642. Principles of Family Practice II
Spring. 1(0-4) M 632. Continuation of F M 632.

652. Principles of Family Practice III
Fall, Summer. 1(0-4) M 632 or approval of department.
Continuation of F M 642.

662. Principles of Family Practice IV
Fall, Winter. 1(0-4) M 632 or approval of department.
Continuation of F M 652.

672. Principles of Family Practice V
Winter, Spring. 1(0-4) M 632 or approval of department.
Continuation of F M 662.

682. Principles of Family Practice VI
Spring, Summer. 1(0-4) M 632 or approval of department.
Continuation of F M 672.

607. Ambulatory Care Clerkship
Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. H M 602. Interdepartmental with the departments of Community Health Science, Medicine, and Pediatrics and Human Development. Outpatient experience, lasting an equivalent of 48 half days over a period of six months or more, emphasizing continuous and comprehensive patient care under the supervision of appropriate physicians.

610. Family Practice Clerkship
Fall, Winter, Spring, Summer. 8 to 17 credits. May reenroll for a maximum of 34 credits. H M 602. A clerkship in a model family practice unit with graded responsibility and supervision in the care of families and their medical problems with emphasis on primary, continuing and comprehensive care.

611. Introduction to Office Practice
Fall, Winter, Spring. Summer. 5 to 6 credits. H M 602.
A one month preceptorial exposure to the office practice of family practice in a variety of settings.

612. Inpatient Clerkship in Family Practice
Fall, Winter, Spring. Summer. 4 to 6 credits. H M 602.
Demonstration of the role of the family physician in the hospital setting, including management of consultations and referrals.

FISHERS AND WILDLIFE - Descriptions of Courses

College of Agriculture and Natural Resources

100. Introduction to Fisheries and Wildlife
Fall, Winter, Summer. 1(1-0) Freshmen Fisheries and Wildlife Majors.
Fisheries and wildlife as a profession. Academic and nonacademic needs to meet professional objectives, using current management problems as a focus for discussion.

IDC. Introduction to Resource Ecology
For course description, see Interdisciplinary Courses.

301. Fish and Wildlife of North America
Winter. 3(3-0) S S 212 or approval of department. Comparative study of fish and wildlife groups in North America, their significant life history stages, morphology, migrations, habitats and populations. Common species are identified in the laboratory.

305. Principles of Fisheries and Wildlife Management
Winter. 3(3-0) IDC 200 or approval of department. Not open to majors in fisheries, limnology or wildlife-ecology options. Ecological concepts in management. Effects of regulations, refuges, stocking, species introduction, habitat manipulation, artificial feeding, genetic improvement, land use and control of predators, diseases and competitors on the production of fish and game.

328. Vertebrate Pest Control
Fall. 3(3)-0 S S 212 or approval of department. Role of wild vertebrate animals as agents damaging to man's interests; the concepts of damage and control; damage control techniques. Field trip.

340. Wildlife Biometry
Winter. 4(3-2) MTH 111, six credits in fisheries and wildlife. Survey of statistical formulas, methods and applications of statistics to problems in fisheries and wildlife.

374. Biological Oceanography
Winter. 3(3-0) B S 212 or approval of department. Biology of marine animals, with emphasis on physical, chemical and biological factors affecting their abundance and distribution.

402. Environmental Conservation Education
Spring, Summer. 4(3-2) Education majors or approval of department.
Nature, distribution and interrelationships of natural resources dictating the quality of man's environment. Principles of resource use, study of natural objects and techniques of teaching in and about the environment.

404. Fisheries and Wildlife Problems
Fall, Winter, Spring. 1 to 3 credits. May reenroll for a maximum of 12 credits. B S 212, 6 credits of fisheries and wildlife; approval of department. To give undergraduate majors an opportunity to study special topics in fisheries and wildlife.

420. Biology of Animal Parasites
Summer. 6 credits. B S 212 or approval of department. Given at W. K. Kellogg Biological Station. Interdepartmental with the departments of Microbiology and Public Health, and Zoology. Administered by the Department of Microbiology and Public Health. Parasitism of animals by protozoa, helminths and arthropods with emphasis on the interrelationships of host-parasite associations with the natural environments.

421. Stream Ecology
Fall. Summer–given at W. K. Kellogg Biological Station. 3(3-0) ENT 420 or approval of department. Interdepartmental with and administered by the Department of Entomology. An in-depth examination of stream ecosystems—physical, chemical and biological aspects. Field work will be centered on local streams. Laboratory exercises will involve manipulations necessary for the determination of population energy budgets, with special emphasis on aquatic insects. Field trips required.

424. Wildlife Population Analyses
Spring. 4(3-2) BOT 450 or ZOL 389, or concurrently. Population measurements; reproductive and survival rates; sex and age determination; handling and marking methods. Field trips.
425. Wildlife Habitat Analyses Fall, 4(2-4) BOT 450 or ZOL 389 or FOR 290. Evaluation of environmental factors affecting wildlife species; food and cover measurements. Determination of limiting factors.

426. Ecology of Migratory Birds Fall, 4(2-4) ZOL 491 or approval of department. Ecological, behavioral, and physiological characteristics affecting population parameters of migratory birds and applications of these relationships to the management of migratory wildlife resources.

427. Wildlife Biology and Management Winter, 4(2-4) F W 424; ZOL 389 or BOT 450. Ecology and management of resident wildlife on farm, forest and range lands.


455. Natural Resource Economics Fall, 4(4-0) Approval of department. Interdepartmental with Agriculture and Natural Resources and the departments of Forestry, Park and Recreation Resources, and Resource Development. Administered by the Department of Forestry. Basic economic and political principles and techniques that govern the production and consumption of forest land products, including basic forest valuation procedures.

471. Ichthyology Spring, 3(3-2) to 4(3-7) F W 301 or ZOL 326 or ZOL 425. Interdepartmental with the Department of Zoology. Classification and natural history of fishes. Emphasis on food, game, and forage fishes.

473. Fishery Biology and Management Fall, 5(3-3) ZOL 471. Biology of fishes with special reference to distribution and natural history, and application of this knowledge to problems of obtaining maximum return from fishery resources.

475. Fish Culture Spring, 3(3-0) F W 473. Artificial propagation of freshwater fish including hatchery management, nutritional and environmental requirements, disease and parasite control and intensive fishery management. Utilization of hatchery stock in fishery management.

476. Limnology Winter, 3(3-0) CEM 131 and CEM 161; BOT 450 or ZOL 389. Students may not receive credit for both F W 476 and F W 475. Interdepartmental with the Department of Zoology. Ecology of lakes and streams with special reference to physical, chemical and biological factors affecting their productivity.

477. Limnological Methods Winter, 3(0-9) F W 476 concurrently; ZOL 481; ENT 301, ENT 302 recommended. Interdepartmental with the Department of Zoology. Methods and instruments of limnological field investigation on lakes and streams.

484. Outdoor Environmental Education Fall, 4(3-1) Juniors or approval of department. Using the outdoors as a teaching laboratory for ecological studies of plant and animal communities. Designed primarily for secondary teachers.

485. Environmental Conservation Program Design Winter, 3(3-0) Seniors or approval of department. Materials and methods for integrating environmental conservation into educational programs in schools, nature centers, youth groups and communities.

801. Seminar in Fisheries and Wildlife Fall, Winter, Spring, 1(1-0) May reenroll for a maximum of 3 credits. Approval of department. Graduate problems and current developments of importance.

802. Advanced Topics Fall, Winter, Spring, Summer, 1 to 6 credits. May reenroll for a maximum of 15 credits. Approval of department. Study of selected advanced topics in detail and depth.

830. Environmental Requirements of Fish Winter of odd-numbered years. 3(3-0) Approval of department. Adaptations and responses of fish to environmental changes; research methods for evaluating environmental limitations and effects of pollutants on fish growth, reproduction and survival. Applications for developing water quality criteria.

871. Ecology of Fishes Summer of even-numbered years. 3 credits. Approval of department. Given at the W. K. Kellogg Biological Station. Interdepartmental with and administered by the Department of Zoology. Exploration of ecological problems with particular emphasis on growth, food and habitat selection, population biology and niche relations. Field and experimental investigations of fish communities.

873. Ecology and Management of Stream Fish Winter of odd-numbered years. 3(4-0) F W 376, ZOL 389 or BOT 450; or F W 476 concurrently. Flowing water habitat as it affects fish, with influences of climate, vegetation, land use, water withdrawal; damming, channel alteration and fishery management.

874. Advanced Biological Limnology Fall of odd-numbered years. 3(4-0) F W 477, or approval of department. Historical and current contributions to concepts of community structure, energy flow and materials cycling in aquatic ecosystems.

875. Chemical Limnology Winter, 4(3-3) F W 476, F W 477 or approval of department. Application of analytical chemistry concepts and technologies to fundamental chemical mechanisms in natural and polluted water systems. Special consideration given to selected heterogeneous equilibria.

876. Applied Limnology Spring, 3(3-0) F W 874 or F W 875 or approval of department. Aquatic ecology: quantitative relationship between physical, chemical and biological parameters in polluted and unpolluted lakes and streams.

899. Master's Thesis Research Fall, Winter, Spring, Summer. Variable credit. Approval of department.

900. Quantitative Wildlife Ecology Fall of even-numbered years. 3(3-0) Approval of department. Fundamentals of population demographics. Rates of increase, dynamic and static life tables, logistic theories, the Leslie matrix model, age specific and time specific parameters. Current hypotheses on mechanisms promoting population stability.

999. Doctoral Dissertation Research Fall, Winter, Spring, Summer. Variable credit. Approval of department.

FOOD SCIENCE AND HUMAN NUTRITION

College of Agriculture and Natural Resources
College of Human Ecology
Food Science


205. Food Laws and Regulations Spring, 3(3-0) Interdepartmental with Human Nutrition and Foods. Food laws and regulations that govern food processing and food service systems; procedures involved in adopting and enforcing food laws and regulations.

211. Introduction to Food Science Spring, 3(3-0) Modern food processing, world food problems, and the basic characteristics of processed foods.

215. World Food Issues Spring, 3(3-0) Interdepartmental with and administered by the Department of Geography. Food resources as related to world distributions of population, soil, water, fuel and minerals. Special attention to urbanization, irrigation, and future food needs and global constraints.