ZOOLOGY (ZOO)

ZOO*2090 Vertebrate Structure and Function Fall Only (LEC: 2, LAB: 3) [0.50]
This course offers a comparative survey of the structure and functioning of the chordates with emphasis on the vertebrates and includes a laboratory study of the anatomy of selected vertebrates.
Prerequisite(s): 4.00 credits including BIOL*1070
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*2700 Invertebrate Morphology & Evolution Winter Only (LEC: 3, LAB: 3) [0.50]
This course examines the vast diversity of invertebrate taxa and the tools and concepts used to classify them and understand their origins. Principles of zoogeography, phylogeny, natural selection and comparative analyses will form the conceptual backbone of the course. In lectures and labs, students will 'climb' the tree of life, from the most ancient pre-invertebrates to more derived forms, and explore their anatomical and morphological diversity.
Prerequisite(s): 4.00 credits including BIOL*1070
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3000 Comparative Histology Fall Only (LEC: 3, LAB: 3) [0.50]
This course provides an introduction to the microscopic structure of the major organ systems of the vertebrate body. Beginning with an examination of epithelial, connective, muscular, and nervous tissues, the course then examines the comparative histology of the circulatory, nervous, digestive, integumentary, respiratory, excretory, reproductive, endocrine, and sensory systems of vertebrates.
Prerequisite(s): ZOO*2090
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3050 Developmental Biology Winter Only (LEC: 3, LAB: 3) [0.50]
This course will focus on the development of vertebrates and invertebrates from fertilized egg to adult. It will examine fertilization, cell differentiation into tissues and organs, regulation of cell growth, and transmission of developmental information to the next generation. Throughout, the course will emphasize the evolutionary mechanisms that have shaped developmental patterns in animals.
Prerequisite(s): MBG*2040, BIOL*2400 is strongly recommended.
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3600 Comparative Animal Physiology I Fall Only (LEC: 3) [0.50]
This course will examine the physiological processes that enable animals to live within a diverse range of environments. Lectures will focus on the underlying molecular and cellular events that mediate physiological processes and contribute to whole animal homeostasis, and emphasize strategies and adaptations used by different animals when influenced by various environmental conditions. Fundamental mechanisms in animal physiology such as diffusion, osmosis, feedback systems, and homeostasis will be explored in nervous, muscular, endocrine and sensory physiological systems. An associated lab course (ZOO*3610) is available.
Prerequisite(s): BIOC*2580, ZOO*2090, (STAT*2040 or STAT*2230 is recommended)
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3610 Lab Studies in Animal Physiology I Fall Only (LAB: 3) [0.25]
This hands-on laboratory course will provide practical experience in comparative animal physiology and complement themes covered in the lecture course (ZOO*3600). Students will learn skills and techniques used for conducting experiments on living animals with the goal of characterizing physiological processes. Students will learn how to collect data, statistically analyze results and write formal laboratory reports.
Prerequisite(s): STAT*2040 or STAT*2230
Co-requisite(s): ZOO*3600
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3620 Comparative Animal Physiology II Winter Only (LEC: 3) [0.50]
This course will examine the physiological processes that enable animals to live within a diverse range of environments. With a focus on respiratory, cardiovascular, osmoregulatory and digestive physiological processes, the lectures will examine the underlying molecular and cellular events that mediate physiological processes and contribute to whole animal homeostasis. An associated lab course (ZOO*3630) is available.
Prerequisite(s): ZOO*3600
Restriction(s): ZOO*3210
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3630 Lab Studies in Animal Physiology II Winter Only (LAB: 3) [0.25]
In this hands-on laboratory course, students will apply skills and techniques to conduct experiments on living animals with the goal of characterizing physiological processes. Students will advance their writing skills through preparation of several full lab reports. The last experiment in the course is a self-directed study where students will develop hypotheses, generate and test predictions and design the experiment using tools they have learned in the course.
Prerequisite(s): ZOO*3610
Co-requisite(s): ZOO*3620
Restriction(s): ZOO*3210
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*3700 Integrative Biology of Invertebrates Fall Only (LEC: 3, LAB: 3) [0.50]
This course explores variation in physiology, reproduction and life history among invertebrates, and the role of invertebrates in marine, freshwater and terrestrial ecosystems. Through field experiences, lab study and a class experiment, we will examine the diverse solutions that invertebrates have evolved to live in very different environments, including: circulation and gas exchange; feeding and digestion; osmoregulation and excretion, nervous system and sensory structures; locomotion and biomechanics, and invertebrate communities.
Prerequisite(s): ZOO*2700
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4070 Animal Behaviour Fall Only (LEC: 3) [0.50]
This course provides an introduction to the theories and principles of the behaviour of animals. It includes comparative studies of learning, socialization, social interaction, and other components of animal behaviour.
Prerequisite(s): BIOL*2400, (STAT*2040 or STAT*2230)
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4170 Experimental Comparative Animal Physiology Winter Only (LEC: 3, LAB: 3) [0.50]
In this course an experimental approach to the study of physiological mechanisms and adaptive responses to changes in the environment will be stressed. The focus of the course will be on laboratory exercises.
Prerequisite(s): 1 of BIOM*3200, HK*2810, ZOO*3210, ZOO*3600
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4300 Marine Biology and Oceanography Fall Only (LEC: 3, LAB: 3) [0.75]
This intensive two-week course is held in late July through early August although it must be recorded as part of your Fall course selection where tuition and compulsory fees apply. The course is held at the Huntsman Marine Science Centre, St. Andrews, New Brunswick. The ecology, behaviour, physiology, biochemistry, biomechanics of marine plants and animals will be studied as well as basic oceanographic techniques. Students will be able to familiarize themselves with the techniques and equipment involved in various branches of marine biology and oceanography. In addition to regular Fall tuition fees, students are responsible for the cost of transportation to St. Andrews, and for charges levied by the Huntsman Marine Science Centre for room and board, research facilities and ship time. A department application form must be submitted for approval before course selection. The signature of the course coordinator is required to select the course. Students taking this course DO NOT use course numbers reserved for the Ontario Universities Program in Field Biology.
Prerequisite(s): BIOL*3450, ZOO*2700
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4330 Biology of Fishes Winter Only (LEC: 2, LAB: 3) [0.50]
This course provides a comparative examination of selected freshwater and marine fishes to illustrate the influence of aquatic environments on life styles, behavioral patterns, physiological responses, population biology and community structure. The use of niche, habitat and ecotope concepts in defining the role of fishes in representative types of aquatic ecosystems will be examined.
Prerequisite(s): 15.00 credits including (STAT*2040 or STAT*2230), ZOO*2090
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4570 Marine Ecological Processes Winter Only (LEC: 3, LAB: 1) [0.50]
This course provides an advanced analysis of the physical and biogeochemical processes in the world's oceans and the dependence of biological processes on physical and chemical processes from micro- to macro-scales. Topics to be discussed include production and energy transfer within pelagic food webs, export of energy to the benthos, and structure and dynamics of marine communities.
Prerequisite(s): BIOL*2060, BIOL*3450, PHYS*1080
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4910 Integrative Vertebrate Biology Fall Only (LEC: 3) [0.50]
This course examines the proximate and historical causes of diversity in morphology, physiology and behaviour among major groups of vertebrates (fishes, amphibians, reptiles, birds, mammals). First, topics such as vertebrate origins, zoogeography, taxonomy and comparative methods will be developed as a foundation for inquiry. The remainder of the course will be organized around specific contemporary problems in vertebrate biology such as the evolution of endothermy; feeding strategies and metabolism; locomotion and migration; trends in vertebrate reproduction; evolution of brain size and complexity in relation to cognition and communication. Each problem will be explored through analyses of taxonomic diversity, historical and phylogenetic constraints, physiological and developmental causes, and functional effects.
Prerequisite(s): BIOL*2400, ZOO*2090
Co-requisite(s): ZOO*3600
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4920 Lab Studies in Ornithology Fall Only (LAB: 3) [0.25]
This course provides a practical experience in the study of Ornithology. Using University collections of prepared and preserved specimens and field observations where possible, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate, through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.
Prerequisite(s): 14.00 credits including ZOO*2090
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information. Instructor consent required.
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4940 Lab Studies in Herpetology Winter Only (LAB: 3) [0.25]
This course provides a practical experience in the study of Herpetology. Using University collections of prepared and preserved specimens and field observations where possible, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.
Prerequisite(s): 15.00 credits including ZOO*2090
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Integrative Biology
Location(s): Guelph

ZOO*4950 Lab Studies in Mammalogy Winter Only (LAB: 3) [0.25]
This course provides a practical experience in the study of Mammalogy. Using University collections of prepared and preserved specimens and field observations where possible, students will develop and apply skills in identification and sampling, explore relations between species diversity and habitat, and investigate through guided study, the extent of anatomical, skeletal, reproductive and morphological variation and its functional and evolutionary causes.
Prerequisite(s): 15.00 credits including ZOO*2090
Restriction(s): This is a Priority Access Course. Enrolment may be restricted to particular programs, specializations or semester levels during certain periods. Please see the departmental website for more information.
Department(s): Department of Integrative Biology
Location(s): Guelph