

FISHERIES WILDLIFE SCIENCE (FW)

FW 1001 Orientation to Fisheries and Wildlife Science

Offered: Fall.

An introduction to professions in fisheries and wildlife science. Required of fisheries and wildlife students during their first fall term on the Tech campus.

FW 2003 Elements of Fish and Wildlife Management

Offered: Fall Principles of fish and wildlife management for the non-major, including fish and wildlife identification and the role of various natural resource organizations in conservation.

\$40 laboratory fee.

FW 2013 Natural Resources Communications

Offered: Fall.

Prerequisite: ENGL 1023 or alternate.

An investigation and practice of effective communication techniques typically used in natural resources management. The focus of this course is to teach students to effectively communicate complex scientific messages to diverse audiences. Specific types of communication explored will include construction of figures, graphs and tables, power point presentations, abstracts and technical reports specific to the natural resources discipline.

FW 2833 Introduction to Geographic Information Systems

Cross-listed: GEOG 2833.

An introductory course dealing with computer organized spatial and attribute data. GIS is a system of specialized computer programs with the capability to manipulate and analyze data for problem solving.

FW 3053 Fisheries and Wildlife Administration

Offered: Fall Prerequisites: Fisheries and Wildlife Science or Environmental Science majors or approval of instructor.

Administration of fish and wildlife agencies, including organizational designs and policies, planning, directing, budgeting, personnel management, and public relations. Special consideration will be given to public, scientific, and economic considerations in the decision making process.

FW 3074 Habitat Evaluation

Introduction to aquatic and terrestrial habitat mensuration and evaluation for field biologists, with emphasis on the description and demonstration of evaluation procedures and software. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 3084 Ichthyology

Cross-listed: BIOL 3084.

Offered: Fall.

Prerequisite: BIOL 2124.

Systematics, collection, identification, natural history, and importance of fishes. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 3114 Principles of Ecology

Cross-listed: BIOL 3114.

Prerequisite: BIOL 2124, BIOL 2134, and one semester of chemistry. Responses of organisms to environmental variables, bioenergetics, population dynamics, community interactions, ecosystem structure and function, and major bio geographical patterns. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 3144 Ornithology

Cross-listed: BIOL 3144.

Offered: Spring of even years.

Prerequisite: BIOL 2124.

An introduction to the biology of birds. The course covers aspects of anatomy, physiology, behavior, natural history, evolution, and conservation of birds. Laboratories address field identification and natural history of the birds of Arkansas. Lecture two hours, laboratory four hours. \$40 laboratory fee.

Note: Students will be expected to participate in an extended 5-7day field trip.

FW 3154 Mammalogy

Cross-listed: BIOL 3154.

Offered: Fall.

Prerequisite: BIOL 2124.

Taxonomy identification, ecology, and study natural history of the mammals. Lecture three hours, laboratory two hours. \$40 laboratory fee.

FW 3173 Biostatistics

Offered: Fall.

Prerequisite: one semester of statistics.

An analysis and interpretation of fisheries and wildlife data including descriptive statistics, hypothesis testing, analysis of variance, simple linear regression, correlation, goodness of fit, and contingency tables.

FW 3204 Aquaculture

Offered: Spring.

Prerequisite: BIOL 2124 or permission of instructor.

Course is designed to provide students with the essentials of successful warm water aquaculture including crayfish and alligators. Basics of cool and cold water aquaculture are also covered. Emphasis ranges from maintenance of brood stock and culture of fingerlings to production of market size fish. Lecture three hours, laboratory two hours plus several full-day field trips that may involve weekend or overnight travel. \$40 laboratory fee.

FW 3224 Herpetology

Cross-listed: BIOL 3224.

Offered: Spring of odd years.

Prerequisite: BIOL 2124.

The phylogeny, classification, physiology, behavior, and distribution of reptiles and amphibians. The Laboratory will stress identification of the species found in Arkansas. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 4001 Senior Seminar in Fisheries and Wildlife Biology

Offered: Fall.

Prerequisite: Senior fisheries and wildlife biology major or by consent of instructor.

Designed to integrate various aspects of fisheries and wildlife biology by covering current topics and to acquaint students with areas not covered elsewhere in the curriculum.

FW 4003 Principles of Wildlife Management

Offered: Spring.

Prerequisite: FW (BIOL) 3114 or permission of instructor.

Principles of managing wildlife resources with emphasis on the history of wildlife resources in the United States, population ecology, wildlife values, and the administration of wildlife resources and resources agencies.

FW 4013 Wildlife Techniques

Offered: Spring Prerequisite: FW (BIOL) 3114 or permission of instructor. Instruction in current wildlife techniques including habitat evaluation and manipulation, estimation of wildlife abundance, capturing and marking, identification, aging, and scientific writing. Course is structured around a research project that requires use of popular wildlife techniques. Lecture one hour, laboratory four hours. \$40 laboratory fee.

FW 4014 Forest Ecology and Management

Offered: Fall of odd years.
Prerequisite: FW (BIOL) 3114.
An in-depth coverage of ecological interactions in forested ecosystems. Lectures cover biotic and abiotic factors that influence development and species compositions of forest stands. Wildlife habitat relationships in forested ecosystems will also be discussed. Laboratories will familiarize students with field techniques and management activities important in the major forest types of Arkansas. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 4024 Limnology

Cross-listed: BIOL 4024.
Offered: Spring.
Prerequisite: FW (BIOL) 3114.
A study of physical and chemical processes in fresh water and their effects on organisms in lakes and streams. Laboratory sessions and field trips demonstrate limnological instrumentation and methodology. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 4034 Advanced Geographic Information Systems Applications

Offered: Spring.
Prerequisite: An introductory course in GIS or permission of instructor. Use of GIS technology in wildlife and fisheries management and research. Emphasis placed on creation, maintenance, and analysis of spatially explicit data. Lecture three hours, laboratory two hours. \$40 laboratory fee.

FW 4043 Fisheries Techniques

Offered: Fall.
Prerequisite: FW (BIOL) 3114 and a computer science elective, or permission of instructor.
The techniques and practices of warm water fish management. Major emphasis will be placed on survey techniques, data collection, and data analysis techniques. Lecture one hour, laboratory four hours. \$40 laboratory fee.

FW 4054 Waterfowl Ecology and Management

Prerequisite: BIOL (FW) 3114.
Ecology and management of North American waterfowl and their habitats. Laboratory exercises will focus on identification, life histories, sex and age determination, and abundance survey methods. Lectures and discussions will cover behavioral ecology, reproductive ecology, winter ecology, harvest management, and habitat management and conservation. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 4064 Wetland Ecology and Management

Offered: Fall of even years.
Prerequisite: A course in ecology or permission of instructor An in-depth coverage of wetlands including occurrence, morphology, hydrology, soils, ecology, and regulation.
The types of wetlands and their functions are discussed, as are local, state and federal regulations pertaining to their use, management and protection. Laboratory focuses on identification of common wetland vegetation, delineation of wetland boundaries, as well as field techniques and management activities commonly used in Arkansas wetlands. Lecture two hours, laboratory four hours. \$40 laboratory fee.

FW 4083 Principles of Fisheries Management

Offered: Spring.
Prerequisite: FW (BIOL) 3114, one semester of statistics, and one semester of calculus, or permission of instructor.
The principles and theory of warm water fish management with major emphasis on the human dimension in fisheries management, fishery assessment, population dynamics, and common management practices.

FW 4103 Human Dimensions of Fisheries and Wildlife Management

Offered: Fall.
Prerequisite: BIOL (FW) 3114 or permission of instructor.
Exploration of the complex interactions of social, political, institutional, economic and ecological processes that contribute to natural resource use and management. The primary focus is on interactions and conflict resolution among various stakeholders, resource management agencies, and wildlife and fisheries resources. Topics covered include public attitudes and expectations; agency structure and policy; values of fishes, wildlife; and public relations.

FW 4112 Internship

Prerequisite: Consent of program director.
A supervised, practical experience providing FW majors with a hands-on, professional experience related to their career interests. Approximately 200 clock hours, a proposal, a log book, and a written report are required. Note: A maximum of four credit hours is allowed for FW internship.

FW 4114 Internship

Prerequisite: Consent of program director.
A supervised, practical experience providing FW majors with a hands-on, professional experience related to their career interests. Approximately 400 clock hours, a proposal, a log book, and a written and oral report are required. Note: A maximum of four credit hours is allowed for FW internship.

FW 4163 Biodiversity and Conservation Biology

Cross-listed: BIOL 4163.
Offered: Fall.
Prerequisite: a course in ecology or permission of instructor.
The concepts of, processes that produce, and factors that threaten biological diversity are introduced and examined. Further emphasis is placed on unique problems associated with small population size, management of endangered species and practical applications of conservation biology.

FW 4881 Advanced Topics

Offered: On demand.
Prerequisite: Consent of instructor.
Open to junior and senior students only. Offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. The primary focus of the course will vary from offering to offering, thus the course may be taken more than once. \$40 laboratory fee.

FW 4882 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

Open to junior and senior students only. Offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. The primary focus of the course will vary from offering to offering, thus the course may be taken more than once. \$40 laboratory fee.

FW 4883 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

Open to junior and senior students only. Offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. The primary focus of the course will vary from offering to offering, thus the course may be taken more than once. \$40 laboratory fee.

FW 4884 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

Open to junior and senior students only. Offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. The primary focus of the course will vary from offering to offering, thus the course may be taken more than once. \$40 laboratory fee.

FW 4951 Undergraduate Research in Fisheries and Wildlife

Offered: On demand.

Prerequisite: Departmental approval.

Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

FW 4952 Undergraduate Research in Fisheries and Wildlife

Offered: On demand.

Prerequisite: Departmental approval.

Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

FW 4953 Undergraduate Research in Fisheries and Wildlife

Offered: On demand.

Prerequisite: Departmental approval.

Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

FW 4954 Undergraduate Research in Fisheries and Wildlife

Offered: On demand.

Prerequisite: Departmental approval.

Advanced students carry out independent research activity relating to a significant problem in a major field of study. Supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

FW 5003 Principles of Wildlife Management

Offered: Spring.

Prerequisite: A course in ecology or permission of instructor.

Principles of managing wildlife resources with emphasis on population ecology, habitat evaluation and manipulation, wildlife values, and the administration of wildlife resources and resources agencies.

Note: May not be taken for credit after completion of FW 4003 or equivalent.

FW 5014 Forest Ecology and Management

Offered: Fall of odd years.

Prerequisite: FW (BIOL) 3114.

An in-depth coverage of ecological interactions in forested ecosystems. Lectures cover biotic and abiotic factors that influence development and species compositions of forest stands. Wildlife habitat relationships in forested ecosystems will also be discussed. Laboratories will familiarize students with field techniques and management activities important in the major forest types of Arkansas. Lecture two hours, laboratory four hours. \$40 laboratory fee.

Note: May not be taken for credit after completion of FW4014 or equivalent.

FW 5024 Limnology

Offered: Spring.

Prerequisite: A course in ecology.

A study of physical and chemical processes in fresh water and their effects on organisms in lakes and streams. Laboratory sessions and field trips demonstrate limnological instrumentation and methodology. Lecture two hours, laboratory four hours. \$40 laboratory fee.

Note: May not be taken for credit after completion of FW 4024 or equivalent.

FW 5034 Advanced Geographic Information Systems Applications

Offered: Spring.

Prerequisite: An introductory course in GIS or permission of instructor.

Use of GIS technology in wildlife and fisheries management and research. Emphasis placed on creation, maintenance, and analysis of spatially explicit data. Lecture three hours, laboratory two hours. \$40 laboratory fee.

Note: May not be taken for credit after completion of FW 4034 or equivalent.

FW 5054 Waterfowl Ecology and Management

Prerequisite: BIOL/FW 3114 (Ecology) Ecology and management of North American waterfowl and their habitats.

Laboratory exercises will focus on identification, life histories, sex and age determination, and abundance survey methods. Lectures and discussions will cover behavioral ecology, reproductive ecology, winter ecology, harvest management, and habitat management and conservation. \$40 laboratory fee.

Note: May not be taken for credit after completion of FW 4054 or equivalent.

FW 5064 Wetland Ecology and Management

Offered: Fall of even years.

Prerequisite: A course in ecology or permission of instructor.

An in-depth coverage of wetlands including occurrence, morphology, hydrology, soils, ecology, and regulation. The types of wetlands and their functions are discussed, as are local, state and federal regulations pertaining to their use, management and protection. Laboratory focuses on identification of common wetland vegetation, delineation of wetland boundaries, as well as field techniques and management activities commonly used in Arkansas wetlands. Lecture two hours, laboratory four hours. \$40 laboratory fee.

Note: May not be taken for credit after completion of FW 4064 or equivalent.

FW 5103 Human Dimensions of Fisheries and Wildlife Management

Offered: Fall.

Prerequisite: BIOL/FW 3114 or permission of instructor.

Exploration of the complex interactions of social, political, institutional, economic and ecological processes that contribute to natural resource use and management. The primary focus is on interactions and conflict resolution among various stakeholders, resource management agencies, and wildlife and fisheries resources. Topics covered include public attitudes and expectations; agency structure and policy; values of fishes, wildlife; and public relations.

Note: May not be taken for credit after completion of FW 4103 or equivalent.

FW 5163 Biodiversity and Conservation Biology

Offered: Fall.

Prerequisite: A course in ecology or permission of instructor.

The concepts of, processes that produce, and factors that threaten biological diversity are introduced and examined. Further emphasis is placed on unique problems associated with small population size, management of endangered species and practical applications of conservation biology.

Note: May not be taken for credit after completion of FW 4163 or equivalent.

FW 5881 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

This course offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. This course may be repeated for credit if content is different.

Note: The primary focus of the course will vary from offering to offering, thus the course may be taken more than once.

FW 5882 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

This course offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. This course may be repeated for credit if content is different.

Note: The primary focus of the course will vary from offering to offering, thus the course may be taken more than once.

FW 5883 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

This course offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. This course may be repeated for credit if content is different.

Note: The primary focus of the course will vary from offering to offering, thus the course may be taken more than once.

FW 5884 Advanced Topics

Offered: On demand.

Prerequisite: Consent of instructor.

This course offers special instruction on fisheries and wildlife topics that are not otherwise covered in the curriculum. This course may be repeated for credit if content is different.

Note: The primary focus of the course will vary from offering to offering, thus the course may be taken more than once.

FW 6001 Graduate Seminar in Fisheries and Wildlife Biology

Analysis of current and classical concepts in fisheries and wildlife biology. Note: May be repeated for credit.

Note: The primary focus of this course will vary from offering to offering, thus the course may be taken for credit more than once.

FW 6002 Research Methods I

Offered: Spring.

Prerequisite: A course in statistics.

Methods for literature review, experimental design, and thesis proposal development.

FW 6012 Research Methods II

Offered: Fall.

Prerequisite: A course in statistics.

Methods for data analysis and thesis preparation.

FW 6013 Population Dynamics

Offered: Spring.

Prerequisite: Courses in ecology, statistics, and calculus, or permission of instructor.

An in-depth analysis of major historical development in the theory, techniques of manipulating, and mathematical modeling of fish and wildlife populations.

FW 6023 Quantitative Fisheries Science

Prerequisite: A course in fisheries management or permission of instructor.

Quantitative principles of fisheries science used in the analysis and interpretation of fisheries data.

FW 6033 Conservation Management Practicum

Offered: Each summer term.

Individual student experience in the field of conservation management.

The course will include a 2-day on-campus introduction, weekly conferences via distance delivery during the 4-week off-campus experience, and 3 days of on-campus presentations. The practicum cannot be initiated until the student has completed at least 8 graduate-level hours.

FW 6043 Conservation Research Practicum

Offered: Each summer term.

Prerequisite: Completion of 8 graduate-level hours.

Individual student experience in the field of conservation research. The course will include a 2-day on-campus introduction, weekly conferences via distance delivery during the 4-week off-campus experience, and 3 days of on-campus presentations. The practicum cannot be initiated until the student has completed at least 8 graduate-level hours.

FW 6101 Comprehensive Exam

Prerequisite: Completion of 24 graduate-level hours.

Written and oral comprehensive exam that evaluates student knowledge of fisheries and wildlife science and conservation management. The exam is administered after completion of 24 graduate-level hours.

FW 6891 Independent Study

Open to graduate students who wish to pursue individual study or investigation of some facet of knowledge that complements the purpose of the University's graduate program. Students will be required to plan their studies and prepare formal written reports of their findings. This course may be repeated for credit.

Note: The selected topic may not constitute any duplication of study leading to the accomplishment of a thesis.

FW 6892 Independent Study

Open to graduate students who wish to pursue individual study or investigation of some facet of knowledge that complements the purpose of the University's graduate program. Students will be required to plan their studies and prepare formal written reports of their findings. This course may be repeated for credit.

Note: The selected topic may not constitute any duplication of study leading to the accomplishment of a thesis.

FW 6893 Independent Study

Open to graduate students who wish to pursue individual study or investigation of some facet of knowledge that complements the purpose of the University's graduate program. Students will be required to plan their studies and prepare formal written reports of their findings. This course may be repeated for credit.

Note: The selected topic may not constitute any duplication of study leading to the accomplishment of a thesis.

FW 6894 Independent Study

Open to graduate students who wish to pursue individual study or investigation of some facet of knowledge that complements the purpose of the University's graduate program. Students will be required to plan their studies and prepare formal written reports of their findings. This course may be repeated for credit.

Note: The selected topic may not constitute any duplication of study leading to the accomplishment of a thesis.

FW 6991 Thesis Research

Research on a topic culminating in a written thesis.

Note: May be repeated for credit.

FW 6992 Thesis Research

Research on a topic culminating in a written thesis.

Note: May be repeated for credit.

FW 6993 Thesis Research

Research on a topic culminating in a written thesis.

Note: May be repeated for credit.

FW 6994 Thesis Research

Research on a topic culminating in a written thesis.

Note: May be repeated for credit.

FW 6995 Thesis Research

Research on a topic culminating in a written thesis.

Note: May be repeated for credit.

FW 6996 Thesis Research

Research on a topic culminating in a written thesis.

Note: May be repeated for credit.