FISHERIES AND WILDLIFE  FW
Department of Fisheries and Wildlife
College of Agriculture and Natural Resources

100. Introduction to Fisheries and Wildlife
Fall. 1 credit
R: Open only to freshmen or sophomores.
Fisheries and wildlife history, philosophy and management in the context of conservation ethics.

110. Conservation and Management of Marine Resources
Spring. 3 credits
Marine environment, resource distribution, and human impacts on selected marine commercial fisheries. Conflicts in management goals between government and industry. Management goals and techniques in preserving and conserving marine resource biodiversity.

203. Resource Ecology
Fall, Spring. 3 credits
Basic concepts of ecology which provide a foundation for examining environmental problems and their solutions.

205. Principles of Fisheries and Wildlife Management
Spring. 3 credits
Characteristics of fish and wildlife resource. Ecological and societal factors influencing the management of fish and wildlife. Management techniques.

207. Great Lakes: Biology and Management
Fall. 3 credits
Interdepartmental with Resource Development.
Living aquatic resources of the Great Lakes: environmental history, biological resources and their management. Policy issues.

211. Introduction to Gender and Environmental Issues
Spring. 3 credits
R: Not open to freshmen.

275. Seafood Systems Management
Spring, 3 credits
Interdepartmental with Food Science and Animal Science.
Domestic and international perspectives on major aquatic foods. Cultural and nutritional value; wild harvest; aquaculture; processing technology; food handling and food safety.

284. Natural History and Conservation in Michigan
Fall. 3 credits
R: Not open to freshmen.
Identification, habitat requirements, and distribution of Michigan's flora and fauna. Interrelationships which influence natural resource use. Field trips required.

324. Wildlife Biomeity
Spring. 3 credits
P: MTH 116, ZOL 355.
Quantitative techniques to analyze and interpret fishery and wildlife data.

326. Introduction to Waste Management
Fall. 3 credits
P: RD 200, RD 320.
Waste management definitions, techniques, technologies, and strategies. Integrative approach to waste management as an environmental, social, and political subject.

328. Vertebrate Pest Control
Spring. 3 credits
P: BS 110.
Role of vertebrate animals as agents damaging to human interests. Damage evaluation. Damage control strategies and techniques.

364. Ecosystem Processes
Spring. 3 credits
P: CEM 141, FW 224.
Concepts of ecosystem structure and function developed from basic scientific laws and relationships.

369. Introduction to Zoo and Aquarium Science
Spring. 3 credits
Interdepartmental with Zoology, Landscape Architecture, and Veterinary Medicine. Administered by Zoology.
P: BS 110.
Fundamentals of zoo and aquarium operations including research, interpretation, design, nutrition, captive breeding, conservation, ethics and management.

410. Upland Ecosystem Management
Spring. 4 credits
P: FOR 404 or ZOL 250.
Analysis and management of upland ecosystems to meet wildlife management and biodiversity objectives. Mitigation of human impact.

412. Wetland Ecosystem Management
Fall. 3 credits
P: FW 364 or ZOL 250. R: Completion of Tier I writing requirement.
Ecosystem components and processes applied to wetland management. Mitigation of human impact.

413. Wildlife Research and Management Techniques
Fall. 4 credits
P: FW 324 C; FW 412 or FW 410 or concurrently or approval of department. R: Open only to juniors or seniors or graduate students in the Fisheries and Wildlife major.
Field and laboratory techniques used in collecting, analyzing, and communicating data on wild animal populations and their habitats. Field trip required.

419. Geographical Information Systems in Natural Resource Management
Spring. 4 credits
Interdepartmental with Geography; Forestry; Resource Development; Biosystems Engineering; and Park, Recreation and Tourism Resources.
P: GRS 221.
The application of geographic information systems, remote sensing, and global positioning systems to integrated planning and management for fish, wildlife, and related resources.

420. Stream Ecology
Fall. 3 credits
Interdepartmental with Zoology.
P: BS 110, CEM 141, ZOL 355.
Biological and environmental factors determining structure and function of stream ecosystems.

434. Population Analysis and Management
Fall. 4 credits
P: FW 364.
Statistical, ecological and management concepts and methods needed to analyze and interpret demographic data and manage fish and wildlife populations.

431. Comparative Limnology
Summer. 4 credits
Given only at W.K. Kellogg Biological Station. Interdepartmental with Zoology, and Botany and Plant Pathology. Administered by Zoology.
P: CEM 141 or CEM 151; ZOL 250. R: Not open to students with credit in FW 472.
Physical, chemical, and biological aspects of lakes and streams. Introduction to freshwater biology, and population and community ecology.

444. Conservation Biology
Fall. 3 credits
Interdepartmental with Zoology.
P: BS 110. R: Completion of Tier I writing requirement.
Ecological theories and methodologies to manage species, communities and genetic diversity on a local and global scale.

462. Invertebrate Fisheries and Wildlife Management
Spring. 4 credits
P: ZOL 355.
Natural history, conservation and management of selected invertebrate species, including commercially important, exotic, non-game, and selected threatened and endangered species.

464. Natural Resource Economics and Social Science (W)
Fall. 3 credits
Interdepartmental with Forestry; Park, Recreation and Tourism Resources; and Resource Development. Administered by Forestry.
P: EC 201 or EC 202. R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.

465. Ecological Risk Assessment
Spring. 3 credits
Interdepartmental with Resource Development.
P: CEM 143, CEM 161, ZOL 355; FW 324 or STT 200 or STT 201.
Descriptions — Fisheries and Wildlife of Courses

466. Natural Resources Planning and Policy
Fall. 3 credits. Interdepartmental with Forestry, Park, Recreation and Tourism Resources; and Resource Development. Administered by Forestry.
R: Open only to seniors and graduate students in Forestry, Fisheries and Wildlife; Park, Recreation and Tourism Resources; and Resource Development. Approval of department. Application required. Designed to prepare students to fulfill societal goals for the management of human impact and biotic diversity.

471. Ichthyology
Fall. 4(3-5) P: ZOL 328. R: Completion of Tier I writing requirement.
Fish morphology, physiology. Development, behavior, evolution and ecology. World fishes with emphasis on freshwater fishes.

474. Fishery and Limnological Techniques
Fall. 3(1-6) Interdepartmental with Zoology. P: FW 472 or concurrently. Field and laboratory investigations of physical, chemical, and biological parameters of lakes and streams. Field trips required.

475. Aquaculture
Spring. 3(3-0) P: ANS 313 or FW 364 or ZOL 250. Propagation and rearing of aquatic organisms used for food, bait and recreational fisheries management. Cultural principles and techniques for important aquatic species. Commercial potential.

477. Pest Management I: Pesticides in Management Systems
Fall. 3(3-0) Interdepartmental with Entomology, Horticulture, and Crop and Soil Sciences. Administered by Entomology.
P: CEM 141; BOT 405 or CSS 492; ENT 404 or ENT 470 or FW 329. Chemistry, efficient use, and environmental fate of pesticides. Legal and social aspects of pesticide use.

478. Pest Management II: Biological Components of Management Systems
Spring. 3(3-0) Interdepartmental with Entomology, Horticulture, and Crop and Soil Sciences, and Forestry. Administered by Entomology.
P: ENT 404 or ENT 470 or BOT 405 or CSS 492 or FW 329. Review of human dimensions research and current case studies.

480. Capstone: Seminar in Zoo and Aquarium Science
Fall. Spring. 1 credit. A student may earn a maximum of 3 credits in all enrollments for this course.
Interdepartmental with Zoology and Park, Recreation and Tourism Resources. Administered by Zoology. R: Approval of department. Scientific writing and oral presentations related to zoo and aquarium studies.

482. Conservation and Genetics
Fall of odd-numbered years. 3(3-0) P: ZOL 341 or CSS 320 or ANS 314. Population genetic principles applied to zoo and aquarium studies.

483. Aquatic Toxicology
Spring of odd-numbered years. 4(3-0) R: Open only to graduate students in the Colleges of Agriculture and Natural Resources, Engineering, Human Medicine, Natural Science, Osteopathic Medicine, and Veterinary Medicine.
Techniques for assessing acute and chronic effects of toxicants on biochemical, physiological, organismal, population, community and ecosystem level characteristics of organisms.

Spring of odd-numbered years. 3(3-0) Interdepartmental with Forestry, Resource Development, Biosystems Engineering, and Zoology.
P: FW 820 or BE 486 or ZOL 851 or approval of department. R: Open only to seniors and graduate students.
Mathematical models for evaluating resource management strategies. Stochastic and deterministic simulation methods. Applications of systems approach and techniques to natural resource management, and to ecological and agricultural research.

486. Ecology and Management of Waterfowl
Fall of even-numbered years. 3(2-3) P: FW 412, FW 424. Physiological, behavioral, and population characteristics of waterfowl. Current issues and management.

487. Fishery Habitat Analysis and Management
Spring of odd-numbered years. 3(3-0) R: Open only to graduate students in the Colleges of Agriculture and Natural Resources, Engineering, and Natural Science.
Analysis of fish habitats and use. Analysis and manipulation of habitats to enhance fish production in freshwater ecosystems.

488. Advanced Aquaculture
Fall of odd-numbered years. 3(3-0) P: FW 475. R: Open only to seniors and graduate students.
Adaptation and applications of aquatic organisms to environmental change in aquaculture systems. Research methods and applications for aquaculture planning and management decisions.

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