672. Principles of Family Practice V
Winter. 1(0-4) Admission to medical school and approval of department.
Continuation of 671.

675. Principles of Family Medicine IV
Winter. 4(4-0) Admission to medical school and approval of department.
Continuation of 674.

680. The Osteopathic Examination VI
Spring. 1(0-2) Admission to medical school and approval of department.
Continuation of 679.

682. Principles of Family Practice VI
Spring. 1(0-4) Admission to medical school and approval of department.
Continuation of 681.

685. Principles of Family Medicine V
Spring. 4(4-0) Admission to medical school and approval of department.
Continuation of 684.

690. The Osteopathic Examination VII
Summer. 1(0-2) Admission to medical school and approval of department.
Continuation of 689.

692. Principles of Family Practice VII
Summer. 1(0-4) Admission to medical school and approval of department.
Continuation of 691.

695. Principles of Family Medicine VI
Summer. 4(4-0) Admission to medical school and approval of department.
Continuation of 694.

FAMILY PRACTICE* FMP

College of Human Medicine

500. Preceptorship Training
Fall, Winter, Spring. 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.

FISHERIES AND WILDLIFE F W

College of Agriculture and Natural Resources

100. Introduction to Fisheries and Wildlife
Fall. 1(0-4) Fisheries and wildlife as a profession. Academic and curricular needs to meet professional objectives, using current management problems as a focus for discussion.

IDC. Resource Ecology and Man
For course description, see Interdisciplinary Courses.

420. Ecology of Animal Parasites
Summer. 6 credits. B S 212 or approval of department. To give undergraduate majors an opportunity to study special topics in fisheries and wildlife.

404. Fisheries and Wildlife Problems
Fall, Winter, Spring. Summer. 1 to 5 credits. May re-enroll for a maximum of 12 credits. B S 212; 5 credits of fisheries and wildlife; approval of department.

424. Wildlife Population Analyses
Spring. 4(3-2) IDC 200 or approval of department.

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

436. Ecology of Migratory Birds
Fall. 2(3-4) ZOL 461 or approval of department.

450. Natural Resource Administration Fall, Spring. 4(3-3) Seniors. Interdepartmental with the departments of Forestry, Parks and Recreation Resources and Resource Development and Natural Resources. Administered by the Department of Forestry.

471. Ichthyology
Spring. 3(3-3) ZOL 305 or 314. Interdepartmental with Zoology Department.

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

476. Limnology
Winter. 3(3-0) B S 212. Interdepartmental with the Zoology Department.

477. Limnological Methods
Winter. 3(3-0) 476 concurrently; ZOL 481; ENT 301, 202 recommended. Interdepartmental with the Zoology Department.

484. Outdoor Environmental Education
Fall. 4(3-2) Juniors or approval of department.

*Established July 1, 1974.
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.

486. Field Techniques in Environmental Conservation Education Spring, 4(1-6) 494. Field skills for secondary and environmental education majors, including photography, orienteering, and population investigations of areas flora, fauna, and community interactions.

801. Seminar in Fisheries and Wildlife Fall, Winter, Spring, 1(1-0) Graduate problems and current developments of importance.

802. Advanced Topics Fall, Winter, Spring, Summer. 1 to 8 credits. May re-enroll for a maximum of 15 credits. Approval of department. Study of selected advanced topics in detail and depth.

811. Advanced Stream Ecology Summer. 3 credits. ENT 421 or approval of instructor. Given at W. K. Kellogg Biological Station. Interdepartmental with and administered by the Zoology Department. Stream ecosystem energy budget models with emphasis on individual projects involving both laboratory and field experiments. Particular use will be made of artificial streams and locally abundant species of aquatic insects.

830. Environmental Requirements of Fish Winter, 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. 6 credits. Approval of instructor or ZOL 359 or FW 473. 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.

874. Advanced Biological Limnology Fall, 3(4-0) 477, or approval of department. Historical and current contributions to concepts of community structure, energy flow and material cycling in aquatic eco-systems.

875. Chemical Limnology Winter, 4(3-3) 476, 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 heterogeneities equilibria.

889. Research Fall, Winter, Spring, Summer. Variable credit. Approval of department.

940. Quantitative Wildlife Ecology Spring, 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 fecundity and survival. 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

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 science and 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 Science in Agriculture and Natural Resources. Processes and systems used in handling, processing and distribution of food; the need for processing systems and their influence on food quality.

243. Meats, Poultry and Fishery Products I Fall, 3(3-2) Interdepartmental with the Animal Husbandry Department. 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) Composition, use, classification and market grades, methods of storage and factors affecting keeping quality of dairy products.

311. Food Processing and Preservation Winter, Summer, 3(3-0) CEM 133 or HRI 245 or approval of department; not open to majors in Food Science. Development of a working knowledge of processing, packaging and preservation of foods. Topics include effects of packaging, storage and preparation on nutrient content and food quality.

312. Food Processing and Preservation Laboratory Winter, Summer, 1(0-3) 311 or concurrently. Effects of processing, packaging and food preparation on flavor, color, texture, functionality and storage quality of foods. Role of proteins, fat and carbohydrates in food systems. Techniques of preserving foods.

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

332. Biological Principles of Food Processing Fall, 4(3-2) MPH 200 or approval of department. Biological problems related to food processing including waste disposal, sanitizing and bacteriological compounds, plant and animal growth regulators, radioactive elements, preservatives and toxicology of additives.

333. Chemical Principles of Food Processing Spring, 4(3-2) 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 133 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(3-6) 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.


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

405. Chemistry and Technology of Dairy Products Manufacturing Winter, 3(2-3) May re-enroll for a maximum of 6 credits if a different topic is taken. 400 or approval of department. Physical, chemical and microbiological factors in the processing of dairy products. Ice cream, sherbets, ice milks and special frozen desserts are studied in odd-numbered years; cheese, and related dairy products in even-numbered years.

421. Food Plant Management Spring, 3(2-3) Seniors or approval of department. Efficiency concepts, merchandising, personnel utilization and organization.