Zoology (ZOOL)

ZOOL 1090  BB
Introduction to Human Anatomy and Physiology
3:3:0  Fall, Spring, Summer
Prerequisite(s): BIOL 1010 or BIOL 1610

Presents a basic introduction to the sciences of anatomy and physiology. Covers the basic structure and function of the human body at the cellular, tissue, organ, and system levels. Provides a foundation of particular value for pre-nursing students who wish to have a preview of their required life science courses.

ZOOL 2320  Human Anatomy BB
3:3:0  Fall, Spring, Summer
Prerequisite(s): BIOL 1610 and (ENGL 1010 or ENGL 1005) with a minimum of C- or written permission of the Anatomy program coordinator
Corequisite(s): ZOOL 2325

Studies, in-depth, the anatomy of the human body. Covers the structure and some functions at the cellular, tissue, organ, and system levels. Emphasizes the names, locations, and functions of body components. Involves problem solving and analytical thinking. Includes weekly laboratory study of human cadavers, models, and specimens.

ZOOL 2325  Human Anatomy Laboratory
1:0:3  Fall, Spring, Summer
Corequisite(s): ZOOL 2320

Studies, in-depth, the anatomy of the human body. Covers the structure and some functions at the cellular, tissue, organ, and system levels. Emphasizes the names, locations, and functions of body components. Involves problem solving and analytical thinking. Includes weekly laboratory study of human cadavers, models, and specimens. Course Lab fee of $30 applies.

ZOOL 232H  BB
Human Anatomy
3:3:0  Fall, Spring, Summer
Prerequisite(s): BIOL 1010 or BIOL 1610, (ENGL 1010 or ENGL 1005) or written permission of the Anatomy program coordinator, a minimum of a C- required in prerequisite courses
Corequisite(s): ZOOL 232L laboratory section; at least one semester of college level experience is highly recommended.

For students who intend to pursue careers in the bio-medical sciences; especially pre-nursing, pre-med, pre-dent, and pre-vet students. Emphasizes the role and value of anatomical knowledge in health and disease. Covers the same general material as ZOOL 2320, but emphasizes clinical applications of the information. Students will choose and complete a course project that may involve short written reports, a term paper, or a poster presentation. Includes weekly laboratory study of human cadavers, models, and specimens.

ZOOL 232L  Human Anatomy Honors Laboratory
1:0:3  Fall, Spring
Prerequisite(s): BIOL 1010 or BIOL 1610, ENGL 1010 or ENGL 1005 or written permission of the Anatomy program coordinator
Corequisite(s): ZOOL 232H

For students who intend to pursue careers in the bio-medical sciences; especially pre-nursing, pre-med, pre-dent, and pre-vet students. Emphasizes the role and value of anatomical knowledge in health and disease. Covers the same general material as ZOOL 2320, but emphasizes clinical applications of the information. Students will choose and complete a course project that may involve short written reports, a term paper, or a poster presentation. Includes weekly laboratory study of human cadavers, models, and specimens.

ZOOL 242L  Human Physiology Honors Laboratory
1:0:3  Fall, Spring
Prerequisite(s): BIOL 1010 (or BIOL 1610), CHEM 1110, written permission of the physiology program coordinator
Corequisite(s): ZOOL 242H

Studies the functions of the human body at the chemical, cellular, organ, and system levels. Emphasizes control mechanisms involved in homeostasis and stimulus/response pathways. Involves problem solving and analytical thinking. Includes weekly laboratory. Course Lab fee of $24 applies.

ZOOL 242H  Human Physiology Honors Laboratory
1:0:3  Fall, Spring, Summer
Prerequisite(s): BIOL 1610 with a C- grade of C- and CHEM 1110 with a minimum grade of C-
Corequisite(s): ZOOL 2425

Studies the functions of the human body at the chemical, cellular, organ, and system levels. Emphasizes control mechanisms involved in homeostasis and stimulus/response pathways. Involves problem solving and analytical thinking. Includes weekly laboratory.

ZOOL 2425  Human Physiology Laboratory
1:0:3  Fall, Spring, Summer
Prerequisite(s): BIOL 1610 and CHEM 1110
Corequisite(s): ZOOL 2420

Accompanies ZOOL 2420. Covers topics that include the scientific method, scientific data presentation, diffusion and osmosis, enzymatic function, buffers, neurotransmission, skeletal and cardiac muscle physiology, hematology, respiratory physiology and renal physiology. Course Lab fee of $24 applies.

ZOOL 3100  Vertebrate Zoology
3:3:0  Spring, Summer
Prerequisite(s): BIOL 1010 or BIOL 1610) with a C- or higher and University Advanced Standing
Corequisite(s): ZOOL 3105

Designed for intended Biology or Zoology majors who desire a broad introduction to the vertebrates and a greater understanding of their unique structure, distribution and the importance of these organisms in the present and past history of the Earth. Covers the evolutionary development of the vertebrates pertaining to major skeletal and physiological adaptations. The approach is also ecological as to vertebrate habitat requirements, their distribution, and community roles. Includes weekly laboratory.

ZOOL 3105  Vertebrate Zoology Laboratory
1:0:2  Spring, Summer
Prerequisite(s): University Advanced Standing
Corequisite(s): ZOOL 3100

Provides students with hands-on laboratory experience in classification and identification of vertebrates. Course Lab fee of $26 applies.

ZOOL 3200  Invertebrate Zoology
3:3:0  Fall
Prerequisite(s): BIOL 1620 with a C- or higher and University Advanced Standing
Corequisite(s): ZOOL 3205 Invertebrate Zoology Laboratory

Intended for Biology Department majors. Covers the anatomy, physiology, systematics, evolution and ecology of invertebrate animals.

ZOOL 3205  Invertebrate Zoology Laboratory
1:0:2  Fall
Prerequisite(s): BIOL 1620 with a C- or higher and University Advanced Standing
Corequisite(s): ZOOL 3200 Invertebrate Zoology

Intended for Biology Department majors. Covers the anatomy, physiology, systematics, evolution and ecology of invertebrate animals. Course Lab fee of $25 applies.
**ZOOL 3300**
**Herpetology**
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* Prerequisite(s): BIOL 1620 with minimum grade of C-, and University Advanced Standing  
* Corequisite(s): ZOOL 3305 Herpetology Laboratory  
Covers the evolution, ecology, and diversity of reptiles and amphibians. Includes active class discussions, oral presentations. Emphasizes native Utah herpetofauna. Must be taken concurrently with weekly laboratory and required field trips.

**ZOOL 3305**
**Herpetology Laboratory**
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* Prerequisite(s): BIOL 1620 with minimum grade of C-, and University Advanced Standing  
* Corequisite(s): ZOOL 3300 Herpetology  
Covers the evolution, ecology, and diversity of reptiles and amphibians. Includes active class discussions, oral presentations, and field trips. Emphasizes native Utah herpetofauna. Must be taken concurrently with lecture. Course Lab fee of $40 for transportation, support, and lab applies.

**ZOOL 3330**
**Entomology**
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* Prerequisite(s): BIOL 1620 and BIOL 1625 with a minimum grade of C- in each, and University Advanced Standing  
* Corequisite(s): ZOOL 3435  
Introduces the study of insects, including insect diversity and classification, anatomy and physiology, relationships to other animals and plants, behavior, and ecology. Includes the application of the study of insects to pest management, environmental assessment, and forensic investigations.

**ZOOL 3400**
**Zoology**
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* Prerequisite(s): BIOL 1620 or MICR 2060 with a C- or higher or written instructor approval] and University Advanced Standing  
* Corequisite(s): ZOOL 3435  
Introduces the study of insects, including insect diversity and classification, anatomy and physiology, relationships to other animals and plants, behavior, and ecology. Includes the application of the study of insects to pest management, environmental assessment, and forensic investigations.

**ZOOL 3430**
**Histology**
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* Prerequisite(s): University Advanced Standing  
* Corequisite(s): ZOOL 3435  
Introduces the study of structures and functions of the body at the cellular, tissue, and organ levels. Emphasizes physical and functional relationships of various tissues in the organs of the body. Includes weekly laboratory. Course Lab fee of $25 applies.

**ZOOL 3435**
**Mammalogy**
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* Prerequisite(s): BIOL 1620 and University Advanced Standing  
* Corequisite(s): ZOOL 3500  
Explores the taxonomy, morphology, behavior, ecology, evolution, development, and conservation of mammals. Includes three weekly lectures and a weekly laboratory.

**ZOOL 3437**
**Zoology**
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* Prerequisite(s): [(ZOOL 2320 or ZOOL 232H) with a C- or higher and written instructor approval] and University Advanced Standing  
For pre-professional students pursuing biomedical careers and Biology majors with a particular interest in vertebrate structure and function. Studies the microscopic structure of the body at the cellular, tissue, and organ levels. Emphasizes physical and functional relationships of various tissues in the organs of the body. Includes weekly laboratory. Course Lab fee of $35 applies.

**ZOOL 3440**
**Animal Behavior**
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* Prerequisite(s): BIOL 1620 and University Advanced Standing  
Examines the biological basis of animal behavior with emphasis on the underlying mechanisms and evolutionary causes of behavior. Covers the proximate causes of behavior and introduces some evolutionary causes of behavior. Includes topics such as the genetic basis of behavior, perceptual and effectual systems, ethology, neurophysiology, learning, animal communication, sexual behavior, and social systems.

**ZOOL 3500**
**Mammalogy Laboratory**
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* Prerequisite(s): University Advanced Standing  
* Corequisite(s): ZOOL 3505  
Explores the taxonomy, morphology, behavior, ecology, evolution, development, and conservation of mammals. Includes three weekly lectures and a weekly laboratory. Course Lab fee of $56 for transportation, lab applies.

**ZOOL 3505**
**Forensic Anthropology I**
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* Prerequisite(s): ZOOL 1090, or ZOOL 2320 and ZOOL 2325, University Advanced Standing  
Provides instruction on the study of human bones and their remains as physical evidence in criminal investigations. Teaches the importance of dentition in determining an age estimate of human remains. Identifies the differences among the sexes, whether the remains are human or nonhuman, and what is of forensic significance. Explains crime scene methodology and clinical applications in Forensic Anthropology. Teaches problem solving and analytical thinking in order to develop a biological profile based on population-specific data and standards. Investigates different pathological conditions and variables and requires a minimum grade of C-. University Advanced Standing.

**ZOOL 3510**
**Forensic Anthropology II**
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* Prerequisite(s): University Advanced Standing  
Examines the biological basis of animal behavior with emphasis on the underlying mechanisms and evolutionary causes of behavior. Covers the proximate causes of behavior and introduces some evolutionary causes of behavior. Includes topics such as the genetic basis of behavior, perceptual and effectual systems, ethology, neurophysiology, learning, animal communication, sexual behavior, and social systems.

**ZOOL 3705**
**Animal Behavior**
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* Prerequisite(s): BIOL 1620 and University Advanced Standing  
Studies acute and chronic physiological responses to exercise, as well as nutritional and environmental effects on these responses. The laboratory is designed to offer the hands-on experience where students will experience the physiological responses to different stressors in the lab setting. The labs are arranged to be conducted as similar material is being discussed in class. Course Lab fee of $28 for materials applies.

**ZOOL 3707**
**Exercise Physiology**
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* Prerequisite(s): University Advanced Standing  
* Corequisite(s): EXSC 3700  
Studies acute and chronic physiological responses to exercise, as well as nutritional and environmental effects on these responses. Requires separate weekly laboratory. Canvas Course Mats $78/McGraw

**ZOOL 3709**
**Exercise Physiology Laboratory**
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* Prerequisite(s): University Advanced Standing  
* Corequisite(s): EXSC 3700  
Studies acute and chronic physiological responses to exercise, as well as nutritional and environmental effects on these responses. The laboratory is designed to offer the hands-on experience where students will experience the physiological responses to different stressors in the lab setting. The labs are arranged to be conducted as similar material is being discussed in class. Course Lab fee of $28 for materials applies.
ZOOLOGY

ZOO 4400
Pathophysiology
4:4:0 Fall, Spring
* Prerequisite(s): ZOOL 2320, ZOOL 2420, and MICR 2060 each with a minimum grade C-, and University Advanced Standing

For Biology majors with an emphasis in human physiology, pre-professional majors, and nursing students. Studies pathophysiological etiologies and mechanisms that cause disease and examines physiological adaptations and dysfunction of organs and organ systems in a disease state.

ZOO 4500
Comparative Vertebrate Zoology
3:3:0
* Prerequisite(s): ZOOL 3100 and (ZOOL 1090 or ZOOL 2320), with a grade of C- or higher, and University Advanced Standing
* Corequisite(s): ZOOL 4505 Comparative Vertebrate Zoology Laboratory

Studies the structure and function of vertebrates at the cellular, tissue, organ and systems levels. Emphasizes developmental and evolutionary comparative aspects of mammalian, avian, reptilian, amphibian, and piscian organs and systems.

ZOO 4505
Comparative Vertebrate Zoology Laboratory
1:0:3
* Prerequisite(s): ZOOL 3100 and (ZOOL 1090 or ZOOL 2320), with a grade of C- or higher, and University Advanced Standing
* Corequisite(s): ZOOL 4500 Comparative Vertebrate Zoology

Studies the structure and function of vertebrates at the cellular, tissue, organ and systems levels. Emphasizes developmental and evolutionary comparative aspects of mammalian, avian, reptilian, amphibian, and piscian organs and systems. Course Lab fee of $24 applies.

ZOO 4600
Ornithology
4:3:2
* Prerequisite(s): BIOL 1620 and University Advanced Standing; ZOOL 3100 and ZOOL 3105 highly recommended

Provides an in-depth study of avian evolution, systematics, developmental anatomy (wings, beaks, feathers), physiology, and social and reproductive behavior. Emphasizes an evolutionary and adaptive theme to the study of birds. Includes lectures, laboratories and field trips. Course Lab fee of $41 for transportation, lab applies.

ZOO 4700
Advanced Anatomy
4:3:3 Fall, Spring
* Prerequisite(s): ZOOL 2320 with a minimum grade of C- and University Advanced Standing

For students interested in biomedical science careers or with a special interest in anatomy. Covers principles and techniques of anatomical investigation and specimen preparation. Provides supervised experience in human cadaver dissection, anatomic interpretation of radiographs, craniometrics, and palpation of the body. A regional dissection approach will be used in the lab. Requires problem solving and analytical thinking. Includes the theory and basic principles of various forms of diagnostic imaging, light and electron microscopy, skeletal preparation, and injection/maceration techniques. Includes weekly laboratory. Course Lab fee of $13 applies.

ZOO 4750
Human Physiology A Cell Biology Approach
4:3:3 Not Offered
* Prerequisite(s): BIOL 3400 and University Advanced Standing

Addresses physiological principles and functions of the human body systems at the molecular level. Emphasizes cell signal transduction involved in the body maintaining homeostasis. Gives special attention to nervous, muscular, cardiovascular, urinary and respiratory systems. Requires problem solving and analytical thinking skills to be successful in the class. Includes weekly laboratory. Course Lab fee of $25 applies.

ZOO 4780
Neuroscience
4:3:2 Fall
* Prerequisite(s): ZOOL 2420 with a C- or higher and University Advanced Standing

Covers aspects of molecular and cell biology, physiology, pharmacology, anatomy and the interplay of these and other disciplines in our understanding of the structure and function of the nervous system. Discusses neuroanatomy, developmental neurobiology, electrophysiology, membrane specializations related to signal propagation and signal transmission, neurotransmitter function and neuropharmacology, structure and function of simple neuronal circuits and complex neural networks and the plasticity of the nervous system. Incorporates discussion of journal articles related to the latest advances in neuroscience.