Biological Sciences Courses

BSC 1406 - Introductory Biology I
Hours: 4
This course is the first half of the Introductory Biology series. It is designed for the following majors: Broadfield Biology, Pre-Med, Pre-Allied Health, and Pre-Vet. Topics covered include biological evolution, biochemistry, cellular and molecular biology, genetics, and microbiology. Note All courses carrying four semester hours have labs. Students must register for both lecture and lab sections

BSC 1407 - Introductory Biology II
Hours: 4
This course is the second half of the Introductory Biology series. It is designed for the following majors: Broadfield Biology, Pre-Med, Pre-Allied Health, and Pre-Vet. Topics covered include evolution, the diversity of life, immunology, endocrinology, neurobiology, ecology and behavior. Prerequisite: a grade of C or better in BSc 101 or 1406. Note All courses carrying four semester hours have labs. Students must register for both lecture and lab sections Prerequisite BSC 1406 with a minimum grade of C.

BSC 1411 - Botany
Hours: 4
This course is designed for students majoring in Agricultural Science, Plant and Soil Science, Wildlife and Conservation Science, and in Environmental Science. Students are introduced to the structure and function of plants as well as their diversity and ecology. Topics covered include plant cellular and gross anatomy, plant physiology and biochemistry, genetics, evolution, classification, and biogeography. Students must register for both lecture and lab sections.

BSC 1413 - Zoology
Hours: 4
This course is designed for students in Agricultural Science, Plant and Soil Science, Animal Science, Wildlife and Conservation Science, and in Environmental Science. Students are introduced to animal cellular biology and physiology, animal diversity and classification, and the biogeography and ecology of animal populations. Topics covered include cellular metabolism, animal physiology and genetics, developmental biology and architectural patterns, evolution, and the diversity of animal life. Students must register for both lecture and lab sections.

BSC 2401 - Hum Anatomy/Physiology I
Hours: 0-4
Study of the structure and functions of human organ systems. Students must register for both lecture and lab sections.

BSC 2402 - Hum Anatomy/Physiology II
Hours: 4
Study of the structure and function of human organ systems (continuation of BSc 251). Students must register for both lecture and lab sections. Pre-requisite: BSC 2401

BSC 256 - Medical Terminology
Hours: 3
This course will study the basic structure of medical words. Included will be prefixes, suffixes, roots, combining forms, and plurals. Emphasis will be placed on pronunciation and spelling. This course cannot be used or substituted for any course in any degree program in Biological Sciences.

BSC 297 - Special Topics
Hours: 1-4

BSC 303 - Cell Biology
Hours: 4
This course is intended for biology and pre-professional majors with a solid understanding of general biology and general chemistry. This course covers the chemical nature of the cell. It deals with the variety of chemicals found in cells as well as the subcellular structures and components. It includes an extensive review of enzymes, cell membranes and transport, cell signalling, motility of cells and within cells, and extracellular adhesion and signals. The regulation, chemical synthesis, and transport of both RNA and proteins are also covered. Students must register for both lecture and lab sections. Prerequisites: A minimum grade of C is required in the following prerequisite courses: BSC 1407, and CHEM 1312, a grade of "C" or more must be earned in the course.

BSC 304 - Genetics
Hours: 4
This course is intended for biology and pre-professional majors with a solid understanding of general biology and general chemistry. Cell Biology is very helpful, and may be taken concurrently. This course covers essentially DNA, studying it at the molecular, organismal, and population levels. Students will cover the mechanisms of inheritance, including Mendelian and non-Mendelian inheritance and genetic recombination in viruses through humans. At the molecular level, topics include the structure and organization of DNA, DNA replication, techniques of DNA analysis (including recombinant DNA and DNA sequencing), and transgenic organisms. The final section of the course covers an introduction to population genetics with a thorough treatment of the Hardy-Weinberg equilibrium and evolution. Students must register for both lecture and lab sections. Prerequisites: BSC 303 with a minimum grade of C or concurrent registration in BSC 303.

BSC 305 - General Physiology
Hours: 4
This course is designed for majors with a well-rounded background in biology. It provides students with an understanding of basic physiological principles and the functional organization of living systems. Emphasis will be placed on human physiology and the integrated functions of organ systems. Students are expected to learn the basic principles and concepts of human physiology both at the molecular and cellular levels, to learn to reason scientifically, and to understand and describe the cooperative function of multiple organ systems in the human body. Students must register for both lecture and lab sections. Prerequisite BSC 303 Cell Biology with a minimum grade of C.

BSC 306 - Applied Microbiology
Hours: 4
This course is for biology undergraduate students designed to provide important key principles of microbial life. The important key principles will then be applied to real-life examples to better understand dynamics of microbial world as a part of global ecosystem. Although relatively simple and primitive, microorganisms are considered as the most successful form of life. They are virtually everywhere and they are in tight relationship with other forms of life on earth. Unlike macroorganisms (i.e. animals, plants, insects, etc), microorganisms carry out their life processes such as energy metabolism, growth, and reproduction independently from other cells. This unique feature makes microorganisms a great tool to study the nature of life. Students must register for both lecture and lab sections. Prerequisites: BSC 1407 Min Grade C and CHEM 1312 Min Grade C.

BSC 307 - Ecology
Hours: 3
Ecology is the study of living things and their interaction with their environment. This class takes a hierarchical look at ecological processes from ecosystems to populations. Specific topics include the flow of energy and matter through global and local ecosystems, factors affecting production and biodiversity, zones of tolerance, ecological succession, ecotones and ecoclines, community ecology, niche theory, population models, and evolutionary arms races. Prerequisites: BSC 1407 or BSC 1413 or ENVS 303.

BSC 310 - Animal Behavior
Hours: 3
An introduction to the principles of animal behavior with an emphasis on Methods of Observation and the proximate and ultimate causes of behavior. Aspects of physiology and development of behavior, instinct and learning and modern cognitive ethology will be addressed. Prerequisites: BSC 1407 or BSC 1413.

BSC 314 - Comparative Vertebrate Physiology
Hours: 3
The course is a comparative study of basic physiological principles and functional organization with emphasis on the functioning of organ systems in various vertebrate classes and their adaptation to the environment leading to an understanding of evolutionary relationships. The course evaluates i) the mechanisms by which animals perform their life-sustaining functions, ii) the ways in which diverse phylogenetic groups of animals both resemble each other and differ, iii) the ways in which physiology and ecology interact, and iv) the importance of all levels of organization, from genes to proteins and tissues to organs, for the full understanding of physiological systems. Crosslisted with: ANS 314.

BSC 315 - Ecological Genetics
Hours: 3
Ecological genetics is about how environmental and population-level processes affect the genetic structure of populations. The course begins with a basic overview Mendelian genetics followed by an in-depth study of population genetics and the intrinsic and extrinsic processes that influence the genetic composition of populations and metapopulations. Because the interaction between genes and the environment fundamentally affect the viability of populations, ecological genetics has broad relevance for understanding population stability and maintenance healthy populations. Prerequisites: BSC 1407 or BSC 1413 with a minimum grade of C. Crosslisted with: AG 315.

BSC 316 - Becoming a Wildlife Professional
Hours: 3
Working with wildlife can be a thrilling adventure steeped in the wonders of the natural world, but entering the field demands a strong personal commitment. Students will gain knowledge in the proper training and guidance needed to transform themselves into competitive applicants for wildlife jobs and forge successful careers. Student will learn about many entry-level jobs available for the next generation of wildlife biologists and conservationists. Over 100 diverse career options for aspiring wildlife workers will be presented, including work in biological field research, forestry, rehabilitation, ranching, photography, and refuge management. Students will learn the best ways to prepare for a vocation in the wildlife profession while obtaining pragmatic advice about applying for and obt

BSC 335 - Wildlife Management I
Hours: 3
The purpose of this course is to introduce students to the many aspects of wildlife and conservation science. It will provide an introduction to the history of wildlife management and conservation, ecosystems and ecology, population modeling, animal behavior, food and cover, wildlife diseases, predators and predation, and hunting and trapping. Offered: FALL

BSC 336 - Wildlife Management II
Hours: 3
This course is designed to complement Wildlife Management I and provides an introduction to the many aspects of wildlife ecology and conservation science. Topics covered include water and soils, farmlands, rangelands, and forests, parks and refuges, urban wildlife management, and non-game and endangered species. Offered: SPRING

BSC 337 - Field Methods in Wildlife and Conservation Science
Hours: 4
This course provides students with practical training in the methods used to collect quantitative data on plant and animal populations, animal movements and home ranges, habitat associations, and animal behavior. Field exercises are integrated with lecture material emphasizing study design, statistics, and data interpretation. Crosslisted with: AG 337.

BSC 338 - Wildlife Management Techniques
Hours: 3
This class will develop the principles and techniques for managing wildlife populations. Topics covered will include experimental design, hypothesis testing, scientific writing, techniques for capturing and marking wildlife, age and sex determination, parameter estimation (population size, density, survival, etc.), radio-telemetry, home range and resource selection. Students enrolled in this course must be willing to participate in a field-based classroom research project when and where feasible. Crosslisted with: AG 338.

BSC 339 - Becoming a Wildlife Professional
Hours: 3
Working with wildlife can be a thrilling adventure steeped in the wonders of the natural world, but entering the field demands a strong personal commitment. Students will gain knowledge in the proper training and guidance needed to transform themselves into competitive applicants for wildlife jobs and forge successful careers. Student will learn about many entry-level jobs available for the next generation of wildlife biologists and conservationists. Over 100 diverse career options for aspiring wildlife workers will be presented, including work in biological field research, forestry, rehabilitation, ranching, photography, and refuge management. Crosslisted with: AG 339.

BSC 371 - Science and Math Education Theory and Practice
Hours: 1
Learning theory and teaching practices for science learning assistants. Topics include questioning strategies, conceptual development, formative assessment, argumentation, metacognition, and nature of science. Crosslisted with: PHYS 371, CHEM 371, MATH 371.

BSC 381 - Big Game Management
Hours: 3
This class will expose students to concepts of managing major big game species in North America (i.e. white-tailed deer, feral hog, desert mule deer, pronghorn antelope, desert bighorn sheep, javelina, mountain lion, bear), with focus on the conservation practices of those species in Texas. Overview of topics include taxonomy, life history, harvest management, habitat management, population estimation, and conservation ecology of exotic species. Additional topics cover wildlife diseases, genetics, economic significance, and human dimensions. Indoor lab exercise will cover identification and aging of species. Field trips will expose students to actual management practices conducted in the field and provide an opportunity for applied skills in planning field studies, data collection, analysis, and synthesis of a management plan. Crosslisted with: AG 381.

BSC 383 - Waterfowl Management
Hours: 3
The course will expose students to concepts of managing waterfowl in North America (i.e.with focus on the conservation practices of those species in Texas. Overview of topics include taxonomy, life history, harvest management, habitat management, population estimation, and conservation ecology of exotic species. Additional topics cover wildlife diseases, genetics, economic significance, and human dimensions. Indoor lab exercise will cover identification and aging of species. Field trips will expose students to actual management practices conducted in the field and provide an opportunity for applied skills in planning field studies, data collection, analysis, and synthesis of a management plan. Crosslisted with: AG 383.

BSC 385 - International Wildlife Conservation
Hours: 3
The course covers select topics in wildlife conservation such as biodiversity, habitat management, and cultural and political influences for the conservation of fauna in major biomes of Africa, Asia, Europe, Latin America, Oceania and other regions of the world. Students will i) build an understanding of and appreciation for diverse perspectives in wildlife management approaches throughout the world, ii) Competently assess and apply past and current ecological principles to evaluating international approaches to wildlife conservation, iii) Demonstrate constructive dialog with diverse perspectives focusing on international wildlife conservation, and iv) Critically assess an international wildlife conservation policy issue using examples from scientific literature. Crosslisted with: AG 385.

BSC 397 - Special Topics
Hours: 1-4

BSC 401 - Research Literature and Seminar
Hours: 3
This course provides students with the fundamentals of scientific thinking and scientific writing. The course starts with a brief overview of the history and philosophy of science as it pertains to biology. Students will learn about each steps in scientific processes including empiricism, parsimony, and developing and testing hypotheses. Students will be taught how to write in scientific style, how to critically read and analyze scientific articles, how to avoid obfuscatory scrivenry, establishing flow, organizing a scientific document, how to present scientific data and statistics, how to cite figures and tables, how to cite scientific sources, how to avoid plagiarism; and concepts of bioethics Discussions and presentations of issues of current interest in the biological sciences and of related career opportunities also will be covered. Prerequisites: BSC 304, 305, 306, 307, concurrent enrollment in one or more of these classes or permission of instructor.

BSC 402 - Ornithology
Hours: 3
This course begins with an overview of current theories regarding the origins of birds and flight. This is followed by a brief survey the living orders and their biogeography. Other topics include the mechanics and adaptations for flight, avian physiology and anatomy, migration, communication and behavior, ecology, and avian conservation. Crosslisted with: AG 402.

BSC 403 - Ichthyology
Hours: 3
This course will provide students with a broad understanding of the field of ichthyology (the study of fishes). The course will examine form and function in fish anatomy, physiology, patterns of life history, reproduction and growth, fish environmental biology, aspects of fish social behavior and predation, fish population and community ecology, fish conservation, and broadly explore freshwater and marine fish taxonomic diversity. The class will also introduce current field methods in freshwater fish sampling and include identification information for local, North Texas freshwater fish species.

BSC 404 - Vertebrate Biology
Hours: 3
This course takes a systematic approach to understanding vertebrate evolution, diversity and biology. It will follow the development of each vertebrate taxon through the fossil record from late Cambrian to the present. This is followed by discussions of vertebrate zoogeography, habitat and foraging, feeding modes, dispersal and migration, mating systems and parental care. Crosslisted with: AG 404.

BSC 404A - Advanced Biostatistics
Hours: 3
(Same as BSC 504) The objective of this course is to provide students with the knowledge and understanding of the methods of statistical analysis applicable to biological research. Emphasis will be placed on the concepts and application of statistical thinking. Basic probability theory, parametric and non-parametric statistics including t-test, analysis of variance, correlation, simple linear regression will be reviewed. Advanced statistical methods including multiple regression, logistic regression, model selection and other quantitative methods will be introduced. Crosslisted with BSC 504 Advanced Biostatics. Prerequisites: An undergraduate degree in Biology, Wildlife, or related discipline or permission from instructor.

BSC 405 - Wildlife Internship
Hours: 1-6
This course, required for Wildlife and Conservation Science Majors, provides the opportunity for students to gain hands-on experience in preparation for careers in wildlife conservation and management and wildlife or ecological research. Assignments will be at an approved work situation under supervision of a designated faculty member. Ten to twenty hours per week will be required. Crosslisted with: AG 405.

BSC 406 - Mammalogy
Hours: 3
Mammalogy - Three semester hours The objective of this course is to survey the phylogenetic relationships, diversity, biology, and ecology of mammals, including an understanding of the characterization of the orders and families of the extant mammals based on morphological traits, evolutionary Crosslisted with: AG 406.

BSC 410 - Fundamentals of Bioremediation
Hours: 3
This undergraduate course explores fundamental aspects of using microorganisms and plants for the remediation of inorganic and organic pollutants impacted soil, groundwater and surface water; and discuss the applications of bioremediation methods for contaminated field in real world.

BSC 412 - Fundamentals of Biostatistics
Hours: 3
The objective of this course is to provide students with the knowledge and understanding of the methods of statistical analysis applicable to biological research. Emphasis will be placed on the concepts and application of statistical thinking. Basic probability theory, parametric and non-parametric statistics including t-tests, analysis of variance, correlation, regression, and other quantitative methods will be introduced. Prerequisites: MATH 1314.

BSC 414 - Evolutionary Biology
Hours: 3
In-depth view of evolutionary theory including gene flow, genetic drift, mutation, molecular evolution, mechanisms of speciation, phylogenies, and the evolution of sex, and sexual selection.

BSC 415 - Upland Game Bird Ecology and Management
Hours: 3
Status, ecology, management, and conservation issues of North American upland game birds. Student will understand the role of upland game bird professionals. Develop knowledge of the status of North American upland game birds. Understand the basic principles of upland game bird ecology and management. Learn to apply knowledge to solve conservation problems. Crosslisted with: AG 415.

BSC 415A - Advanced Cell Biology
Hours: 3
This course is designed for graduate students with a thorough background in biology and cell biology. Therefore, this course provides students with a greater understanding of molecular mechanisms of cellular function. Emphasis will be placed on internal organization of the cell. Students are expected to gain an in-depth understand of basic principles and concepts of eukaryotic cells at the molecular levels, to learn to reason scientifically, and to understand and describe the cooperative function of organelles in the specialized cells. Prerequisites: An undergraduate degree in Biology or related discipline or permission from instructor.

BSC 416 - Wildlife Population Biology
Hours: 3
This course outlines processes governing the abundance and distribution of animals and plants, and the consequences for natural resource management. Practical applications lie in wildlife management, sustainable harvesting of resources, pest control and conservation of endangered species. Topics will include mathematical models of population growth, population viability analysis, and metapopulations, dispersal, population harvesting, predation, population cycles, and competition. Prerequisites: MATH 142 or MATH 2312. Crosslisted with: AG 416.

BSC 417 - Geospatial Mapping
Hours: 3
Three semester hours. (3 lecture, 0 lab) The course will provide basic knowledge of the fundamentals of Geographic Information Systems (GIS), including GIS theory and applications. The course will take a hands-on and problem solving approach to learning GIS and will cover basic GIS including map characteristics and projections, spatial data models, relational databases, and spatial analysis with a focus on natural resource research and management and environmental science. Prerequisites: BSC 1407 or BSC 1413. Crosslisted with: AG 417.

BSC 418 - Undergraduate Research
Hours: 1-3
Individual research project under the guidance of a biology faculty member. May be repeated for up to six (6) hours credit. Prerequisites: Consent of the faculty prior to registration.

BSC 419 - Gene Control
Hours: 3
This course will provide a rigorous knowledge in regulation of gene expression so that students will be ready for graduate level courses. Although this course will introduce students to prokaryotic gene transcription and gene regulation, the emphasis will be on the molecular biology of gene control in eukaryotes. This course will familiarize the student with current technology and driving principles of the field of gene regulation. Prerequisites: BSC 303 and BSC 304 with a grade of C or more.

BSC 420 - Immunology
Hours: 3
This course is designed for majors with a well-rounded background in biology. This course provides students with a deeper understanding of fundamental concepts in immunology. First, we will examine the molecular and cellular dynamics and principles of the immune system. We will cover topics such as the development of the immune system, humoral and cell-mediated responses. In the second half of the course, we will discuss diseases and treatments related to immunization, immunodeficiency, autoimmunity, and tumors. Prerequisites: BSC 303 and 305 with a grade of C or more.

BSC 421 - Essentials of Plant Microbiome
Hours: 3
This undergraduate course mainly introduces what are plant microbiome; covers the relationships between plant and microorganisms; and discuss the applications of plant microbiome for nutrients uptake, soil health improvement and pollutants cleaning.

BSC 422 - Comp Vertebrate Anatomy
Hours: 0-4
Comparative Vertebrate Anatomy. Four semester hours. (3 lecture, 4 lab) The lecture material in this course explore the evolution of vertebrate structure and design among vertebrate taxa. Emphasis is placed on the integument, skeletal, muscular, digestive, urogenital, respiratory, circulatory and nervous systems. Laboratory dissections, using the dogfish and the cat as models, are used to complement the lecture material.

BSC 423 - Introduction to Soil and Biogeochemistry
Hours: 3
The biogeochemistry of soil investigates processes that drive the environmental cycles of matter, nutrients, and energy through time and space. This undergraduate course mainly introduces the physico-chemical and microbial nutrient transformations and exchange processes in soil and water, for example food-water-energy exchange nexus. In summary, students will receive in depth knowledge of biogeochemical properties of the major global systems (terrestrial, atmospheric, and oceanic systems), biogeochemical cycles of carbon, nitrogen, phosphorus, and sulfur, and patterns of productivity, pollution, and consequences of environmental change from local to regional to global scale.

BSC 424 - Bacteriophage Discovery
Hours: 3
This course is designed to immerse students in fundamental biological concepts and scientific reasoning through original, hypothesis-driven research. As part of the Howard Hughes Medical Institutes SEA-PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) research team, students will engage in hands-on molecular techniques to discover, propagate, and characterize bacteriophages isolated from soil samples across diverse biomes. They'll also sharpen their scientific communication skills by maintaining a laboratory notebook and presenting their findings in a final poster project. This unique opportunity allows students to explore novel bacteriophages while learning key concepts in molecular biology, microbiology, and evolution through practical experiments. The course includes a mix of lectures and lab work. Prerequisites: BSC 303 Cell Biology with a grade of C or more.

BSC 425 - Fundamentals of Neuroscience
Hours: 3
This course is intended for advanced undergraduate biology students who understand genetics and cell biology/biochemistry. The course is a survey introducing various aspects of neuroscience and is textbook based. The cell types of the nervous system are introduced, with emphasis on the molecular specializations used for these cells to function and develop connections to other cells. The structure, function, and processing of all 6 senses (including kinesthesia) are covered, as are muscle control circuits. More complex functions of the nervous system, including control of eye movements, hunger, sleep, addiction, speech, and learning and memory are also covered. Prerequisites: BSC 303 with a minimum grade of C.

BSC 426 - Fundamentals of Human Anatomy
Hours: 4
This four hour course examines gross and microscopic human anatomy. The blended course covers classroom lecture plus laboratory with hands on (Models) experience of human anatomy. Prerequisite: BSC 1407 or BSC 305 with a grade of C.

BSC 427 - Pharmacology
Hours: 3
This course is designed for undergraduate students with a background in biology, cell biology, and chemistry. It provides an in-depth understanding of the fundamental concepts in pharmacology. The course begins with an examination of specific drugs and their sites of action, focusing first on the autonomic nervous system. It then explores the pharmacology of major organ systems and concludes with a detailed study of the central nervous system. Prerequisites: BSC 303 with a minimum grade of C and CHEM 1411 with a minimum grade of C.

BSC 428 - Introductory Medical Microbiology
Hours: 3
Introductory Medical Microbiology. Three Semester Hours. This is a course for junior or senior biology undergraduate students designed to help understand the basic principles of pathogenic microorganisms, infection, and human-pathogen interactions. Specific topics covered during this class include pathogenic microorganisms, diagnostic laboratory procedures, infection controls, and emerging diseases. This course includes many etiological agents responsible for infectious diseases and will focus on the principles of pathogenic mechanisms, rather than individual cases of diseases, in order to foster a student’s ability to develop the fundamental understanding required for their future clinical career.

BSC 430 - Introductory Virology
Hours: 3
Introductory Virology (Three Hours). This course is designed to introduce the significance of viruses to biology, the origin of life, and our current world. Viruses are the most numerous and the most ubiquitous form of life, although whether viruses are life or not is still an open debate. They are virtually everywhere and they are in tight relationship with other forms of life on earth. This course will focus on the principle nature of viral life; obligate parasite and host dependency. Topics include introduction to viruses, host specificity, viral replication cycles, virus classification & nomenclature, viral diseases, how viruses interact with host body, and host resistance to viruses. Prerequisites: BSC 306.

BSC 431 - Eukaryotic Cell Biology
Hours: 3
This course is the study of advanced knowledge of the eukaryotic cell including contemporary concepts of membranes, signal transduction mechanisms, messengers and receptors, extracellular structures, cell adhesions and attachment proteins, cell cycle and regulation, protein synthesis, sorting and targeting, cytoskelton and cell movements. Prerequisites: BSC 303 Cell Biology or concurrent enrollment.

BSC 435 - Wildlife Habitat Ecology and Management
Hours: 3
This class will expose the student to the history and concepts of an animal's habitat beginning with the ideas of Aldo Leopold to current ideas of what habitat is. Students will be introduced to principles and techniques of habitat management as they apply to forest, rangeland, wetland, and agricultural ecosystems. Current concepts of Conservation Biology such as fragmentation, meta-population ecology, and corridor ecology will also be covered. Students enrolled in this course must be willing to attend field trips when and where feasible to see actual management practices conducted in the field. Crosslisted with: AG 435.

BSC 436 - Plant Diversity & Conservation
Hours: 3
Plant Diversity and Conservation. Three semester hours. The course focuses on patterns and distribution of plant diversity and threats to plant diversity. Range of strategies and approaches used in plant conservation will be discussed. Crosslisted with: AG 436.

BSC 437 - Fundamentals of Genetic Engineering
Hours: 3
Ecological Restoration of Plant Communities - Three semester hours The class is an introduction to landscape scale, process-oriented approaches to ecological restoration. Topics include enhancing resource capture, techniques in re-vegetation and restoration of historic vegetation. Prescribed fire and grazing as restoration and management techniques will also be addressed. Pre-requisites: BSC 303 Cell Biology and BSC 304 Genetics.

BSC 438 - Wetland Ecology and Management
Hours: 4
This class will address the ecology of wetlands from a systems approach, starting first with what defines a wetland both legally and functionally, and covering important and defining principles of hydro-period, soils, wetland plants, wetland succession, delineation, and wetlands as wildlife habitat. The lab will immerse students in field exercises ranging from wetland plant collection and identification, and wetland bird identification. Students enrolled in this course must be willing to attend field trips when and where feasible to see different wetland types and the function and values they provide. Prerequisites: BSC 307 Ecology. Crosslisted with: AG 438.

BSC 440 - Human Dimensions of Wildlife
Hours: 3
Human Dimensions of Wildlife Management explains how a wildlife professional can more effectively manage species and social-ecological systems by fully considering the role that humans play in every stage of the wildlife management process. Human Dimensions of Wildlife Management provides the essential information that students and practitioners need to be effective problem solvers to handle a variety of situations, such as managing deer populations in residential areas, encounters between predators and people, or managing citizen input on wildlife issues. Topics will include human dimensions of wildlife management and conservation, wildlife use (hunting and fishing), working with public and private landowners, involving citizen scientists, managing citizen input, using economics to inform Crosslisted with: AG 440.

BSC 461 - Biology for Mid School Teacher
Hours: 3
Biology for Middle School Teachers. Three semester hours. (2) This course will examine the necessary content for students wishing to teach at the fourth through eighth grade level. This course will combine both content and pedagogy. Emphasis will be placed on the content as expressed the Texas Essential Knowledge and Skills. This course cannot be used for advanced credit for a biology major or minor. Prerequisites: MATH 1314 and 8 sh of biological science or consent of instructor.

BSC 463 - Landscape Ecology
Hours: 3
BSC 463 landscape Ecology is a three hour course designed to provide an overview of the relationships between ecological processes in the environment and particular ecosystems using a variety of landscape scales, development of spatial patterns, and organizational levels of research and policy. Crosslisted with: AG 463.

BSC 464 - Principles of Sustainability
Hours: 3
BSC 464 Principles of Sustainability is a three hour course designed to provide an overview of the social and biological principles of sustainability. An emphasis will also be placed on understanding on the education, health, population dynamics, culture, agriculture, food security, and natural resources aspects of sustainability.

BSC 489 - INDEPENDENT STUDY
Hours: 0-5
Independent Study. One to four semester hours. Individualized instruction/research at an advanced level in a specialized content area under the direction of a consenting faculty member. May be repeated when the topic varies. Prerequisite: Consent of department head.

BSC 490 - H Honors Thesis
Hours: 3
Honors Thesis.

BSC 491 - H Ind Honors Readings
Hours: 0-4
Individual Honors Reading.

BSC 492 - Developmental Biology
Hours: 3
This course is designed to explore the fundamental concepts and mechanisms that regulate the wonder of animal development from fertilization of the egg to formation of the adult organism, including such topics as cycle of life, differential gene expression, cell-cell communication, fertilization, early development, formation of germ layers (ectoderm, mesoderm, endoderm) and their derivatives, inductive cell/tissue interactions, stem cells, organogenesis, environment/genetics/birth defects, evolutionary changes and more. Prerequisites: BSC 303, a grade of "C" or more must be earned in the course; BSC 305 a grade of "C" or more must be earned in the course.

BSC 493 - Bioinformatics of Bacteriophages
Hours: 4
This is the second part of the Howard Hughes Medical Institute's SEA-PHAGES (Science Education Alliance-Phage Hunters Advancing Genomics and Evolutionary Science) program. This course is designed to immerse students in fundamental biological concepts and scientific reasoning through original, hypothesis-driven research. Students will characterize phages discovered by previous cohorts or explore other novel genomes using a comprehensive array of molecular and bioinformatics techniques. They will perform comparative genomics, complete genome annotation, and utilize molecular and recombinant DNA techniques to characterize these novel genomes. The course will be delivered in a blended format, combining traditional lectures with hands-on laboratory sessions. Students must register for both lecture and lab sections. Prerequisites: BSC 303 with a grade of C or more.

BSC 497 - Special Topics
Hours: 1-4
Special Topics. One to four semester hours. Organized class. May be repeated when topics vary.

BSC 498 - Health Professions Internship
Hours: 3
The internship intends to provide students pursuing a career in the health professions exposure to a professional healthcare environment along with interaction with professionals from various fields of healthcare. The student learning experience is faculty supervised and requires journal documentation and a final report. Students with a GPA of 3.25 at the end of 90 credits hrs is eligible to register with the recommendation advisor. Department approval required. Prerequisites: Students with a GPA of 3.25 at the end of 90 credits hrs is eligible to register with the recommendation advisor. Department approval required.