WFSC-WILDLIFE & FISHERIES SCI (WFSC)

WFSC 101 Introduction to Wildlife and Fisheries
Credits 3. 3 Lecture Hours.
Introduction to a variety of topics in the wildlife and fisheries discipline to prepare to be successful both in the field and in further studies; case studies will guide through current issues and laboratory concepts will provide hands on experience in methods and skills important in the field of wildlife and fisheries.
Prerequisite: Open only to students with less than 36 hours at Texas A&M University.

WFSC 291 Research
Credits 1 to 4. 1 to 4 Other Hours.
Research conducted under the direction of faculty member in wildlife and fisheries sciences. May be repeated 3 times for credit.
Prerequisites: Freshman or sophomore classification and approval of instructor.

WFSC 300/ENTO 300 Field Studies
Credits 3. 3 Other Hours.
Integration of principles of animal and plant ecology with environmental factors to characterize wildlife populations; intensive analysis of specific areas will emphasize either the development of a wildlife management plan or a general vertebrate natural history survey.
Prerequisite: Prior approval of instructor and concurrent enrollment in WFSC 450/ENTO 450 and WFSC 451/ENTO 451.
Cross Listing: ENTO 300/WFSC 300.

WFSC 301 Wildlife and the Changing Environment
Credits 3. 3 Lecture Hours.
Using an ecosystem approach, analyzes changes in the North American environment; effects of these changes on wildlife populations; and reviews areas of major, current concern.
Prerequisites: Junior or senior classification; restricted to non-majors.

WFSC 302 Natural History of the Vertebrates
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Introduction to life histories of fishes, amphibians, reptiles, birds and mammals; lecture covers vertebrate groups on a worldwide scale and emphasizes a comparative approach to the study of adaptation to the environment; lecture topics include behavior, reproduction, feeding specializations, evolutionary history, locomotion, hibernation, migration, endangered species, zoogeography and importance to man; laboratory emphasizes the recognition of Texas vertebrates. Designed for both science and non-science majors.
Prerequisites: BIOL 111 and BIOL 112 or BIOL 101 and BIOL 107 or equivalent.

WFSC 303 Fish and Wildlife Laws and Administration
Credits 3. 3 Lecture Hours.
Review and analysis of state and federal laws and international treaties and conventions affecting fish and wildlife; their application and administration; organizational structure of state, federal and international agencies; their objectives, policies and practices.
Prerequisites: Grade of C or better in WFSC 101; grade of C or better in RENR 205 or BIOL 357; junior classification or approval of instructor.

WFSC 304 Wildlife and Fisheries Conservation
Credits 3. 3 Lecture Hours.
Ecological principles used to conserve and manage wildlife and fisheries resources at the individual, population and community levels; topics include conservation biology, species interactions, animal-habitat relationships, population dynamics and harvesting, habitat management and restoration and human dimensions of fish and wildlife conservation.
Prerequisites: RENR 205 and junior or senior classification or approval of instructor.

WFSC 311 Ichthyology
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Introduction to the study of fishes, their biology, classification, evolution, distribution, ecology and economic importance.
Prerequisite: WFSC 302 or BIOL 318.

WFSC 314 Down River. Biology of Gulf Coastal Fishes
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Understanding the biological complexity of Gulf coast river systems while gaining hands-on experience in field and museum ichthyological techniques; sampling of the Guadalupe and San Antonio rivers; participation in lectures, museum preparation and archiving specimens at the Biodiversity Research and Teaching Collections (BRTC).
Prerequisites: WFSC 311 with a grade of B or better and approval of instructor.

WFSC 315 Herpetology
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Evolutionary ecology of reptiles and amphibians and conservation biology of the major groups; labs concentrate on the global diversity of herps and the herpetofauna of Texas; foundation for students in wildlife science and biology.
Prerequisites: WFSC 302 or approval of instructor; WFSC 302 or BIOL 318.

WFSC 316 Field Herpetology
Credit 1. 3 Lab Hours.
Field work involving collection and preservation of herpetological specimens; natural history, ecological relations. Available for students enrolled in WFSC 315 who would like to have field trips.
Prerequisite: WFSC 315 or registration therein.

WFSC 327/VTPB 301 Wildlife Diseases
Credits 3. 3 Lecture Hours.
Basic mechanisms of diseases as they occur in wildlife populations; interplay of habitat requirements, individual physiological requirements and disease producing mechanisms of varied wildlife species.
Prerequisite: Junior classification or approval of department head.
Cross Listing: VTPB 301/WFSC 327.

WFSC 335 Natural History of the Invertebrates
Credits 4. 3 Lecture Hours. 3 Lab Hours.
A phylogenetic survey of the invertebrate phyla including their taxonomy, morphology, life histories, ecology, ethology and zoogeography. Field trips may be required for which departmental fees may be assessed to cover costs.

WFSC 401 General Mammalogy
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Mammalian biology; evolution, classification, biogeography, reproduction, physiology, ecology, and behavior; focuses on basic concepts necessary for a foundation in both wildlife science and biology.
Prerequisites: WFSC 302 or BIOL 318; junior classification.
WFSC 402 General Ornithology  
Credits 3. 2 Lecture Hours. 3 Lab Hours.  
Introduction to study of birds, their structure, classification, geographic  
distribution, ecological relations and economic status; foundation of  
wildlife science, also for museum work.  
Prerequisites: WFSC 302 or BIOL 318; junior classification.  

WFSC 403 Animal Ecology  
Credits 3. 2 Lecture Hours. 3 Lab Hours.  
Concepts of animal ecology which emerge at various levels of  
organization; the ecosystem, the community, the population and the  
individual; laboratoires emphasis on the quantitative analysis of field data  
and the simulation of population dynamics.  
Prerequisites: Grade of C or better in RENR 205 or approval of instructor;  
junior classification.  

WFSC 404 Aquatic Ecosystems  
Credits 3. 3 Lecture Hours.  
Inland and coastal zone aquatic ecosystems, lower foodweb structure,  
functioning and influence on living resources; lakes, rivers, estuaries,  
open bay systems, factors impacting ecosystem health and fisheries;  
harmful algal blooms, reduced water inflows, eutrophication and hypoxia  
formation as they affect foodwebs, recruitment of commercially and  
recreationally important fisheries.  
Prerequisite: Junior or senior classification or approval of instructor.  

WFSC 405 Urban Wildlife and Fisheries  
Credits 3. 3 Lecture Hours.  
Urban wildlife and fisheries trains students to establish and maintain  
diverse, self-sustaining urban wildlife and fish populations at levels in  
harmony with ecological, social, and economic values of the human  
community and to develop optimal levels of public appreciation and use  
of urban wildlife and fish resources and associated habitats.  
Prerequisites: RENR 205; junior or senior classification.  

WFSC 406 Wildlife Habitat Management  
Credits 3. 3 Lecture Hours.  
Designed to acquaint the student with major land use practices on  
lands that produce wildlife, how these influence wildlife production and  
alterations or manipulations of habitat used to achieve specific wildlife  
management goals.  
Prerequisites: Grade of C or better in RENR 205 and WFSC 302 or  
approval of instructor; junior classification.  

WFSC 407 Field Wildlife Habitat Management  
Credit 1. 2 Lab Hours.  
Field and laboratory studies of specific wildlife habitat management  
practices with special emphasis on those used in Texas; attendance  
required at four weekend field trips to study wildlife habitat operations.  
Prerequisite: Concurrent registration in WFSC 406 required.  

WFSC 408 Techniques of Wildlife Management  
Credits 3. 2 Lecture Hours. 3 Lab Hours.  
Techniques available to directly and indirectly manipulate wild animal  
populations to achieve balance between socioeconomic and aesthetic  
values.  
Prerequisites: Senior classification; WFSC 403 and WFSC 406 or  
registration therein or approval of instructor.  

WFSC 409 NATURE in the Classroom: Needed Activities To Understand  
Resource Ecology  
Credit 1. 3 Lab Hours.  
Integration of natural resources through conservation ecology programs,  
utilization of research techniques adaptable for classroom use; field trips  
to community facilities, gaming strategies and computer simulations.  
Prerequisites: WFSC 420 or RENR 205 or concurrent enrollment; junior or  
senior classification.  

WFSC 410 Principles of Fisheries Management  
Credits 4. 3 Lecture Hours. 3 Lab Hours.  
Basic knowledge from ichthyology, biology of fishes and limnology  
related to applied aspects of freshwater and marine fishery science.  
Management techniques applicable to streams, ponds, reservoirs,  
estuaries and the oceans.  
Prerequisites: BIOL 357, or grade of C or better in WFSC 311, WFSC 403,  
or WFSC 404, or approval of instructor.  

WFSC 411 Ecology of the Coastal Zone  
Credits 3. 3 Lecture Hours.  
Introduction to the ecosystems that comprise the coastal zone with  
an emphasis on the role of freshwater inflows; open bay systems are  
the focus of lectures, but fringing habitats are also discussed; human  
components of the coastal zone are also discussed including industrial,  
commercial domestic, conservation and restoration issues.  
Prerequisite: Junior or senior classification.  

WFSC 412 Ecology of Lakes and Rivers  
Credits 4. 3 Lecture Hours. 3 Lab Hours.  
Biological, physical, chemical and geological characteristics of fresh  
waters; human impacts, which include influence of industrial, domestic,  
conservation and restoration activities.  
Prerequisites: CHEM 101 and CHEM 222; PHYS 201; junior or senior  
classification.  

WFSC 413 Problem Solving in Wildlife and Fisheries  
Credits 4. 2 Lecture Hours. 4 Lab Hours.  
Project-based to combine experiences and knowledge from other wildlife  
and fisheries sciences courses; critical thinking about issues and relevant  
questions in wildlife and fisheries sciences field; emphasis on completion  
of course project and answering research or management question.  
Prerequisites: Grade of a C or better in WFSC 317 and WFSC 304;  
STAT 301, STAT 302, or STAT 303; senior classification.  

WFSC 414 Ecology of Lakes and Rivers  
Credits 3. 3 Lecture Hours.  
Basic knowledge from ichthyology, biology of fishes and limnology  
related to applied aspects of freshwater and marine fishery science.  
Management techniques applicable to streams, ponds, reservoirs,  
estuaries and the oceans.  
Prerequisites: BIOL 357, or grade of C or better in WFSC 311, WFSC 403,  
or WFSC 404, or approval of instructor.  

WFSC 415/MARB 415 Coastal Marine Biology and Geology of Alaska  
Credits 3. 3 Lecture Hours.  
Field course conducted in south-central Alaska for two weeks; work at  
the remote Alice Cove Research Station located in Prince William Sound;  
conduct research on marine mammals behavior and ecology; exploration  
of the geology and glaciology.  
Prerequisite: BIOL 112.  
Cross Listing: MARB 415/WFSC 415.  

WFSC 416 Biology of Fishes  
Credits 4. 3 Lecture Hours. 3 Lab Hours.  
Fishes' physiological and morphological adaptations for life in aquatic  
systems; physiological and behavioral responses of fish to environmental  
variation. Laboratory emphasizes design, conduct and analysis of virtual  
experiments featuring "EcoFish," a simulation model of fish autecology.  
Prerequisites: WFSC 302 or WFSC 311; WFSC 414; or approval of  
instructor.  

WFSC 417 Biology of Fishes  
Credits 4. 3 Lecture Hours. 3 Lab Hours.  
Fishes' physiological and morphological adaptations for life in aquatic  
systems; physiological and behavioral responses of fish to environmental  
variation. Laboratory emphasizes design, conduct and analysis of virtual  
experiments featuring "EcoFish," a simulation model of fish autecology.  
Prerequisites: WFSC 302 or WFSC 311; WFSC 414; or approval of  
instructor.  

WFSC 418 Ecology of the Coastal Zone  
Credits 3. 3 Lecture Hours.  
Introduction to the ecosystems that comprise the coastal zone with  
an emphasis on the role of freshwater inflows; open bay systems are  
the focus of lectures, but fringing habitats are also discussed; human  
components of the coastal zone are also discussed including industrial,  
commercial domestic, conservation and restoration issues.  
Prerequisite: Junior or senior classification.
WFSC 419 Wildlife Restoration
Credits 3. 2 Lecture Hours. 3 Lab Hours.
Study of the fundamentals of the restoration of animal populations and the resources they require; factors that control the distribution and abundances of animals in relation to restoration; and how restoration plans for wildlife are developed.
Prerequisite: RENR 205 or equivalent; junior or senior classification or approval of instructor; WFSC 406 and WFSC 407 and ESSM 320 preferred.

WFSC 420 Ecology and Society
Credits 3. 3 Lecture Hours.
Study and compare human and natural ecosystems using diversity, interrelations, cycles, and energy as the conceptual organization; central themes are sustainability, stewardship and science.
Prerequisite: Junior or senior classification.

WFSC 422 Ethology
Credits 3. 3 Lecture Hours.
Survey of the control, ontogeny, function and natural selection of behavior in a variety of vertebrate and invertebrate species; interaction between the organism and its environment with regard to the mechanisms and adaptive significance of behavior; evolution of anti-predator, feeding, reproductive and cooperative traits.
Prerequisite: BIOL 112 or equivalent.

WFSC 425 Marine Fisheries
Credits 3. 3 Lecture Hours.
Survey of fisheries for marine vertebrates and invertebrates primarily in the Gulf of Mexico and South Atlantic with special emphasis being directed to their biology, economics and management.

WFSC 427 Disease Management in Fisheries and Aquaculture
Credits 3. 2 Lecture Hours. 2 Lab Hours.
Fish and invertebrates of economic importance; factors influencing the maintenance of health for each species group; problems and solutions unique to each phase of aquaculture from breeding to growout; application of routine diagnosis and other management tools.
Prerequisite: Junior classification.

WFSC 428 Wetland Ecosystem Management
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Ecosystem approach to the ecology and management of wetlands; emphasis on factors controlling wetland structure and function, characteristics of different wetland types, and applied issues of wetland restoration, creation and delineation.
Prerequisite: Junior or senior classification.

WFSC 433 Molecular Ecology in Wildlife and Fisheries
Credits 3. 3 Lecture Hours.
Fundamentals of molecular ecology applied to conservation and management of wildlife and fisheries; presentation and discussion of scientific papers on wildlife and fisheries molecular ecology; topics in conservation, management and aquaculture.
Prerequisites: BIOL 112 or equivalent; junior or senior classification.

WFSC 444 Aquaculture I: Principles and Practices
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Scientific perspectives concerning major principles associated with fish production under controlled conditions; production techniques associated with prominent species produced via aquaculture throughout the world with emphasis on those cultured in the United States.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 447 Aquaculture II: Aquatic Animal Nutrition, Feeding and Disease Management
Credits 4. 3 Lecture Hours. 3 Lab Hours.
Review of scientific perspectives on major aspects of nutrition, diet formulation and feeding of aquatic species in aquaculture; major disease-causing organisms encountered in aquaculture and means of disease prevention and control.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 448 Fish Ecophysiology
Credits 3. 3 Lecture Hours.
Ecological domains and demands placed on physiological performance; physiological mechanisms and control in fishes, interaction of physiological mechanisms with environment, emphasis in adaptive value of physiological traits; analysis of physiology and adaptation with models; process and functional modeling.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 449 Professional Aspects of Aquatic Ecology
Credits 3. 3 Lecture Hours.
Discipline of aquatic sciences through oral presentation and written documentation; job market expectations, resume preparation, job application, and preparation for and giving an interview.
Prerequisite: Junior or senior classification or approval of instructor.

WFSC 450/ENTO 450 Caribbean Conservation
Credits 2. 6 Lab Hours.
Provide experience in and appreciation for diverse tropical habitats and the problems associated with conserving these habitats; design and conduct individual research projects on topics of their choice with approval of the instructors on project design and feasibility.
Prerequisites: Concurrent enrollment in ENTO 300/WFSC 300 and ENTO 451/WFSC 451; junior or senior classification.
Cross Listing: ENTO 450/WFSC 450.

WFSC 451/ENTO 451 Caribbean Research Seminar
Credit 1. 1 Other Hour.
Document research activities; keep a journal of activities and research methods during study abroad trips.
Prerequisites: Concurrent enrollment in ENTO 300/WFSC 300 and ENTO 450/WFSC 450; junior or senior classification.

WFSC 454 Amazon Field School
Credits 4. 4 Lecture Hours.
Investigation of social and ecological complexities of biodiversity conservation in tropical ecosystems; biological and social science approaches to evaluate causes, consequences and solutions to biodiversity loss through ecology, culture and governance.
Prerequisites: Junior or senior classification with a minimum GPA of 2.0 and approval of instructor.
Cross Listing: RPTS 454 and VTPB 404.

WFSC 457 Wildlife Ecotoxicology
Credits 3. 3 Lecture Hours.
Approaches used to identify, evaluate and manage ecological risks of chemicals on aquatic and terrestrial environments; emphasis on methods useful to assess effects of contaminants on ecosystems; testing techniques, site assessment and monitoring procedures, regulatory requirements and field and laboratory techniques.
Prerequisites: Grade of C or better in RENR 205, or CHEM 101, or approval of instructor.
WFSC 462/Biol 462 Amazon River Tropical Biology  
Credits 3. 3 Lecture Hours.
History, ecology, evolutionary-biology, geography and culture of the Amazon River and Rio Negro; exploration of the world's most bio-diverse river during a 10-day expedition from Manaus, Brazil; survey biota, record observations about the ecosystem, select research topics, development of presentations.  
**Prerequisites:** BIOL 107, BIOL 112, BIOL 113, BIOL 357 or RENR 205; or approval of instructor.  
**Cross Listing:** BIOL 462/WFSC 462.

WFSC 481 Seminar  
Credit 1. 1 Lecture Hour.  
Oral discussion of selected topics from technical literature on recent advances in the field.  
**Prerequisites:** Senior classification in wildlife and fisheries sciences; 6 hours of 300- or 400-level wildlife and fisheries sciences courses. May be repeated for credit.

WFSC 484 Internship  
Credits 0 to 9. 0 to 9 Other Hours.  
Practical experience working in a professional wildlife or fisheries facility.  
**Prerequisite:** Approval of department head.

WFSC 485 Directed Studies  
Credits 1 to 3. 1 to 3 Other Hours.  
Individual study and research on selected problem approved by instructor and academic advisor.  
**Prerequisites:** Junior or senior classification; approval of department head.

WFSC 489 Special Topics in...  
Credits 1 to 4. 1 to 4 Lecture Hours. 0 to 4 Lab Hours.  
Selected topics in an identified area of wildlife and fisheries sciences. May be repeated for credit.  
**Prerequisite:** Approval of department head.

WFSC 491 Research  
Credits 0 to 6. 0 to 6 Other Hours.  
Laboratory and/or field research supervised by a faculty member in wildlife and fisheries sciences. Registration in multiple sections of this course are possible within a given semester provided the per semester credit hour limit is not exceeded.  
**Prerequisites:** Junior or senior classification; approval of instructor.