

RWFM - RANG WILD & FISH MGMT (RWFM)

RWFM 101 Exploring Rangeland, Wildlife and Fisheries Management

Credit 1. 1 Lecture Hour. Exploration of knowledge, skills and abilities required for varied careers within rangeland, wildlife and fisheries management; development of a professional portfolio and résumé; exploration of career options through team approach; conduct one service project.

RWFM 103 Introduction to Outdoor Enterprise Management

Credits 3. 3 Lecture Hours. Overview of the interface between consumptive and non-consumptive use of fish and wildlife resources and conservation; addresses the array of issues in conservation and consumptive/non-consumptive use of fish and wildlife resources.

RWFM 202 Concepts in Applied Plant Biology

Credits 3. 2 Lecture Hours. 2 Lab Hours. Overview of diversity in form and function present in the plant kingdom with linkage to the human condition; emphasis on the full spectrum of plant groups ranging from the lower plants to the highly advanced seed plants; selected families and genera considered in detail regarding important ecological and anthropogenic values; exploration of the structural, reproductive and ecological attributes from the cellular level to the whole organism; basic concepts of botanical classification and nomenclature.

RWFM 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.

RWFM 301 Wildland Watershed Management

Credits 3. 2 Lecture Hours. 2 Lab Hours. Elements of watershed management including range, forest and other natural resources and principles and practices of wildland management for protection, maintenance and improvement of water resource values. **Prerequisite:** Junior or senior classification or approval of instructor.

RWFM 302 Wildland Plants of North America

Credits 3. 2 Lecture Hours. 2 Lab Hours. Familiarization with the distribution and economic value of important wildland plants including range, forest and other natural resources in Texas and North America and fundamentals of sight identification of these plants; plant collection required. **Prerequisite:** Junior or senior classification or approval of instructor.

RWFM 305 Principles and Practices of Wildlife and Fisheries Management

Credits 3. 3 Lecture Hours. A broad survey of the diverse fields of wildlife, fisheries, and aquaculture management; exploration of professions for students interested in pursuing related careers; overview of the history and philosophical underpinnings of modern wildlife and fisheries management; emphasis on key subfields of each field that are translatable into post-graduate careers.

RWFM 306 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.

RWFM 308 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 ECCB 205 or BIOL 357; junior classification or approval of instructor.

RWFM 309/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/RWFM 309.

RWFM 313 Vegetation Sampling Methods and Designs in Ecosystems

Credits 3. 2 Lecture Hours. 2 Lab Hours. Basis for vegetation sampling in ecosystems including range, forest and other natural resources; methods for conducting sampling; selection of sampling unit appropriate for vegetation type; sampling statistics; mean comparisons; regression analysis; sampling design principles; development of sampling plan; presentation and interpretation of sampling data. **Prerequisites:** Any MATH course satisfying university core curriculum, junior or senior classification or approval of instructor.

RWFM 314 Principles of Rangeland Management Around the World

Credits 3. 3 Lecture Hours. Basic knowledge of world rangeland ecosystems, how these systems are managed in diverse cultural settings; principles of underlying ecological processes influenced by various land management practices; foster understanding of the values that people in different countries place on rangeland resources; use of these values to enhance geologically sustainable and socially acceptable rangeland management practices. **Prerequisite:** Junior or senior classification or approval of instructor.

RWFM 316 Range Ecology

Credits 3. 2 Lecture Hours. 2 Lab Hours. Organization and distribution of rangeland ecosystems of the world, with emphasis on North America; community dynamics and functions stressed including biotic history, succession, disturbance regimes, competitive interactions, herbivory, energy flow and nutrient cycling; conservation of rangeland resources.

Prerequisites: ECCB 205, ECCB 215, RWFM 302, and RWFM 314, junior or senior classification or approval of instructor.

RWFM 317 Vegetation Management

Credits 3. 3 Lecture Hours. Familiarization with practices that cause changes in rangeland vegetation composition for multiple uses; understanding of criteria for range improvement practices; comparison of expected responses of livestock forage production, watershed parameters and wildlife to vegetation changes following range improvements; systems concept for planning, analysis and implementation of range improvement practices. **Prerequisites:** RWFM 314, junior or senior classification or approval of instructor.

RWFM 321 Communicating Natural Resources

Credits 3. 3 Lecture Hours. Principles of effectively communicating natural resource science to a diverse stakeholder group; development of critical skills for obtaining and retaining employment in the Rangeland, Wildlife, and Fisheries Management fields; experience in audience identification, mixed-media presentations and interpersonal communications skills unique to the culture of diverse natural resources stakeholders. **Prerequisite:** RWFM major.

RWFM 322 Community Development and Sustainability

Credits 3. 3 Lecture Hours. Analysis of the elements comprising a community, community assessment techniques and community development processes engaged by stakeholders and residents to improve living conditions; definitions and principles associated with community development. **Prerequisites:** Junior or senior classification, or approval of instructor.

RWFM 323 Parks and Protected Area Management

Credits 3. 3 Lecture Hours. Focus on key aspects of parks and protected area management; significance of parks and protected areas in society; visitor use; systems and techniques for management; agencies and organizations involved, and factors that influence parks and protected area management. **Prerequisites:** Junior or senior classification, or approval of instructor.

RWFM 325 Watershed Analysis and Planning

Credits 3. 3 Lecture Hours. Provide an integrated framework for watershed planning that addresses the related biophysical, social and economic issues; comprehensive in scope and approach giving students the tools and techniques for developing sound watershed management policy and practice; water issues, problems and regulations for Texas. **Prerequisites:** Junior or senior classification, or approval of instructor.

RWFM 330 Conservation Principles and the Role of Hunting

Credits 3. 2 Lecture Hours. 2 Lab Hours. Integration of past conservation actions and icons with modern day policies; exploration of conservation funding mechanisms; instruction in hands-on learning related to firearm safety, components; hunter education certification; field exercises on departmental facilities and field trip to state conservation agency. **Prerequisites:** Junior or senior classification, or approval of instructor.

RWFM 333 Rangeland, Wildlife & Fisheries Field Techniques

Credits 3. 3 Other Hours. Rangeland, Wildlife & Fisheries Field Techniques. Techniques of natural resource principles in rangeland, wildlife and fisheries management within a field practicum setting; analyze and assess management scenarios through critical thinking exercises, field measurements, conservation planning, and integration of social, legal and regulatory, and economic factors and constraints.

RWFM 336 Research Methods in the Human Dimensions of Natural Resources

Credits 3. 3 Lecture Hours. Fundamentals of conducting research in the human dimensions of natural resources (HDNR); explanation of the scientific method; emphasis on identifying problems, sampling, data collection, questionnaire design, data analysis and interpretation, ethics, reporting and applications. **Prerequisites:** Junior or senior classification; or approval of instructor.

RWFM 344 Principles of Nature-Based Enterprises

Credits 3. 3 Lecture Hours. 0 Lab Hours. 0 Other Hours. Study of market opportunities for nature-based enterprises; principles for developing nature-based enterprises; examination of diverse forms of nature-based enterprises. **Prerequisites:** Junior or senior classification or approval of instructor.

RWFM 345 Human Dimensions of Natural Resource Management and Policy

Credits 3. 3 Lecture Hours. Social science principles that can help identify and address problems in natural resource and environmental management with two goals; exploration of concepts that help explain why people affect the environment as they do; introduction to methods for influencing and understanding human behavior that can be used to promote community and environmental sustainability. **Prerequisite:** Junior or senior classification.

RWFM 346 Park Ecology and Management

Credits 3. 1 Lecture Hour. 4 Lab Hours. Classroom and hands-on exposure to outdoor recreation resources management in a major national park facing complex challenges; interactive problem-solving to understand natural resources, management strategies and issues related to a park's broader region; includes one intensive week in Smoky Mountains National Park. May be taken two times for credit. **Prerequisites:** Junior or senior classification; or approval of instructor.

RWFM 349 Rangeland and Wildlife Animal Nutrition

Credits 3. 3 Lecture Hours. Connection of the life history of wild and domestic animals with the quality of their habitat by examining the transfer of energy and nutrients from foods to body tissues and activities for survival, growth and reproduction; exploration of the use of nutrition for management and conservation of rangelands and wildlands.

Prerequisite: BIOL 357, or ECCB 205 and BIOL 112, or ECCB 205 and ANSC 107; ANSC 108; junior or senior classification.

RWFM 350 Wildlife and Fisheries Population Dynamics

Credits 3. 2 Lecture Hours. 3 Lab Hours. Development of a background in population dynamics of wildlife and fisheries species, and basic estimation of those parameters; theoretical components, how populations are measured, underlying heuristic theories of population dynamics, and methods for assessing wildlife and fisheries population dynamics and estimating population sizes. **Prerequisites:** STAT 302 or MATH 140, or approval of instructor.

RWFM 351 Geographic Information Systems for Resource Management

Credits 3. 2 Lecture Hours. 2 Lab Hours. Geographic Information Systems (GIS) approach to solving spatial problems and managing natural resources, including the acquisition, management, manipulation, analysis, and mapping of spatial and non-spatial databases; identification of natural and relevant features from various data sources; integration of relevant technologies and data; extensive use of GIS software to solve real-world problems. Only one of the following will satisfy the requirements for a degree: AGSM 461, ECCB 351, ECCB 651, BAEN 651, or RENR 651. **Prerequisites:** Junior or senior classification or approval of instructor. **Cross Listing:** AGSM 461 and ECCB 351.

RWFM 354 Wildlife Anatomy and Physiology

Credits 3. 2 Lecture Hours. 3 Lab Hours. Fundamental knowledge of the anatomy and physiology of wild animals; comparative form and function of all major vertebrate systems; familiarity with anatomical or physiological characteristics of various groups limit or allow their exploitation of different habitat types; examination and recognition of interactions between animals and their environment. **Prerequisite:** RWFM majors; BIOL 111 and BIOL 112.

RWFM 370 Aquatic Vegetation Identification and Management

Credits 3. 3 Lecture Hours. Identification and management of common and problematic aquatic vegetation species; aquatic plant ecology and management of aquatic vegetation as aquatic animal habitat; management methods include physical, chemical and biological methods as well as propagation and introduction and restoration. **Prerequisites:** Junior or senior classification, or approval of instructor.

RWFM 371 Fisheries and Small Impoundment Management

Credits 3. 3 Lecture Hours. Practices and principles with a focus on the variations in regional management techniques in North America, from north to south; history of fisheries and pond management, the pond environment, stocking strategies for recreational small impoundments, fisheries management in small bodies of water, water quality management, problem troubleshooting in small impoundments and management opportunities. **Prerequisites:** Junior or senior classification, or approval of instructor.

RWFM 375 Conservation of Natural Resources

Credits 3. 3 Lecture Hours. Principles and philosophies associated with the development, management and use of natural resources; ecological and social implications inherent in management alternatives involving the natural environment and use of renewable natural resources.

RWFM 400/ECCB 452 Study Abroad in Natural Resources

Credits 2 to 12. 2 to 12 Lecture Hours. Focus on an individual student effort assessing the ecological and human dimensions of biodiversity conservation and nature tourism; exposure to the ecological aspects of managing natural resources, especially wildlife populations and their habitat, as well as the economic, social, and cultural factors affecting biodiversity conservation and nature tourism in a developing country. May be taken two times for credit. **Prerequisite:** Junior or senior classification or approval of instructor. **Cross Listing:** ECCB 452/ RWFM 400.

RWFM 401 Rangeland Plant and Herbivory Dynamics

Credits 3. 3 Lecture Hours. Evaluation of the effects of herbivory at the plant population and community levels; developmental plant morphology and plant resistance to grazing; foraging strategies of herbivores relating to landscape and plant attributes along with animal nutritional needs; manipulation of the grazing process to meet management objectives; focus on resilience, adaptive management and alternative goods and services along with grazing topics. **Prerequisite:** RWFM 314.

RWFM 402 Wildlife Tracks and Signs

Credits 3. 3 Lecture Hours. Designed for ecologists, naturalists, and other parties who wish to have a deeper understanding of the behavior of terrestrial animals in terms of the habitats they frequent, what and where they feed, den and bedding locations, and other activities; designed for wildlife professionals who work in the field conducting animal surveys, observations, and capturing/handling wildlife or who are otherwise involved in teaching field skills. **Prerequisites:** Junior or senior classification; or approval of instructor.

RWFM 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.

RWFM 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:** ECCB 205; junior or senior classification.

RWFM 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:** Junior or senior classification, or approval of instructor.

RWFM 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 or approval of instructor.

RWFM 409 NATURE in the Classroom

Credits 3. 3 Lecture 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:** Junior or senior classification or approval of instructor.

RWFM 410 Principles of Fisheries Techniques and 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 ECCB 311, ECCB 403, or RWFM 404, or approval of instructor.

RWFM 411 Ecosystem Management

Credits 4. 3 Lecture Hours. 3 Lab Hours. Concepts and practices relevant to the development of landscape/regional level ecosystem management plans including range, forest and other natural resources; an ecosystem management plan will be developed utilizing a strategic management/coordinated resources approach to establish resource goals, ecosystem resource analysis and impact evaluation and implementation compatible with societal and individual concerns. **Prerequisites:** ECCB 205, senior classification or approval of instructor.

RWFM 415 Range Analysis and Management Planning

Credits 4. 3 Lecture Hours. 2 Lab Hours. Basic concepts and theories of range management systems. Resource inventory, analysis and management planning. **Prerequisites:** AGECE 105 or ECON 202, RWFM 314, RWFM 317; junior or senior classification or approval of instructor.

RWFM 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:** ECCB 205 or equivalent; junior or senior classification or approval of instructor; RWFM 406 and RWFM 407 and ECCB 320 preferred.

RWFM 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.

RWFM 421 Game Bird Management

Credits 3. 2 Lecture Hours. 3 Lab Hours. Basic morphological, physiological and nutritional characteristics important to upland bird management, both game and non-game; history of upland bird habitat and management in the U.S., as well as current status of various groups of species; emphasis on population and habitat management techniques relevant to specific species; application of management principles to current, real-world management problems. **Prerequisites:** RWFM majors; ECCB 402 and RWFM 350, or approval of instructor.

RWFM 422 Large Mammal Management

Credits 3. 2 Lecture Hours. 3 Lab Hours. Management of various herbivorous large mammals, both game and non-game; development of knowledge on how to implement habitat and population management techniques to achieve management goals; history of modern wildlife management as it relates to the restoration and harvest of various species as game that once were imperiled; utilization of natural history information in the selection of the most the beneficial management techniques, and a survey of the techniques currently used in large mammal population management. **Prerequisite:** RWFM majors; ECCB 401 and RWFM 350.

RWFM 424 Wildlife Damage Management

Credits 3. 2 Lecture Hours. 3 Lab Hours. Exploration of the principles, philosophy, techniques, and application of wildlife damage management to solve negativistic human-wildlife interactions; exposure to animal capture, handling and sampling as well as human dimensions of wildlife damage management; hands-on project throughout the semester in real-world wildlife damage management situations; focus on preparation to pursue employment as a wildlife damage manager with public or private employers. **Prerequisite:** RWFM majors; ECCB 401 and RWFM 350.

RWFM 425 Carnivore Management

Credits 3. 2 Lecture Hours. 3 Lab Hours. Principles and practices of carnivore management; biology, ecology and management of various carnivorous wildlife species; application of the principles of trophic levels, carrying capacity and wildlife restoration to inform management plans; emphasis on current carnivore management scenarios that encompass both the biology and human-dimensions of carnivores; real-life examples to contextualize course learning. **Prerequisite:** RWFM majors; ECCB 401 and RWFM 350.

RWFM 436 Natural Resources Policy

Credits 3. 3 Lecture Hours. Natural resources and forest policy development in the United States and review of current issues in forest and related natural resource policy. **Prerequisite:** Junior or senior classification or approval of instructor.

RWFM 440 Wetland Delineation

Credits 3. 2 Lecture Hours. 2 Lab Hours. Application of the 1987 Wetland Delineation Manual in use by the Army Corps of Engineers (CORPS); field indicators of hydrophytic vegetation; hydric soils, wetland hydrology, methods for making jurisdictional determinations in non-disturbed and disturbed areas, recognition of problem wetlands and technical guidelines for wetlands. **Prerequisite:** Junior or senior classification.

RWFM 443 Aquaculture Production and Hatchery Management

Credits 3. 2 Lecture Hours. 2 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.

RWFM 444 Aquaculture Hatchery Management

Credits 3. 3 Lecture Hours. Study of finfish and shellfish hatchery requirements and operations, broodstock management, reproduction and hatchery techniques and application of those techniques in the field; management of hatchery systems for the production of seed stock. **Prerequisite:** Junior or senior classification or approval of instructor.

RWFM 445 Fish Health and Diseases

Credits 3. 3 Lecture Hours. Health disorders and diseases of finfish and shellfish including water quality issues and management, environmental endocrine disruptors, biosecurity and practical techniques used to isolate, identify and manage or mitigate diseases. **Prerequisite:** Junior or senior classification.

RWFM 446 Fish Physiology

Credits 3. 3 Lecture Hours. Physiology of fish focusing on the diverse range of functional adaptations that fish use to cope with various environmental and physiological states; bioenergetics, respiration, cardiovascular system, blood chemistry and function, muscle function and locomotion, gas exchange, buoyancy regulation, nitrogen metabolism and excretion, thermoregulation, reproduction, growth, osmoregulation, and immunity. **Prerequisite:** Junior or senior classification; ECCB 311.

RWFM 447 Aquatic Animal Nutrition, Diet Formulation and Feeding

Credits 3. 2 Lecture Hours. 2 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.

RWFM 461 Community-Based Conservation

Credits 3. 3 Lecture Hours. Study of community-based conservation (CBC); definition, description, discussion, and analysis of the history, principles, critical actors, benefits, factors leading to successful initiatives, challenges in implementation and different models of community-based conservation. **Prerequisite:** Junior or senior classification.

RWFM 465 Managing Outdoor Enterprises

Credits 3. 3 Lecture Hours. Integration and synthesis of the skills learned throughout the outdoor enterprise management curriculum as well as presentations from industry representatives and content experts; application of various material from previous courses to managing a diverse array of outdoor enterprises. **Prerequisites:** Grade of C or better in RWFM 103; and junior or senior classification.

RWFM 470 Environmental Impact Assessment

Credits 3. 3 Lecture Hours. Evolution of natural resources regulatory policies and how this influences current procedures for environmental/natural resources assessment and management; demonstration of the environmental impact assessment procedures and policy issues associated with environmental impacts. **Prerequisite:** Junior or senior classification, or approval of instructor.

RWFM 480 Plant Identification and Undergraduate Range Management Exam

Credits 0 to 3. 0 to 3 Other Hours. Knowledge of plants morphology, identification and distribution for the profession of range management; knowledge of range management across the world; weekly tests to train on plant and range management knowledge. May be repeated for credit. **Prerequisites:** Junior or senior classification or approval of instructor.

RWFM 481 Senior Seminar

Credit 1. 1 Lecture Hour. Completion of professional e-portfolio, résumé and job application; exploration of job search, application, and interview; discipline competency exams; program evaluation. **Prerequisites:** Senior classification in ESSM or RWFM degree programs.

RWFM 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.

RWFM 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.

RWFM 489 Special Topics in...

Credits 1 to 4. 1 to 4 Other Hours. Selected topics in an identified area of wildlife and fisheries sciences. May be repeated for credit. **Prerequisite:** Approval of department head.

RWFM 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.