

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

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

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

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

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

**FAMILY PRACTICE FMP**

**College of Human Medicine**

**500. Preceptorship Training**  
Fall, Winter, Spring, Summer, 3 to 12 credits. May reenroll for a maximum of 36 credits. No more than 3 credits toward degree requirements. One year of medical school. Interdepartmental with and administered by the Department of Human Medicine.  
Field experience in primary care taught by primary care physicians throughout the state to medical students from Michigan State University, University of Michigan and Wayne State University.

**530. Care of the Elderly**  
Fall, Spring, 3(2-2) Student in H M, OST or other clinical program or approval of instructor. Interdepartmental with the Department of Community Health Science.  
Case studies of the care of the elderly based on the physician patient-interaction with elderly persons and their families. Family systems applications to health care. Associated clinical experience.

**540. Families in Crisis: A Clinical View**  
Winter, Spring, 1 to 4 credits. May reenroll for a maximum of 4 credits. Student in medicine, nursing, or graduate student in psychology, counseling, social work or related field. Interdepartmental with the Department of Psychiatry.  
Dynamics of family crises as might be experienced in health care settings. Videotapes, readings and small group discussions to illustrate family dynamics.

**580. Special Topics in Family Practice**  
Fall, Winter, Spring, Summer, 1 to 6 credits. May reenroll for a maximum of 18 credits. Approval of department.  
Explore and study special aspects and modes of family-oriented health care.

**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.

**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.

**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.

**FISHERIES AND WILDLIFE F W**

**College of Agriculture and Natural Resources**

**100. Introduction to Fisheries and Wildlife**  
Fall, 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.

**100. Introduction to Fisheries and Wildlife**  
Fall, 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.

**301. Fish and Wildlife of North America**  
Winter, 5(3-4) B 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) B 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.

**376. Introductory Limnology**  
Winter, 3(3-0) B S 212; students may not receive credit for both FW 376 and FW 476.  
Lake and stream ecology including effects of natural and man-induced perturbations on freshwater ecosystems.

**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, Summer, 1 to 5 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 mensuration; reproductive and survival rates, sex and age determination; handling and marking methods. Field trips.

## Descriptions – Fisheries and Wildlife

of

### Courses

#### 425. **Wildlife Habitat Analyses**

Fall. 4(2-4) BOT 450 or ZOL 389 or FOR 220.

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 461 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) FW 424; ZOL 389 or BOT 450.

Ecology and management of resident wildlife on farm, forest and range lands.

#### 450. **Natural Resource Administration**

Fall. 4(4-0) Seniors; not open to forestry majors. Interdepartmental with Agriculture and Natural Resources and the departments of Forestry, Park and Recreation Resources, and Resource Development. Administered by the Department of Forestry.

Concepts and methods of administering wildland properties. The legal, economic and social environment. Benefit-cost analysis of management changes. Unit organization, personnel management and accounting. Presents a systems view of administration.

#### 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(2-3) FW 301 or ZOL 320 or ZOL 428. 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) FW 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 fisheries management.

#### 476. **Limnology**

Winter. 3(3-0) CEM 131 and CEM 161; BOT 450 or ZOL 389. Students may not receive credit for both FW 376 and FW 476. 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) FW 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(3-2) 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) FW 376, ZOL 389 or BOT 450; or FW 476 or 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) FW 477, or approval of department.

Historical and current contributions to concepts of community structure, energy flow and materials cycling in aquatic eco-systems.

#### 875. **Chemical Limnology**

Winter. 4(3-3) FW 476, FW 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) FW 874 or FW 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.

#### 940. **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 theory, 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

FSC

#### 101. **Food and Society (N)**

Fall, Winter. 3(3-0) Interdepartmental with Human Nutrition and Foods.

Analysis of the scientific, social and environmental aspects of food in determining the quality of man's life. Introduction into the principles of food preservation and safety.

#### 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.