

BIOLOGY

USAO's biology curriculum provides the student with both an introduction to and a competency in the study of living organisms and encourages the student to develop the skills of independent and critical thought. It also seeks to provide a flexible program to meet the needs of students wishing to enter any of the numerous careers open to them as biology majors. A student may pursue the Bachelor of Science degree with a major in biology. A minor in biology is also available.

Bachelor of Science in Biology

Total hours required: 78-80.

Biology Courses (43-44 hours)

<i>Courses</i>	<i>Title</i>	<i>Hours Required (31)</i>
BIOL 1014	General Botany	4
BIOL 1114	General Zoology	4
BIOL 1222	Biological & Medical Terminology	2
BIOL 2204	Comparative Vertebrate Anatomy	4
BIOL 3014	Taxonomy of Vascular Plants	4
BIOL 3334	General Genetics	4
BIOL 3404	Principles of Ecology	4
BIOL 3815	Basic Microbiology	5

<i>Elective Course</i>	<i>Title</i>	<i>Hours Required (11-12)</i>
BIOL 2004	Oklahoma Plants	4
BIOL 2254	Human Anatomy	4
BIOL 2880	Special Topics	1-4
BIOL 2900	Workshop	1-4
BIOL 2990	Tutorial	1-4
BIOL 3104	Principles of Evolution	4
BIOL 3124	Human Physiology	4
BIOL 3204	Vertebrate Embryology	4
CHEM 3211	Biochemistry Lab	1
CHEM 3323	Biochemistry	3
BIOL 4800	Biological Projects	1-4
BIOL 4900	Workshop	1-4
BIOL 4990	Tutorial	1-4

Chemistry Courses (16-17 hours)

<i>Courses</i>	<i>Title</i>	<i>Hours Required (12)</i>
CHEM 1111	Chemistry I Lab	1
CHEM 1113	Chemistry I	3
CHEM 1121	Chemistry II Lab	1
CHEM 1123	Chemistry II	3
CHEM 3302	Organic Chemistry I Lab	2
CHEM 3303	Organic Chemistry I	3

<i>Elective Courses</i>	<i>Title</i>	<i>Hours Required (4-5)</i>
CHEM 3312	Organic Chemistry II Lab	2
CHEM 3313	Organic Chemistry II	3
CHEM 3011	Analytical Chemistry Lab	1
CHEM 3013	Analytical Chemistry	3

Physics Courses (10 hours)

<i>Courses</i>	<i>Title</i>	<i>Hours Required (10)</i>
PHYS 1301	General Physics I Lab	1
PHYS 1401	General Physics II Lab	1
PHYS 2114	General Physics I	4
PHYS 2124	General Physics II	4

Mathematics Courses (9 hours)

<i>Courses</i>	<i>Title</i>	<i>Hours Required (9)</i>
MATH 1513	College Algebra	3
MATH 1613	Trigonometry	3
MATH 2203	Elementary Statistics	3

Exit Requirements:

1. Must schedule and satisfactorily complete the exit exam which may include both a written and an oral section. (see item "d" under general requirements for graduation.)
1. If transfer students require additional upper-level hours for graduation, they must select them from the following: IDS 3223, IDS 3313, IDS 3323, IDS 4333, and IDS 4522.

Minor in Biology

24 hours, including BIOL 1014, BIOL 1114, BIOL 3815, *plus* 8 hours of biology to be selected with approval of biology advisor.

COURSE LISTINGS in BIOLOGY

- 1014 GENERAL BOTANY
Survey of plant kingdom, including algae, fungi, and higher plants with emphasis on structure, life processes, and reproduction of higher plants. Three lectures and one 3-hour laboratory per week. 4 hours.
- 1114 GENERAL ZOOLOGY
Major biological principles and concepts illustrated in structure and function of animals; emphasis is on vertebrate self-regulatory mechanisms and adaptive significance. Three lectures and one 3-hour laboratory per week. 4 hours.
- 1222 BIOLOGICAL AND MEDICAL TERMINOLOGY
Basic biological and medical terms; Greek and Latin origins of commonly used prefixes, roots, and suffixes; and current uses and interpretations of these terms. Two 1-hour lectures and exams per week. 2 hours.
- 2004 OKLAHOMA PLANTS
Study of vascular plants of Oklahoma, including classification and techniques of identification and preservation; special attention to edible, poisonous, and medicinal plants in Oklahoma. Three lectures and one 3-hour laboratory per week; field trips required. 4 hours.
- 2204 COMPARATIVE VERTEBRATE ANATOMY
Study of anatomy and evolutionary development of vertebrate organ systems. Three lectures and one 3-hour laboratory per week. 4 hours. Prerequisite: BIOL 1114.
- 2254 HUMAN ANATOMY
Development and gross morphology of the human body and its systems. Three lectures and one 3-hour laboratory per week. 4 hours.
- 2880 SPECIAL TOPICS
Special topics in biology. 1-4 hours (may be repeated for total of 6 hours).

- 2900 **WORKSHOP**
Guided study in biology under faculty supervision. Topics and methods of instruction may vary. 1-4 hours (may be repeated for total of 6 hours with change in title and topic).
- 2990 **TUTORIAL**
Independent study in biology under faculty supervision. 1-4 hours (may be repeated for total of 9 hours with change in title and content).
- 3014 **TAXONOMY OF VASCULAR PLANTS**
Classification and identification of flowering plants with emphasis on Oklahoma flora; consideration given to ecological and economic importance of selected plant groups. Two lectures and two 2-hour laboratories per week; field trips required. 4 hours. Prerequisite: BIOL 1014 *or* BIOL 2004.
- 3104 **PRINCIPLES OF EVOLUTION**
Processes of evolution with emphasis on differentiation, speciation, natural selection within populations, the nature of species, and evolution above the species level. Four lectures per week. 4 hours. Prerequisites: BIOL 1014 *and* BIOL 1114.
- 3124 **HUMAN PHYSIOLOGY**
Functions of the organ systems of the human body (e.g., circulation, digestion, respiration, excretion, reproduction, nervous, muscular, endocrine) and basic relationships between these systems (e.g., metabolism and homeostasis). Three lectures and one 3-hour laboratory per week. 4 hours. Prerequisites: BIOL 1114 *or* BIOL 2254, *plus* CHEM 1111 and CHEM 1113.
- 3204 **VERTEBRATE EMBRYOLOGY**
Development of the vertebrate body from gamete formation through early organ formation; development of frog, chicken, and pig studied in laboratory. Three lectures and one 3-hour laboratory per week. 4 hours. Prerequisites: BIOL 1114 *and* an anatomy course.
- 3334 **GENERAL GENETICS**
Principles of inheritance at the gene, chromosome, and population levels; nature of genetic material and its involvement in determination of structure and function. Three lectures and one 3-hour laboratory per week. 4 hours. Prerequisites: BIOL 1014, BIOL 1114, one year of general chemistry (biochemistry is also recommended), MATH 1513 *and* MATH 2203.
- 3404 **PRINCIPLES OF ECOLOGY**
Relationships of plants, animals, and microorganisms to each other and to their physical environments. Study of succession in different community types. Various sampling techniques discussed and used in laboratory and field work. Three lectures and one 3-hour laboratory per week; field trips required. 4 hours. Prerequisites: BIOL 1014, BIOL 1114, *either* BIOL 2004 *or* BIOL 3014, MATH 1513, MATH 2203, *and* 1 year of general chemistry.
- 3815 **BASIC MICROBIOLOGY**
Survey of bacteria, yeasts, molds, viruses, algae, and protozoa; cell structure; pure culture methods; isolation techniques and microbial cultivation; microbial growth; microbial ecology; and microbial genetics. Three lectures and two 3-hour laboratories per week. 5 hours. Prerequisites: minimum of 8 hours of biology with laboratory, *plus* 4 hours of chemistry with laboratory (organic chemistry is strongly recommended).
- 4800 **BIOLOGICAL PROJECTS**
Research and seminar projects; may be taken unlimited number of times. 1-3 hours (credit to be arranged by instructor). Prerequisites: 8 hours of biology *and* permission of instructor.

4900 WORKSHOP

Related topics and problems in biology. 1-6 hours (may be repeated for total of 9 hours with change in title and content). Prerequisites: 8 hours of biology *and* permission of instructor.

4990 TUTORIAL

Independent study in biology under faculty supervision. 1-4 hours (may be repeated for total of 9 hours with change in title and content). Prerequisites: 8 hours of biology *and* permission of instructor.