

Biology Courses

Courses

BIOL 1103. Introductory Biology Lab.

Introductory Biology Laboratory: [TCCN BIOL 1108] Elementary aspects of evolution, physiology, development, genetics, and ecology in plants and animals. Concurrent enrollment in BIOL 1203 or BIOL 1303 is recommended. Course fee required.

Department: Biology

1 Credit Hour

2 Total Contact Hours

2 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1303 w/C or better) OR (BIOL 1203 w/C or better)

Corequisite(s):

BIOL 1104. Human Biology Laboratory.

Human Biology Laboratory: [TCCN BIOL 1109] Exercises and computer simulations of development, physiology, and heredity in humans. Concurrent enrollment in BIOL 1304 is recommended. Course fee required.

Department: Biology

1 Credit Hour

2 Total Contact Hours

2 Lab Hours

0 Lecture Hours

0 Other Hours

Corequisite(s): BIOL 1304

BIOL 1107. Topics in Study of Life I.

Topics in the Study of Life: [TCCN BIOL 1106] Elementary aspects of cell structure, function, and genetics. Concurrent enrollment with BIOL 1305 is recommended. Course fee required.

Department: Biology

1 Credit Hour

2 Total Contact Hours

2 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1310 w/C or better) OR (MATH 1508 w/C or better) OR (STAT 1380 w/C or better) OR (TAKM score between 2200 and 2900) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (BCPM score of 1) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60) OR (MDM2 score of Y)

Corequisite(s): BIOL 1305

BIOL 1108. Organismal Biology Laboratory.

Organismal Biology Laboratory: [TCCN BIOL 1107] Laboratory experiments and observation on plants, animals, and fungi. BIOL 1306 may be taken concurrently with BIOL 1108.

Department: Biology

1 Credit Hour

2 Total Contact Hours

2 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1305 w/C or better) AND (BIOL 1107 w/C or better) AND (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1310 w/C or better) OR (MATH 1508 w/C or better) OR (STAT 1380 w/C or better) OR (TAKM score between 2200 and 2900) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (BCPM score of 1) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60) OR (MDM2 score of Y)

Corequisite(s): BIOL 1306

BIOL 1203. Introductory Biology.

(Common Course Number BIOL 1208) Principles of cell and organismal physiology, inheritance and genetics, and for IDST students, elementary education, and other non-science majors. Co-requisite: BIOL 1103.

Department: Biology

2 Credit Hours

2 Total Contact Hours

0 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1103 w/C or better)

Corequisite(s):

BIOL 1303. Introductory Biology (C).

Introductory Biology: [TCCN BIOL 1308] Evolution and ecology, biotic diversity, and an introduction to principles of cell biology for IDST students and other non-science majors.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1103 w/C or better)

Corequisite(s):

BIOL 1304. Human Biology.

Human Biology: [TCCN BIOL 1309] Introduction to the physiology reproduction, development, and heredity of humans. Recommended for students in non-science majors.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Corequisite(s): BIOL 1104

BIOL 1305. General Biology.

General Biology: [TCCN BIOL 1306] A molecular approach to the principles of biology emphasizing cell biology and genetics. Prerequisite to upper level biology courses. BIOL 1107 may be taken concurrently with BIOL 1305.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1310 w/C or better) OR (MATH 1508 w/C or better) OR (STAT 1380 w/C or better) OR (TAKM score between 2200 and 2900) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (BCPM score of 1) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60) OR (MDM2 score of Y)

Corequisite(s): BIOL 1107

BIOL 1306. Organismal Biology.

Organismal Biology: [TCCN BIOL 1307] Principles of structure and function at the organismal level; survey of biodiversity in plants, animals, and fungi. BIOL 1108 may be taken concurrently with BIOL 1306.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1305 w/C or better) AND (BIOL 1107 w/C or better) AND (MATH 1319 w/C or better) OR (MATH 1320 w/C or better) OR (MATH 1310 w/C or better) OR (MATH 1508 w/C or better) OR (STAT 1380 w/C or better) OR (TAKM score between 2200 and 2900) OR (TSIM score of 350) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1) OR (S02 score between 500 and 800 AND S05 score between 1070 and 1600) OR (A02 score between 19 and 36 AND A05 score between 23 and 36) OR (STRM score between 4000 and 6396) OR (BCPM score of 1) OR (2TSM score of 950) OR (2TDM score of 6 AND 2TSM score between 910 and 949) OR (S12 score between 530 and 800) OR (ALEK score between 46 and 60) OR (MDM2 score of Y)

Corequisite(s): BIOL 1108

BIOL 2111. Human Anat/Physio Lab I.

Human Anatomy and Physiology Lab I (0-2) (C) Computer simulations and laboratory exercises in human anatomy and physiology with emphasis on the skeletal, muscular, and nervous systems. Prerequisite: BIOL 2311 with a grade of "C" or better. BIOL 2311 may be taken concurrently with BIOL 2111. Course fee required.

Department: Biology

1 Credit Hour

2 Total Contact Hours

2 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 2311 w/C or better)

BIOL 2113. Human Anat/Physio Lab II.

Human Anatomy/Physiology Lab (0-2) (C) Computer simulations and laboratory exercises in human anatomy and physiology with emphasis on homeostatic systems. Prerequisite: BIOL 2313 with a grade of "C" or better. BIOL 2313 may be taken concurrently with BIOL 2113. Course fee required.

Department: Biology

1 Credit Hour

2 Total Contact Hours

2 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 2313 w/C or better)

BIOL 2311. Human Anat/Physiology I.

Human Anatomy/Physiology I (3-0) (C) Biological molecules, body organization, and correlated structure and function of the human skeletal, integumentary, muscular, and nervous system. Prerequisites: BIOL 1305 and BIOL 1107 each with a grade of "C" or better, or ZOOL 2406. BIOL 2111 may be taken concurrently with BIOL 2311. Normally taught Spring semester only.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1107 w/C or better AND BIOL 1305 w/C or better) OR (ZOOL 2406 w/D or better)

BIOL 2313. Human Anat/Physiology II.

Human Anatomy/Physiology II (3-0) (C) Correlated structure and function of the human cardiovascular, respiratory, digestive, urinary, reproductive, endocrine and immune systems. Prerequisites: BIOL 1305 and BIOL 1107 or ZOOL 2406, each with a grade of "C" or better. BIOL 2113 may be taken concurrently with BIOL 2313. Normally taught Fall semester only.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1107 w/C or better AND BIOL 1305 w/C or better) OR (ZOOL 2406 w/C or better)

BIOL 2340. Introductory Neuroscience.

Introductory Neuroscience This course will provide a broad introduction to the nervous system, beginning with the study of neurons, nerve impulses, and information transfer between cells. Sensory and motor systems, neuroendocrine integration, and motivation, emotion, learning, and sleep will then be covered. This new course will provide critical background knowledge for upper division neuroscience courses in Biological Sciences and Psychology, and will support students pursuing careers in neuroscience research, medicine or the allied health fields, or education. Students will demonstrate effective teamwork, oral and written communication, quantitative skills, and critical thinking abilities.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1107 w/C or better AND BIOL 1305 w/C or better) OR (BIOL 1108 w/C or better AND BIOL 1306 w/C or better) OR (PSYC 1301 w/C or better)

BIOL 3115. Molecular Cell Biol Laboratory.

Experimental studies in cell and molecular biology. Prerequisites: BIOL 2340/2141 or 2440. Course fee required.

Department: Biology

1 Credit Hour

3 Total Contact Hours

3 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (MICR 2141 w/C or better AND MICR 2340 w/C or better) OR (CHEM 1105 w/C or better AND CHEM 1305 w/C or better AND MATH 1310 w/C or better AND MICR 2440 w/C or better) OR (MATH 1508 w/C or better)

Corequisite(s): BIOL 3314

BIOL 3117. Ecology Laboratory.

Experimental studies in Ecology. Prerequisites: BIOL 1306-1108 MATH 1411 recommended. Course fee required.

Department: Biology

1 Credit Hour

3 Total Contact Hours

3 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1108 w/C or better AND BIOL 1306 w/C or better)

Corequisite(s): BIOL 3316

BIOL 3192. Professional Development Sem..

Preparation for postgraduate study or careers for majors in Biological Sciences, Microbiology, or Cellular and Molecular Biochemistry. Prerequisites: completion of all lower- division coursework in math and sciences required for B.S. or B.A. in Biological Sciences or the B.S. in Microbiology or Cellular and Molecular Biochemistry. Completion of at least six credit hours of upper division coursework in the major strongly recommended. Prerequisites: BIOL 1305-1107 AND BIOL 1306-1108 AND CHEM 1305-1105 AND CHEM 1306-1106 AND (MATH 1411 OR MATH 1312 OR STAT 2480) with a grade of C or better. Restricted to Majors of Biology, Microbiology and Cellular and Molecular Biochemistry. Restricted to class of Junior, Senior.

Department: Biology

1 Credit Hour

1 Total Contact Hour

0 Lab Hours

1 Lecture Hour

0 Other Hours

Prerequisite(s): (BIOL 1107 w/C or better AND BIOL 1305 w/C or better) AND (BIOL 1108 w/C or better AND BIOL 1306 w/C or better) AND (CHEM 1105 w/C or better AND CHEM 1305 w/C or better) AND (CHEM 1106 w/C or better AND CHEM 1306 w/C or better) AND (MATH 1411 w/C or better) OR (MATH 1312 w/C or better) OR (STAT 2480 w/C or better)

BIOL 3193. Prof Development in Eco Evol.

Preparation for postgraduate study or careers for majors in ecology, evolution and environmental science.

Department: Biology

1 Credit Hour

1 Total Contact Hour

0 Lab Hours

1 Lecture Hour

0 Other Hours

Major Restrictions:

Restricted to majors of EEB, ESCI

BIOL 3314. Molecular Cell Biology.

Molecular Cell Biology (3-3) Biochemical and ultrastructural study of cells, including gene regulation, cell signaling, membrane transport, conduction, and contraction. Prerequisites: MICR 2340/2141 or 2440; MATH 1508 and CHEM 1306 or 1408. MATH 1508 and CHEM 1306 or 1408 may be taken concurrently with BIOL 3314.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (MICR 2141 w/C or better AND MICR 2340 w/C or better) OR (CHEM 1105 w/C or better AND CHEM 1305 w/C or better AND MATH 1310 w/C or better AND MICR 2440 w/C or better) OR (MATH 1508 w/C or better) OR (SXDG score of 1) OR (SXMA score of 1) OR (SXMN score of 1) OR (SXOI score of 1) OR (SXTR score of 1)

Corequisite(s): BIOL 3115

BIOL 3316. Ecology.

Ecology (3-3) Interactions between populations of organisms and their environments at community and ecosystem levels. Prerequisites: BIOL 1306-1108 MATH 1411 recommended.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1108 w/C or better AND BIOL 1306 w/C or better)

Corequisite(s): BIOL 3117

BIOL 3320. Genetics.

Genetics (3-0) The nature and functions of hereditary material with emphasis on the experimental procedures and data that have led to the current concepts in genetics. Prerequisites: BIOL 1305-1107 and BIOL 1306-1108.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1108 w/D or better AND BIOL 1306 w/D or better) AND (BIOL 1107 w/D or better AND BIOL 1305 w/D or better)

BIOL 3321. Evolution.

Evolution (3-0) Development of evolutionary thought, evidences of evolution and evolutionary processes. Prerequisites: BIOL 3320 with a grade of "C" or better.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3320 w/C or better)

BIOL 3330. Histology.

Histology (2-2) Survey of tissue structure at the light microscopic level, with emphasis on animal specimens and identification. Not a course in preparative technique. Prerequisites: ZOOL 2406 or BIOL 1306 and BIOL 1108 or BIOL 2311 or BIOL 2313. Course fee required.

Department: Biology

3 Credit Hours

4 Total Contact Hours

2 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (ZOOL 2406 w/D or better) OR (BIOL 1108 w/D or better AND BIOL 1306 w/D or better) OR (BIOL 2311 w/D or better) OR (BIOL 2313 w/D or better)

BIOL 3342. Plants and People.

The role of plants in human culture, economics, technology and medicine. Prerequisites: (BIOL 1306-1108 with a grade of C or better) or permission of instructor. Restricted to class of Junior, Senior.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SR

Prerequisite(s): (BOT 2410 w/C or better) OR (BIOL 1108 w/C or better AND BIOL 1306 w/C or better)

BIOL 3351. Toxicology.

Toxicology: The study of interactions between foreign chemicals and biological systems, including the physiological, developmental, and genetic consequences of exposure of human beings to environmental contaminants and medications. Also treated is the scope of toxicology in forensic science, particularly through its role in interpretation of evidence. A course for non-majors that cannot count towards the major for any degree in Biology.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

BIOL 3357. DNA Structure and Analysis.

Forensic DNA Analysis: Examination of the use of DNA analysis in law and medicine, including validity of the uses of these data, the analytical techniques used to identify specific genes and mutations in individuals, and statistical interpretation of DNA typing results. A course for non-majors that cannot count towards the major for any degree in Biology.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

BIOL 3360. Quantitative Methods Ecology.

Analysis and interpretation of ecological and environmental data using current methods, programs and technologies. Prerequisites: BIOL 3416 OR BIOL 3117 AND BIOL 3316 with a grade of C or better OR permission of instructor. STAT 2480 recommended.

Department: Biology

3 Credit Hours

4 Total Contact Hours

2 Lab Hours

2 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3416 w/C or better) OR (BIOL 3117 w/C or better AND BIOL 3316 w/C or better)

BIOL 3375. Forensic Pathobiology.

Forensic Pathology The course provides the students with a broad-based understanding of forensic pathology including pathologic process, injury, or disease that results in or initiates the events that lead to death (mechanism of death), manner of death, examination of wound and injuries both at autopsy and occasionally in a clinical setting. The primary goal of the course is to provide a basic working knowledge for the interpretation of medical, pathological and biomedical facts and the circumstances surrounding unexplained or violent deaths. In addition, the role of related forensic science disciplines will be presented, with emphasis on forensic pathology which plays an important role in crime investigation by providing important pieces of information and valuable evidences.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SR

Prerequisite(s): (BIOL 1305 AND BIOL 1306) AND (CHEM 2324 AND CHEM 2325)

BIOL 3417. Plant Ecology.

Concepts, methods, technologies and research challenges in plant ecology. Prerequisites: BIOL 3316 AND BIOL 3117 with a grade of C or better. Strongly recommended: STAT 2480.

Department: Biology

4 Credit Hours

6 Total Contact Hours

3 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3117 w/C or better AND BIOL 3316 w/C or better)

BIOL 3427. Desert Ecology.

Desert Ecology (3-3) Physical and biological characteristics of deserts, including behavioral and physiological adaptations of organisms to physical extremes, with emphasis on Chihuahuan desert organisms. Field trips and research projects are required. Prerequisites: BIOL 3316 and BIOL 3117 or department approval.

Department: Biology

4 Credit Hours

6 Total Contact Hours

3 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3117 w/D or better AND BIOL 3316 w/D or better)

BIOL 4185. Waterfowl Ecol. & Evol. Lab.

The goal of this course is to familiarize you with the ecology and management of North American waterfowl throughout their annual cycle by applying broad concepts from life history theory, behavioral and community ecology, and conservation biology. Each lecture, I will strive to provide basic background information on specific topics, and integrate this with new advances on the forefront of waterfowl research. Labs will focus on developing practical skills in applied waterfowl science, and field trips will familiarize you with waterfowl, their habitats, and methods in habitat management.

Department: Biology

1 Credit Hour

3 Total Contact Hours

3 Lab Hours

0 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1306 w/C or better)

Corequisite(s): BIOL 4385

BIOL 4195. Advanced Methods in Biology.

Advanced Methods in Biology (0-3) Advanced investigational techniques in the biological sciences, to accompany selected sections of BIOL 4395. Co-requisite: BIOL 4395.

Department: Biology

1 Credit Hour

3 Total Contact Hours

3 Lab Hours

0 Lecture Hours

0 Other Hours

Corequisite(s): BIOL 4395

BIOL 4198. Special Problems.

Special Problems (0-0-2) Laboratory research conducted by advanced students. No more than 6 hours of 4198-4398 may be counted toward graduation. Course fee required.

Department: Biology

1 Credit Hour

2 Total Contact Hours

0 Lab Hours

0 Lecture Hours

2 Other Hours

BIOL 4225. Field Biology.

Field Biology (0-6) Collection and study of organisms under field conditions. Variable credit. No more than six hours of Field Biology may be counted toward degree. Prerequisite: Department approval. ZOOL 2466 recommended. Transportation fee varies according to destination of trip.

Department: Biology

2 Credit Hours

6 Total Contact Hours

6 Lab Hours

0 Lecture Hours

0 Other Hours

BIOL 4298. Special Problems.

Special Problems (0-0-4) Laboratory research conducted by advanced students. No more than six hours of 4198-4398 may be counted toward graduation. Course fee required.

Department: Biology

2 Credit Hours

4 Total Contact Hours

0 Lab Hours

0 Lecture Hours

4 Other Hours

BIOL 4300. Introduction to Bioinformatic.

This course will teach how computational techniques can help with solving biological problems. Students will learn to efficiently use multiple genomics and bioinformatics tools, that are freely available, for the analysis of DNA, RNA and protein sequences and structure. This interdisciplinary course would be helpful for students in the department of Biology, Computer Science, Mathematics who aspire to go to either graduate school or medical school, or plan to work in the Bioinformatics industry that has experienced exponential growth within the last decade.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1306 w/C or better)

BIOL 4315. Population Genetics.

Population Genetics: Broadly defined as the study of the genetic composition of populations, population genetics attempts to quantify the distribution of genetic variation and changes in the frequencies of alleles. Specifically, we will examine how the four evolutionary processes (mutation, genetic drift, natural selection, and gene flow) affect the genetic composition of natural populations. This includes how concepts in population genetics are advancing the field of Forensic Science. We will be exploring theoretical and practical components of population genetics through lectures and labs, respectively.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1305 w/C or better AND BIOL 1306 w/C or better AND BIOL 3320 w/C or better) OR (BIOL 3321 w/C or better) AND (STAT 2480 w/C or better) OR (MATH 1312 w/C or better)

BIOL 4319. G Protein-Coupled Recept Biol.

G Protein-Coupled Receptor Biology The goal of this course is to help students learn how to thoughtfully discuss and write down their scientific ideas, in a comprehensive, organized manner. In addition to helping the students understand the interdisciplinary nature of the science background required to study signaling processes initiated through activation of G protein-coupled receptors, the course includes interactive lectures, oral presentations and exams.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3314 w/C or better)

BIOL 4320. Endocrinology.

Endocrinology (3-0) Study of the effects and actions of animal hormones, the physiology of hormone control systems, and basic endocrinology research methods. BIOL 3414 or BIOL 4388 or ZOOL 4380 is recommended, but may be taken concurrently. Prerequisites: BIOL 1305-1107 and CHEM 1306-1408 each with a grade of "C" or better.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SR

Prerequisite(s): (BIOL 1305 w/C or better) AND (BIOL 1107 w/C or better) AND (CHEM 1306 w/C or better) AND (CHEM 1106 w/C or better)

BIOL 4321. Developmental Biology.

Developmental Biology: This advanced course is designed for biology students who want to understand the molecular biology of development. We focus on mechanisms that regulate protein expression during embryogenesis in both plants and animals, and explore diseases and defects that occur as a result of inappropriate gene expression/regulation. Model organisms include humans, mice, *C. elegans*, and *Drosophila*. Graduate students enrolled in the course are expected to complete all course work in addition to a grant proposal pertaining to Developmental Biology.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3314 w/C or better) OR (BIOL 4388 w/C or better)

BIOL 4324. Animal Behavior.

Genetic, Environmental & Evolutionary Bases of Animal Behavior (3-0). Theories and experiments that elucidate the biological basis for the behavior of animals. Prerequisites: BIOL 1306 and BIOL 1108.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1108 w/D or better AND BIOL 1306 w/D or better)

BIOL 4325. Field Biology.

Field Biology (0-9) Collection and study of organisms under field conditions. Variable credit. No more than six hours of field biology may be counted toward degree. Prerequisites: Instructor approval. Transportation/trip fee varies according to destination and duration of trip.

Department: Biology

3 Credit Hours

9 Total Contact Hours

9 Lab Hours

0 Lecture Hours

0 Other Hours

BIOL 4327. Animal Ecology.

Study of the structure and function of animal communities, emphasizing population dynamics, trophic patterns, and inter-specific interactions.

Prerequisites: BIOL 3416 and MATH 1411, each with a grade of "C" or better.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SR

Prerequisite(s): (BIOL 3416 w/C or better) OR (BIOL 3117 w/C or better AND BIOL 3316 w/C or better) AND (MATH 1411 w/C or better)

BIOL 4330. Cancer Biology.

Course will present an overview of the cancer development process at the cellular and molecular level. This course will discuss how academic research is helping us understand how cancers evolve, and how to treat them. Prerequisites: BIOL 1306, BIOL 3314, and MICR 2340 each with a grade of C or better.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of JR,SR

Prerequisite(s): (BIOL 1306 w/C or better AND BIOL 3314 w/C or better AND MICR 2340 w/C or better)

BIOL 4350. Cellular Neuroscience.

Neural organization in animals. Evolution of nervous system in different phyla, with emphasis on networks and neurochemical mechanisms for information processing.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (ZOOL 2406 w/D or better) OR (ZOOL 4380 w/D or better) OR (BIOL 1108 w/D or better AND BIOL 1306 w/D or better)

BIOL 4351. Spatial Ecology.

Spatial ecology focuses on understanding ecological patterns and processes across space. This course will introduce students to theory, analytical techniques, and applications from spatial ecology, including the current state of the field. Students will learn how to use common spatial analytical methods and will be expected to apply these to answer scientific questions.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1108 w/C or better AND BIOL 1306 w/C or better)

BIOL 4360. Aquatic Ecology.

Study of the biological, chemical, and physical characteristics of aquatic environments.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3316 w/C or better)

BIOL 4370. History/Philosophy-Biology.

History and Philosophy of Biology (3-0) Historical and philosophical dimensions of biology, as illustrated by selected themes such as Darwin and his critics, classical experiments in biology, evolutionary epistemology, and historical, controversies in biology. Prerequisites: BIOL 1306 and BIOL 1108.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1108 w/D or better AND BIOL 1306 w/D or better)

BIOL 4375. Neuroscience Capstone.

Neuroscience Capstone: This course provides a project-based framework through which students may demonstrate and apply the knowledge gained throughout the interdisciplinary major in neuroscience. Taken during the final year of the curriculum, this course brings together critical concepts and ideas through discussion of previous coursework and experiences, and provides opportunities for skills development including critical thinking, synthesis and integration, resource identification and utilization, and communication through speaking and writing. In addition, this course will support the professional preparation of students for their future academic and career pursuits.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Major Restrictions:

Restricted to majors of NEUR

Classification Restrictions:

Restricted to class of SR

Prerequisite(s): (BIOL 2340 w/C or better) OR (PSYC 2324 w/C or better) AND (CHEM 2124 w/C or better AND CHEM 2324 w/C or better) AND (PSYC 3101 w/C or better AND PSYC 3201 w/C or better)

BIOL 4385. Waterfowl Ecology & Evolution.

The goal of this course is to familiarize you with the ecology and management of North American waterfowl throughout their annual cycle by applying broad concepts from life history theory, behavioral and community ecology, and conservation biology. Each lecture, I will strive to provide basic background information on specific topics, and integrate this with new advances on the forefront of waterfowl research. Labs will focus on developing practical skills in applied waterfowl science, and field trips will familiarize you with waterfowl, their habitats, and methods in habitat management.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 1306 w/C or better)

Corequisite(s): BIOL 4185

BIOL 4386. Waterfowl Ecology & Management.

The goal of this course is to familiarize you with the ecology and management of North America waterfowl throughout their annual cycle by applying broad concepts from life history theory, behavioral and community ecology, and conservation biology. Each lecture, I will strive to provide basic background information on specific topics, and integrate this with new advances on the forefront of waterfowl research. This course is for non-majors, and cannot count towards the major for any degree in Biology or Environmental Science.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

BIOL 4388. Mammalian Physiology.

Mammalian Physiology (3-0) Physiological and homeostatic mechanisms in mammals, with emphasis on Cardiovascular, respiratory, renal, digestive, and endocrine systems in mammals. Prerequisite: BIOL 2313 or BIOL 3414. ZOOL 4181 may be taken concurrently with BIOL 4388 to fulfill upper division physiology course requirements for some degrees and programs.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 2313 w/D or better) OR (BIOL 3414 w/D or better) OR (BIOL 3115 w/C or better AND BIOL 3314 w/C or better)

BIOL 4389. Developmental Neurobiology.

Developmental Neurobiology: The study of the mechanisms regulating normal nervous system development.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3314 w/C or better)

Corequisite(s):

BIOL 4390. Biological Practicum.

Biological Practicum (0-6) Practical on-the-job experience in federal, state, city-county governmental and/or private agencies or industries. Prerequisites: Senior standing, minimum of 15 advanced hours in designated subject matter areas of biological sciences necessary for job experience and department approval. No more than six hours of BIOL 4390 and/or BIOL 4198 and BIOL 4398 will count toward graduation.

Department: Biology

3 Credit Hours

6 Total Contact Hours

0 Lab Hours

0 Lecture Hours

6 Other Hours

Classification Restrictions:

Restricted to class of SR

BIOL 4395. Topics in Biology.

Topics in Biology (3-0) Advanced study of contemporary research topics in molecular, cellular, organismic, environmental, or evolutionary biology. Topics vary according to instructor. May be repeated when topics vary Prerequisite: Department approval.

Department: Biology

3 Credit Hours

3 Total Contact Hours

0 Lab Hours

3 Lecture Hours

0 Other Hours

BIOL 4398. Special Problems.

Special Problems (0-0-6) Laboratory research conducted by advanced students. No more than 6 hours of BIOL 4198 and BIOL 4398 may be counted toward graduation. Course fee required.

Department: Biology

3 Credit Hours

6 Total Contact Hours

0 Lab Hours

0 Lecture Hours

6 Other Hours

BIOL 4428. Global Change Ecology.

Study of the effects of environmental stressors on plants and animals in terrestrial and aquatic environments, and practice of techniques used to measure such stressors.

Department: Biology

4 Credit Hours

6 Total Contact Hours

3 Lab Hours

3 Lecture Hours

0 Other Hours

Prerequisite(s): (BIOL 3117 w/D or better AND BIOL 3316 w/D or better) OR (ESCI 3204 w/D or better)

BIOL 4466. Ecosystem Ecology.

Concepts, methods, and technologies used in ecosystem ecology. Prerequisites: BIOL 3416 AND (BIOL 3316 and BIOL 3117 with a grade of C or better. Strongly recommended:(STAT 2480 OR BIOL 3360) AND (BIOL 3417 OR BIOL 3326). Restricted to class of Senior.

Department: Biology

4 Credit Hours

6 Total Contact Hours

3 Lab Hours

3 Lecture Hours

0 Other Hours

Classification Restrictions:

Restricted to class of SR

Prerequisite(s): (BIOL 3117 w/C or better AND BIOL 3316 w/C or better)