

Zoology (ZOOL)

ZOOL 1090. Introduction to Human Anatomy and Physiology BB. (3 Credits)

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. (3 Credits)

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.

Canvas Course Mats \$85/McGraw applies.

ZOOL 2325. Human Anatomy Laboratory. (1 Credit)

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. Human Anatomy BB. (3 Credits)

Prerequisite(s): BIOL 1610, (ENGL 1010 or ENGH 1005 or written permission of the Anatomy program coordinator), a minimum of a C- required in prerequisite courses.

Corequisite(s): ZOOL 2325; at least one semester of college level experience is highly recommended.

Is 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. Requires students to 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.

Canvas Course Mats \$85/McGraw applies.

ZOOL 232L. Human Anatomy Honors Laboratory. (1 Credit)

Prerequisite(s): BIOL 1010 or BIOL 1610. ENGL 1010 or ENGH 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.

Course Lab fee of \$30 applies.

ZOOL 2420. Human Physiology. (3 Credits)

Prerequisite(s): BIOL 1610 with a minimum grade of C- and CHEM 1110 or CHEM 1210 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. Explains control mechanisms involved in homeostasis and stimulus/response pathways. Involves problem solving and analytical thinking.

ZOOL 2425. Human Physiology Laboratory. (1 Credit)

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 242H. Human Physiology. (3 Credits)

Prerequisite(s): BIOL 1610 with a minimum grade of C- and CHEM 1110 with a minimum grade of C-, written permission of the physiology program coordinator

Corequisite(s): ZOOL 2425

Studies the functions of the human body at the chemical, cellular, organ, and system levels. Explains control mechanisms involved in homeostasis and stimulus/response pathways. Involves problem solving and analytical thinking. Includes weekly laboratory. Requires a term paper, project, or presentation.

ZOOL 242L. Human Physiology Honors Laboratory. (1 Credit)

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. Explains 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 3100. Vertebrate Zoology. (3 Credits)

Prerequisite(s): BIOL 1620 with a C- or higher and University Advanced Standing

Corequisite(s): ZOOL 3105

Covers the evolutionary development of the vertebrates pertaining to major skeletal and physiological adaptations. Has an ecological approach as to vertebrate habitat requirements, their distribution, and community roles. Designed for 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. Includes weekly laboratory.

ZOOL 3105. Vertebrate Zoology Laboratory. (1 Credit)

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 \$50 applies.

ZOOL 3200. Invertebrate Zoology. (3 Credits)

Prerequisite(s): BIOL 1620 with a C- or higher and University Advanced Standing

Corequisite(s): ZOOL 3205

Teaches the fundamentals of invertebrate zoology. Covers the anatomy, physiology, systematics, evolution and ecology of invertebrate animals.

ZOOL 3205. Invertebrate Zoology Laboratory. (1 Credit)

Prerequisite(s): BIOL 1620 with a C- or higher and University Advanced Standing

Corequisite(s): ZOOL 3200 Invertebrate Zoology

Covers the anatomy, physiology, systematics, evolution and ecology of invertebrate animals.

Course Lab fee of \$25 applies.

ZOOL 3300. Herpetology. (3 Credits)

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. (1 Credit)

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 \$65 for transportation, support, and lab applies.

ZOOL 3430. Entomology. (3 Credits)

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 3435. Entomology Laboratory. (1 Credit)

Prerequisite(s): University Advanced Standing

Corequisite(s): ZOOL 3430

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.

Course lab fee of \$45 applies.

ZOOL 3500. Mammalogy. (3 Credits)

Prerequisite(s): BIOL 1620 with a minimum grade of C-, and University Advanced Standing; ZOOL 3100 and ZOOL 3105 strongly recommended

Corequisite(s): ZOOL 3505

Explores the taxonomy, morphology, behavior, ecology, evolution, development, and conservation of mammals. Includes three weekly lectures and a weekly laboratory.

ZOOL 3505. Mammalogy Laboratory. (1 Credit)

Prerequisite(s): University Advanced Standing

Corequisite(s): ZOOL 3500

Explores the taxonomy, morphology, behavior, ecology, evolution, development, and conservation of mammals through a weekly laboratory.

Course Lab fee of \$67 for transportation, lab applies.

ZOOL 3600. Forensic Anthropology I. (3 Credits)

Cross-listed with: FSCI 3600

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 which must be taken into consideration when determining the cause of death.

ZOOL 3700. Exercise Physiology. (3 Credits)

Cross-listed with: EXSC 3700

Prerequisite(s): EXSC Majors: ZOOL 2320 (or 232H), ZOOL 2325 (or 232L), and EXSC 270G all with a C- or higher and (MATH 1050 or MATH 1055).

PETE Majors: PETE 2700 and ZOOL 1090 with a C- or higher and (MATH 1050 or MATH 1055). All: University Advanced Standing

Pre- or Corequisite(s): ZOOL 2420 (or 242H), ZOOL 2425 (or 242L)

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 \$70/McGraw applies.

ZOOL 3705. Exercise Physiology Laboratory. (1 Credit)

Cross-listed with: EXSC 3705

Prerequisite(s): University Advanced Standing

Corequisite(s): EXSC 3700

Investigates acute and chronic physiological responses to exercise, as well as nutritional and environmental effects on these responses. Provides a hands-on experience where students conduct a variety of testing procedures, as well as analyze and interpret the various physiological responses.

Course Lab fee of \$28 for materials applies.

ZOOL 4000. Animal Behavior. (3 Credits)

Prerequisite(s): BIOL 1610 and University Advanced Standing

Examines the biological basis of animal behavior with emphasis on the underlying mechanisms and evolutionary causes of behavior. Covers first the proximate causes of behavior and then the ultimate or 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 4100. Parasitology. (4 Credits)

Cross-listed with: MICR 4100

Prerequisite(s): (BIOL 1620 or MICR 2060) with a C- or higher and University Advanced Standing

Introduces the study of parasites. Emphasizes the biology of principal groups of parasites affecting humans, livestock, and other animals, including their medical economic, and ecological significance. Emphasizes parasites causing zoonotic diseases. Includes weekly laboratory experience involving identification of parasites.

Course Lab fee of \$25 applies.

ZOOL 4300. Histology. (4 Credits)

Prerequisite(s): [(ZOOL 2320 or ZOOL 232H or ZOOL 2420) with a C- or higher] and University Advanced Standing

Prepares students pursuing biomedical careers to analyze tissues and relate them to normal and abnormal physiological functions. 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 4400. Pathophysiology. (4 Credits)

Prerequisite(s): ZOOL 2320, ZOOL 2420, and MICR 2060 or MICR 3450 each with a minimum grade C-, and University Advanced Standing

Emphasizes the effects of human diseases on human physiology. Studies pathophysiological etiologies and mechanisms that cause disease and examines physiological adaptations and dysfunction of organs and organ systems in a disease state.

ZOOL 4500. Comparative Vertebrate Zoology. (3 Credits)

Prerequisite(s): BIOL 1620 and (ZOOL 1090, ZOOL 2320, or ZOOL 3100) with a grade of C- or higher and University Advanced Standing

Corequisite(s): ZOOL 4505

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 piscine organs and systems.

ZOOL 4505. Comparative Vertebrate Zoology Laboratory. (1 Credit)

Prerequisite(s): BIOL 1620 and (ZOOL 1090, ZOOL 2320, or ZOOL 3100) with a grade of C- or higher and University Advanced Standing

Corequisite(s): ZOOL 4500

Accompanies the comparative vertebrate zoology lecture. Studies the structure and function of vertebrates at the cellular, tissue, organ and systems levels. Incorporates dissections of mammalian, avian, reptilian, amphibian, and piscine organs and systems.

Course Lab fee of \$40 applies.

ZOOL 4600. Ornithology. (4 Credits)

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.

ZOOL 4700. Advanced Anatomy. (4 Credits)

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.

ZOOL 4750. Human Physiology A Cell Biology Approach. (4 Credits)

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.

ZOOL 4780. Neuroscience. (4 Credits)

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.

ZOOL 4800. Dissection Techniques. (3 Credits)

Prerequisite(s): ZOOL 2320, ZOOL 2325, and University Advanced Standing

Covers techniques (knife, probe, finger, etc.) used to dissect human cadavers and other mammalian specimens such as horse, cow, cat, dog, and pig for use in gross anatomy labs. Reviews how to procure different types of specimens to preserve and dissect cadavers including, but not limited to, fresh specimens, preserved specimens, and frozen specimens. Introduces various techniques for suturing, plastination, and vascular casting. Emphasizes OSHA standards for laboratory safety, including how to safely use a bone saw.

ZOOL 490R. Special Topics in Zoology. (1-4 Credits)

Prerequisite(s): BIOL 1620 and University Advanced Standing

Explores and examines special topics relating to the field of zoology. Emphasizes areas of rapid growth in zoology or current importance to society. May be repeated for a total of 9 credits toward graduation.