CR)
PARASITOLOGY

The life history and systematics of the major parasites of man and animal, emphasizing host parasite relation, methods of collection, preservation and identification of specimens.
Lecture 2 hours; lab 2 hours.
Prerequisites: BI 2114.

BI 3244 (4CR)
CELL BIOLOGY

A study of cell structure and function, with emphasis on eukaryotes. The lab includes an application of modern cellular and molecular techniques to investigations of cells and their activities. Lecture 3, hours lab 3 hours.
Prerequisites BI 2114, BI 2134, CH 1125 (CH 3325 recommended).

BI 3254 (4CR)
GENETICS

Principles of genetics at the population, organismic, cellular, and molecular levels, including evolution. The lab emphasizes modern and classical investigations of gene transmission and inheritance patterns in organisms, and biochemical and molecular behavior of genes in cells.
Lecture 3 hours; lab 3 hours.
Prerequisites: BI 2114, BI 2134, CH 1125, MT 1323 or equivalent.

BI 4002 (2CR)
BIOLOGY TEACHING TECHNIQUES

A practical introduction to pedagogy specific to Biology and other sciences. Includes literature review, curriculum, material selection, lesson preparation, laboratory, lectures, and other instructional formats, practice in delivery, and evaluation.
Lecture 1 hour; laboratory 2 hours.
Prerequisite: Completion of three upper division courses from the Biology Core for the B.S. in Education, Biology major.

BI 4003 (3CR)
PRACTICUM IN BIOLOGY

A practical experience working in an educational institution, agency, private foundation, conservation or agricultural agency, or medical establishment under the supervision of a practitioner where the student may apply knowledge, skills, understanding, and experience in the biological sciences. The faculty will assist the student in obtaining a placement, but placement is dependent on agreement by the student, the supervising practitioner, and the Department Chair, and the student must request placement to a specific organization in writing. The student's grade will be based on a written report by the student and one by the supervising practitioner at the completion of the assignment and will be assigned by a faculty member. Work assignments may be for no less than 12 weeks for at least 9 hours per week, or for no less than 6 weeks for at least 18 hours per week.
Prerequisite: Senior standing as a biology major, with at least 24 credits in Biology.

BI 4091 (1CR)
BIOLOGICAL SEMINAR

Individual studies of research topics through the biology literature. Each student will present one or more oral reports. Faculty members and visiting scientists will also make presentations.
Lecture 1 hour.
Prerequisite: Senior standing, completion of 3 or more courses from BI 3014, 3124, 3244, 3254.

BI 4092 (2CR)
INVESTIGATIVE TECHNIQUES IN THE BIOLOGICAL SCIENCES

Investigative techniques in the biological sciences. Basic laboratory techniques and the application of biological principles in scientific inquiry.
Laboratory 4 hours.
Prerequisite: Senior standing.

BI 4093 (3CR)
BIOLOGY RESEARCH PROBLEMS

May be repeated one time for no more than 6 CR total. Individual investigation of a question of current interest in biological science; supervised by a faculty member. Includes literature review and proposal development, original research data collection and analysis, and production of a formal report using standard scientific format following the Council of Biology Editors Style Manual. At least 9 hours of independent and directed work per week.
Prerequisite: Senior standing. May be taken by invitation only.

BI 4123 (3CR)
BIOLOGICAL PROBLEMS IN URBAN SOCIETY
Urban environmental problems, health and disease factors, pollution, biosocial interactions. (Non−majors: BALE Program)

BI 4193 (3CR)
BIOLOGY LITERATURE INVESTIGATIONS
Individual investigation of a topic in the current professional biological literature. Results in the production of a formal report using standard scientific format following the Council of Biology Editors Style Manual. At least 9 hours of independent and directed work per week.
Prerequisite: May be taken by invitation only.

BI 4213 (3CR)
WILDLIFE MANAGEMENT
Biological basis for the management of wildlife populations and habitats, with emphasis on current management problems. (Same as AS 4223).

BI 4214 (4CR)
HUMAN PHYSIOLOGY
General consideration of the principles and methods of human body functions. Lectures and laboratory demonstrations on the fundamental physiological activities of man.
Lecture 3 hours; lab 3 hours.
Prerequisites: BI 2214 or 3104; CH 1315 and CH 1515. (CH 1315 for Nursing majors).

BI 4223 (3CR)
HISTOLOGY
Preparation, examination, and analysis of microscopic structure of vertebrate tissues, with emphasis on mammalian material.
Lecture 2 hours; lab 2 hours per week.
Prerequisite: BI 2214 or 3104.

BI 4233 (3CR)
LIMNOLOGY
Physical, chemical, and biological factors in lakes and streams. (Same as AS 4233).

BI 4271 (1CR)
LABORATORY TOPICS IN BIOLOGY

This course is a series of lab/field investigations in subjects not available in other courses. Each topic will be defined around a general area of study including its principles and techniques. Topics may change from semester to semester and the course may be repeated for credit when the content changes. The course may be scheduled alone or with a related lecture topic (BI 4273). When scheduled with BI 4273, both must be taken together.
Laboratory 3 hours.
Prerequisite: Junior standing, 12 hours of BI.

BI 4273 (3CR)
LECTURE TOPICS IN BIOLOGY

This course is a series of presentations in subjects not available in other courses. Each topic will be defined around a general area of study including its theories and findings. Topics may change from semester to semester and the course may be repeated for credit when the content changes. May be scheduled alone or with a related laboratory topic (BI 4271). When scheduled with BI 4271, both must be taken together.
Lecture 3 hours.
Prerequisite: Junior standing, 12 hours of BI.

BI 4433 (3CR)
FISHERIES MANAGEMENT

Techniques and principles involved in management of fishes. (Same as AS 4433).

BI 4443 (3CR)
LIMNOLOGY

Physical, chemical, and biological factors in lakes and streams. (Same as AS 4233).

BI 4514 (4CR)
BIOCHEMISTRY

Biological principles of cellular constituents. An introduction to chemical processes in living systems. Introduction to the study of carbohydrates, lipids, and proteins.
Two (2) lectures and two (2) two hour labs per week. (Same as CH 4514).
Prerequisites: CH 2114 and CH 3325.