FAMILY MEDICINE

College of Osteopathic Medicine

530. Physical Examination Skills
Fall, 2(1-2) Admission to medical school and approval of department.
Introductory course in physical examination skills used in the family physician's office. The lecture relates principles of physical examination to the laboratory where skills are taught.

590. Special Problems in Family Medicine
Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 32 credits. Approval of department.
Each student will work under direction of a faculty member on an experimental, theoretical or applied problem.

600. Clinical Practicum in Family Medicine
Fall, Winter, Spring, Summer. 2 to 12 credits. May reenroll for a maximum of 24 credits. Grade F in all courses offered in terms 1 through 3 is a prerequisite. Opportunity for direct involvement and experience in functioning family practice. Emphasizes patient, office, and personnel management. Provides understanding and consideration of responsibilities encountered in the practice of family medicine.

620. Directed Studies
Fall, Winter, Spring, Summer. 2 to 24 credits. May reenroll for a maximum of 48 credits. Admission to a college of medicine or approval of department.
Individual or group projects on special problems related to family medicine.

FISHERIES AND WILDLIFE

College of Agriculture and Natural Resources

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

500. Preceptorship Training
Fall, Winter, Spring, Summer. 1 to 3 credits. 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.

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.

Fisheries and Wildlife - Descriptions of Courses
305. Principles of Fisheries and Wildlife Management
Spring, 3(3-0) IDC 206 or approval of department. Not open to majors in fisheries & wildlife-ecology options.
Ecological concepts in management. Effects of regulations, refuges, stocking, species introduction, disease, predation, artificial feeding, and control. Field trips required.

328. Vertebrate Pest Control
Fall, 3(3-0) B 212 or approval of department.
Field trips. Role of vertebrate pests and their control. Use of pesticides and other control measures. Field trips.

340. Wildlife Biometry
Winter, 4(3-2) MTH 111, 6 credits in fisheries and wildlife.
Survey of statistical methods, statistical concepts, and applications to problems in fisheries and wildlife.

374. Biological Oceanography
Winter, 3(3-0) B 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 212; students may not receive credit for both F 276 and FW 276.
Lake and stream ecology, including effects of natural and man-induced perturbations on freshwater ecosystems.

402. Environmental Conservation Education
Fall, Winter, Spring, Summer, 4(3-2)
Education majors or approval of department.
Nature, distribution and interrelationships of natural resources; focusing on management of resources. 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 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. Ecology of Animal Parasites
Summer, 6 credits.
B 212 or approval of department.
Given at W. K. Kellogg Biological Station. Interdepartmental with the department of Microbiology and Public Health and Zoology administered by the Department of Microbiology and Public Health.
Parasites include the protozoa, nematodes, and arthropods with emphasis on the relationships of host-parasite associations with the natural environment.

421. Stream Ecology
Fall, Summer—given at W. K. Kellogg Biological Station, 3(3-0). ENT 240 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 measurement, reproductive and survival rates, sex and age determination, handling and marking methods. Field trips.

425. Wildlife Habitat Analyses
Fall, 4(3-2) BOT 450 or ZOL 389 or FOR 220.

426. Ecology of Migratory Birds
Fall, 4(3-2) 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) F W 424; ZOL 389 or BOT 450.
Ecology and management of resident wildlife on farm, forest and range lands.

450. Natural Resource Administration
Fall, Spring, 4(4-0) Seniors.
Interdepartmental with the departments of Forestry, Park and Recreation Resources, and Resource Development and Natural Resources. Administered by the Department of Forestry.

455. Natural Resource Economics
Winter, 4(4-0) FOR 450 or approval of department. Interdepartmental with the departments of Forestry, Park and Recreation Resources, Resource Development, and Natural Resources. 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(3-3) F W 301 or ZOL 399 or ZOL 426. 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, 3(3-3) ZOL 471.
Biological aspects of fish populations. Focus on hatching and management. Nutritional and environmental requirements of fish. Disease and parasite control. Utilization of hatchery fish populations.

475. Fish Culture
Spring, 3(3-0) F W 473.
Artificial propagation of freshwater fish species. Focus on hatchery management. Nutritional and environmental requirements of fish. Disease and parasite control. Utilization of hatchery fish populations.

476. Limnology
Winter, 3(3-0) ZOL 111 and ZOL 112.
B 450 or ZOL 309, or concurrently.
Principles of aquatic ecosystems—physical, chemical and biological aspects. Student may not receive credit for both F W 476 and ZOL 309.

477. Limnological Methods
Winter, 3(0-0) F W 476 concurrently; ZOL 481, ENT 392 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 educational 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.

501. Seminar in Fisheries and Wildlife
Fall, Winter, Spring, 1-4 credits.
May reenroll for a maximum of 12 credits. Approval of department.
Study of selected advanced topics in detail and depth.

581. Advanced Topics
Fall, Winter, Spring, 3 credits.
May reenroll for a maximum of 12 credits.
Interdepartmental with the department of Microbiology and Public Health.
Interdepartmental with and administered by the Department of Zoology.
Study of selected advanced topics in detail and depth.
873. Ecology and Management of Stream Fish
Winter. 3(4-0) F W 376, ZOL 389 or BOT 450; or F W 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. 4(3-3) F W 476, F W 478 or approval of department.
Current and historical contributions to concepts of community structure, energy flow and material cycling in aquatic ecosystems.

875. Chemical Limnology
Winter. 4(3-3) F W 476, F W 478 or approval of department.
Chemical limnology; application of analytical chemistry concepts and techniques to man's influence on aquatic ecosystems. Special considerations 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. Research
Fall, Winter, Spring, Summer Variable credit. Approval of department.

940. Quantitative Wildlife Ecology
Fall. 3(3-0) Approval of department.
Fundamentals of population demography. Rates of increase, dynamic and static life tables, logistic theory, the Leslie matrix model, age specific and time specific parameters. Current hypothesis on mechanisms promoting population stability.

999. 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
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.

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.

223. Commercial Food Processing Systems
Fall. 3(3-0) Interdepartmental with and administered by Physical Systems in Agriculture and Natural Resources.
Processes and systems used in handling, processing and distribution of foods; the need for processing systems and their influence on food quality.

342. Meats, Poultry and Fishery Products I
Fall. 3(2-3) Interdepartmental with the Department of Animal Husbandry.
Principles of evaluation and nutritive value. Identification of grades and cuts of beef, pork, lamb and poultry products.

300. Dairy Products
Spring. 3(2-2) CEM 132 or approval of department.
Chemical and physical properties of milk and milk products. Survey of dairy products and the technologies involved in their manufacture.

311. Food Processing and Preservation
Winter, Summer. 4(4-0) CEM 132 or HRI 245 or approval of department; not open to majors in Food Science.
Effects of processing, packaging and preservation on the quality of foods. Demonstrations of use of ingredients, evaluation of products and results of various processing methods.

331. Physical Principles of Food Processing
Fall, Winter. 4(3-2) FSC 211, MTH 109; PHY 239 or approval of department.
Food preservation by heat, low temperature, dehydration and radiation.

332. Biological Principles of Food Processing
Winter. 4(3-3) MPH 200 or approval of department.
Biological problems related to food processing including waste disposal, sanitizing and bacteriological compounds, pesticides and residues, plant and animal growth regulators, radioactive elements, preservatives and toxicology of additives.

333. Chemical Principles of Food Processing
Spring. 4(3-3) FSC 211 and CEM 241 or approval of department.
Chemical changes in foods that affect the texture, color, flavor, odor, stability, and nutritive quality during processing and storage.

400. Milk Processing Technology
Fall. 4(3-3) CEM 132 or approval of department.
The fluid milk industry. Composition, quality, sanitation, nutritive value, processing, packaging and distribution of milk and milk products.

401. Industrial Food Fermentations
Fall. 3(3-0) FSC 440 and organic chemistry or approval of department.
Physical, microbiological and chemical procedures in utilizing microbial cultures in controlled fermentations of foods and food constituents.

402. Chemistry and Technology of Lipids
Winter. 3(3-0) One term organic chemistry.
Chemical and physical properties of edible fats and oils. Refining and processing of lipids into margarine, butter, shortenings and salad oils. Chemical methods for analysis of lipids.

404. Dehydrated Foods
Spring. 3(2-3) FSC 331; FSC 333 concurrently.
Concentration and dehydration of foods by roller, spray and freeze drying and foam, puff and tunnel drying. Stability and nutritional aspects of dehydrated foods.

405. Technology of Manufactured Dairy Products
Winter. 4(3-3) FSC 400 or approval of department.
Manufacturing technology of fermented dairy foods, frozen dairy desserts, and imitation dairy products.

421. Food Plant Management
Spring. 3(3-0) Seniors or approval of department.
Business and technical management concepts associated with food plants. Efficiency factors, regulatory obligations, and administrative aspects.

440. Food Microbiology
Fall, Dietetics majors only. Spring. 3(3-4) MPH 200 or MPH 301 or approval of department. Interdepartmental with the Department of Microbiology and Public Health.
Major groups of microorganisms of importance to the food industry are studied with emphasis on ecological, physiological, and public health aspects.

445. Meat, Poultry and Fishery Products III
Spring. 3(1-6) FSC 333 or approval of department.
Processing, formulation and quality control.

448. Fruit, Vegetable and Cereal Products I
Fall. 4(3-3) FSC 331 or approval of department.
Quality factors involved in canning, sugar and salt preservation and milling.

449. Fruit, Vegetable and Cereal Products II
Winter. 4(3-3) FSC 331 or approval of department.
Quality factors involved in cooling, freezing and other preservation procedures.

455. Food Analysis I
Fall. 4(2-4) CEM 132 and CEM 162 or approval of department.
Modern methods of analysis for fat, protein, moisture, and other macroconstituents of foods. Application of spectrophotometry and titrimetry to determination of color differences; use of dye-binding, complexometric and titrimetric techniques in food analysis.