450. Natural Resource Administration
Fall, Spring. 4(4-0). Seniors. Interdepartmental with the departments of Forestry, Park and Recreation Resources and Resource Development and Agriculture 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, and Resource Development, and Agriculture 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(2-3) FW 361 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.

Biological study 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 472.

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 361, 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(2-2) 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.

488. Field Methods in Forest and Stream Ecosystems
Spring. 3(3-0) FW 477 or FW 478. Interdepartmental with the Department of Zoology.

Study of interrelationships in forest and stream ecosystems. Application of basic concepts of ecology, genetics and population biology to ecosystems under different living conditions.

491. Field Methods in Forest and Stream Ecosystems
Spring. 3(3-0) FW 477 or FW 478. Interdepartmental with the Department of Zoology.

Study of interrelationships in forest and stream ecosystems. Application of basic concepts of ecology, genetics and population biology to ecosystems under different living conditions.

501. Seminar in Fisheries and Wildlife
Fall, Winter, Spring. 1(1-0)

Graduate problems and current developments of importance.

502. Advanced Topics
Fall, Winter, Spring. Summer, 1 to 6 credits. May enroll for a maximum of 15 credits. Approval of department.

Study of selected advanced topics in detail and depth.

521. Advanced Stream Ecology
Summer. 3 credits. ENT 431 or approval of instructor. Given at W. K. Kellogg Biological Station. Interdepartmental with and administered by the Department of Entomology.

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.

580. 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.

581. Ecology of Fishes
Summer. 3(1-6) Approval of instructor or ZOL 389 or FW 473. Given at 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, and field and experimental investigations of fish communities.

583. Ecology and Management of Stream Fish
Winter. 3(3-0) 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.

584. 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 material cycling in aquatic ecosystems.

585. 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.

586. 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.

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

590. Quantitative Wildlife Ecology
Fall. 3(3-0) Approval of department.

Fundamentals of population demographics. Rates of growth, dynamic and static life tables, logistic theory, the Leslie matrix model, age specific and time specific parameters. Current hypotheses on mechanisms promoting population stability.

599. Doctoral Dissertation Research
Fall, Winter, Spring. 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 to the principles of food preservation and safety.

205. Food Laws and Regulations
Winter. 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.

223. Commercial Food Processing Systems
Fall. 3(3-0) Interdepartmental with and administered by the Department of Animal Husbandry.

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

242. Meats, Poultry and Fishery Products I
Fall. 3(2-2) 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.

310. Food Safety and Microbiology  
Fall. 4(3-3) juniors; CEM 132 or concurrently or approval of department. Not open to students with credit in FSC 440. Interdepartmental with the Department of Microbiology and Public Health. 
Effects of food handling, preparation and service on food safety. Microorganisms in foods, sanitation, food borne disease and food service regulations.

311. Food Processing and Preservation  
Winter. 4(4-0) CEM 132  
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 218 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 bacterial compounds, pesticides and residues, plant and animal growth regulatory, radioactive elements, preservatives and toxicity 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. Winter. 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, shortening and salad oils. Chemical methods for analysis of lipids.

404. Dehydrated Foods  
Spring. 3(2-3) FSC 331, FSC 333 concurrently or approval of department. 
Concentration and dehydration of foods by roller, spray, and freeze drying and fryam, 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  
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 351 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 food. Application of spectrophotometry in determination of microconstituents, use of dye-binding, complexometric and titrimetric techniques in food analysis.

456. Food Analysis II  
Winter. 4(2-6) CEM 162 and CEM 241 or approval of department. 
Use of colorimetry and spectrophotometry, chromatographic methods and other techniques for the analysis of food constituents and additives.

457. Quality Control in the Food Industry  
Winter of even-numbered years. 3(3-0) STT 201 or approval of department.  
Organization of and tools used for quality control: control charts, acceptance and auditing inspections, critical control points, reliability, safety, recall and liability.

480. Special Problems in Food Science  
Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. 
Advanced undergraduates may select research work in food chemistry, food microbiology, food engineering, food plant management, processing dairy products, meat, poultry and fishery products, fruits and vegetables, cereals or beverages.

490. Seminar  
Fall. 1(1-0) Approval of department. 
Preparation and presentation of reports on a specialized aspect of food science.

529. Food Processing Concepts, Systems and Selected New Processes  
Winter. 3(3-0) FSC 321, FSC 332, or FSC 440 or approval of department. 
Concepts and requirements for processing systems and continuous processes. Use of computers in food processing, microwave heating of foods, radiation preservation of foods and related processing methods.

530. Thermal Processing of Food Products  
Winter. 4(3-3) FSC 321; FSC 332 or FSC 440 or approval of department. 
Heating and cooling characteristics of foods in containers, thermal resistance of microorganisms, and derivation of process times and temperatures for pasteurization and sterilization.

532. Microbiology of Food Processing  
Winter. 3(3-3) FSC 440 or approval of department. 
Control of food spoilage and food poisoning microorganisms in food processing and the role of bacterial spores in process selection.

533. Advanced Food Plant Management  
Fall of even-numbered years. 3(3-9) FSC 421 or approval of department. 
Advanced concepts and strategy of policies and practices in the management of food plants.

534. Flavor Quality Control  
Spring of odd-numbered years. 4(3-3) Approval of department. 
Sensory methods used for food evaluation and panel analyses. Flavor chemistry and analytical methods. Sampling plans, control charts, and acceptance sampling for statistical quality control.

535. Carbohydrates in Foods  
Fall of odd-numbered years. 3(3-0) FSC 333. 
The chemistry and food technology of mono-, oligo-, and poly-saccharides.

550. Selected Topics in Food Science  
Fall, Winter, Spring. Summer. 2 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department. 
Advanced studies; food utilization, texture, additives, toxins, food proteins, ingredient safety, nutrient stability, new processing techniques, flavors, quality control, storage stability, state and federal food regulations.
880. Special Problems in Food Science
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits. Approval of department.
Investigation of food science areas of special interest to individual graduate students.

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

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

921. Human Nutrition and Foods
HNF
100. Elementary Food Preparation
Fall, Winter, Spring. 4(2-4)
Composition and properties of foods related to quality characteristics, methods of preparation, evaluation of quality and use of selected foods.

101. Food and Society
Fall, Winter, 3(3-0) Interdepartmental with and administered by Food Science.
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.

102. Nutrition for Man (N)
Fall, Winter, Spring. 3(3-0)
Fundamentals of nutrition with reference to diverse ways man provides for and attaches meaning to his food.

200. Physical and Chemical Properties of Foods
Fall, Winter. 4(2-4) CEM 131.
Interrelationships between basic physical and chemical principles and food preparation; composition, methods of preparation, evaluation, quality standards and comparative analysis.

205. Food Laws and Regulations
Winter, 3(3-0) Interdepartmental with and administered by Food Science.
Food laws and regulations that govern food processing and food service systems; procedures involved in adopting and enforcing food laws and regulations.

221. Food and the Consumer
Fall, Winter, Spring. 3(3-0) Sophomore or approval of department.
Factors affecting the food supply, consumer protection, food buying and management of human and material resources in feeding the family.

222. Food and the Consumer Laboratory
Fall, Winter, Spring, 2(0-4) HNF 222 or concurrently.
Decision making in Foods and Nutrition with emphasis on food choices in the marketplace. Management of human and nonhuman resources in food consumerism activities.

290. Professional Literature I
Fall, Winter. 2(3-0) HNF 102 or HNF 109 or HNF 200 or FSC 101, Sophomore or departmental major.
Identification of factors and development of analytical skills involved in evaluating and communicating scientific information.

300. Experimental Foods
Winter, Spring, 4(2-6) HNF 300, CEM 132; FSC 310 or concurrently.
Experimental approach to the study of foods, relating chemical and physical properties to reactions and processes occurring in food in response to various treatments.

310. Sensory Assessment of Foods
Winter. 2(1-2) HNF 290, HNF 300 or concurrently.
Sensory perception, chemistry of food flavors, and methods used in organoleptic evaluation of foods.

312. Nutrient Composition of Foods
Winter, Summer. 1(0-2) HNF 102 or FSC 101.
Sources of nutrient composition information and their use in menu planning. Choosing foods to meet nutrient needs of various groups.

315. Consumer Aspects of Food Consumption
Fall. 3(3-0) HNF 102 or FSC 101; EC 200.
Economic issues of concern to consumers in the food marketplace, human resource allocation to consumer food consumption activities; federal food programs affecting consumers' nutritional status.

319. Food Service Systems: General Survey
Fall, Winter, Spring. 3(3-0) HNF 222 or concurrently, or approval of department.
Factors which influence the design of food service systems. Comparison of systems as related to organizational objectives and responsibilities, operational resources (material, human) and consumer acceptance factors.

321. Food Service Management: Material Resources
Fall, Winter, Spring. 3(2-2) HNF 319 or approval of department.
Principles, processes and operational control strategies in materials management in food service systems. Menu planning, procurement, purchasing, storage and issue, production, consumer distribution, safety, sanitation, and material cost analysis.

Winter. 3(3-0) HNF 102, FCS 262A, three terms of natural science or approval of department.
Functions and importance of nutrients to physical growth, development and health of the child. Eating behavior of children. Feeding in child care centers.

375. Community Nutrition
(475) Spring. 3(3-0) HNF 102 or approval of department.
Identification of nutritional needs of population groups and available resources in communities.

400H. Honors Work
Fall, Winter, Spring, Summer. Variable credit. May reenroll for a maximum of 10 credits. Senior, approval of department.

403. Fats and Carbohydrates in Food Systems
Fall. 4(2-3) HNF 300 or approval of department.
Chemical and physical reactions in fat and carbohydrate food systems, including sols, gels, emulsions, etc. Food evaluation techniques will be introduced.

404. Role of Proteins in Food Systems
Winter. 4(3-3) HNF 300 or approval of department.
Physical and chemical reactions with protein foods, meats, eggs, cheese, seeds. Emphasis on time-temperature data in relation to quality.

406. Cultural Aspects of Food
Spring, Summer of odd-numbered years. 3(3-0) Juniors.
A cross-cultural investigation of food and its consumption. Factors such as history, religion, food sources and socio-economic status are considered.
Descriptions - Food Science and Human Nutrition

Courses

406L. Laboratory-Cultural Aspects of Food
Spring. 1(0-3) HNF 100 or HNF 200 or approval of department; HNF 406 concurrently.
Art and science of cookery in relation to historical, national, regional, racial and religious customs.

407. Interactions of Culture and Nutrition
Fall. 3(3-0) Juniors; HNF 102 or ANP 171 or approval of instructor. Interdepartmental with the Department of Anthropology.
World and U.S. food behavior focusing on conflicts between cultural and nutritional needs at various stages of life cycle. Anthropological, psychological and social influences affecting food behavior are analyzed.

411. Principles of Human Nutrition
Winter, Summer. 4(3-2) BCH 200.
Identification, function and food sources of nutrients required by man. Metabolism as affected by deficiency or excess of specific nutrients.

420. Food Service Management: Human Resources
Fall, Winter, Summer. 3(2-2) HNF 321 and HNF 322 or approval of department.
Principles, processes and operational control strategies in personnel management in food service systems. Hiring, training, and dismissal procedures, labor-management relations; task analysis and distribution; productivity assessment; and labor cost analysis.

421. Food Service Management: Problem Analysis and Decision Making
Winter, Spring. Summer of even-numbered years. 3(3-1) HNF 420 or approval of department.
Analysis of selected food service problem situations. Application of problem-solving techniques, identification of cause and effect factors, analysis of situational components and development of remedial alternatives for administrative action.

461. Energy Nutrients and Proteins for Human Nutrition
Fall. 4(4-0) BCH 200; PSL 432 or PSL 241.
Metabolism of protein, fats and carbohydrates as applied to the nutritional requirements and food supplies of people.

462. Vitamins and Minerals for Human Nutrition
Winter. 3(3-0) HNF 461.
Metabolism of vitamins and minerals as applied to the nutritional requirements and food supplies of people.

463. Nutrition and Human Development
Spring. 4(3-2) HNF 462 or approval of department.
The role of nutrients in physiological systems and biochemical processes as related to the perspective of human growth and development.

470. Clinical Nutrition
Fall. 3(3-0) HNF 462, PHM 330 or approval of department.
Changes in physiological and/or biochemical functions or processes due to illness and uses of modified diets as an essential part of treatment.

470P. Clinical Nutrition Practicum
Fall. 10(2-2) 470 concurrently.
Assessment of nutritional status. Modification of the hospital general menu for implementation of diets prescribed for treatment of disease.

473. Interpretation of Clinical Laboratory Tests in Dietetics
Winter. 4(3-2) HNF 470 or concurrently.
Principles, procedures and interpretation of clinical laboratory methods with particular emphasis on their interpretation relative to nutritional status and therapeutic nutrition.

475P. Community Nutrition Fieldwork
Fall, Winter, Spring. 10(3-3) Seniors; HNF 375 or concurrently.
Application of community nutrition principles in field settings. Instructor arranged projects in nutrition survey techniques or delivery of nutrition education services.

478. Dietetics: Theory-Practice Interrelationships I
Winter. 3(2-2) HNF 321, HNF 470, ED 414 or FIE 340.
Introduction and practice of competencies required of the professional dietitian. Skills in communication, interviewing, problem solving and planning for nutritional care will be developed using simulated and real life situations.

479. Dietetics: Theory-Practice Interrelationships II
Spring. 3(2-2) HNF 478.
Continuation of HNF 478. Skills in nutritional and employee counseling, resource management and professional behavior will be developed using simulated and real life situations.

480. Practice of Dietetics
Fall, Winter, Spring, Summer. 12(3-30) May reenroll for a maximum of 24 credits. HNF 300, HNF 470.
Application and integration of nutritional and managerial concepts related to the practice of dietetics.

490A. Professional Literature II: Foods Nutrition
Fall. 2(2-0) HNF 290, HNF 300 or HNF 402 or approval of department.
Selected topics in foods research. Emphasis on experimental data and basic scientific principles related to food quality, nutritive stability and food safety.

490B. Professional Literature II: Clinical Nutrition
Spring. Summer of even-numbered years. 2(2-0) HNF 290, HNF 462 or approval of department.
Emphasis on experimental data and scientific principles related to basic nutrition research. Focus on current developments in nutrient requirements, metabolism and interactions.

490C. Professional Literature II: Clinical Nutrition
Winter. 2(2-0) HNF 290, HNF 470 or approval of department.
Selected topics in clinical nutrition research. Emphasis on human investigative data and scientific principles related to nutritional care of patients including pathophysiological correlations, nutritional assessment, diet planning, nutrition counseling.

490D. Professional Literature II: Food Service Management
Spring, Summer. 2(2-0) HNF 290, HNF 420 or concurrently or approval of department.
Examination of trends, problems and research in food service systems operation. Focus on current issues and developments relating to materials handling, manpower needs, operational accountability and public responsibility.

490E. Professional Literature II: Foods and Nutrition Information
Spring. Summer of odd-numbered years. 2(2-0) HNF 290, HNF 411 or HNF 462 or approval of department.
Selected topics in foods and nutrition information. Emphasis on research related to method and effectiveness of nutrition education.

495. Independent Study
Fall, Winter, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. Seniors; approval of department.
Individual study of selected topics in foods, nutrition and food service management under staff guidance.

498. Field Study
Fall, Winter, Spring, Summer. 4 to 12 credits. May reenroll for a maximum of 12 credits. Approval of department.
Planned program of research, observation, study or work in selected organizations under staff guidance.

800. Seminar in Foods and Nutrition
Fall, Winter, Spring. 1(1-0) HNF 403 or HNF 463.

802. Seminar in Food Service Management
Spring. 2 to 4 credits. May reenroll for a maximum of 4 credits. Approval of department.

803. Problems in Food Service Management
Fall, Winter, Spring. Variable credit. Approval of department.

805. Experimental Foods III
Spring. 4(1-9) HNF 404 or approval of department.
Planning, executing, and reporting individual research project. Data collection, evaluation and interpretation to demonstrate understanding of research techniques and attitudes, and awareness of significant problems in the field.

813A. Special Studies in Nutrition
Fall, Winter, Spring. Variable credit. HNF 461.

813B. Special Studies in Experimental Foods
Fall, Winter, Spring. Odd-numbered years. Variable credit. HNF 404, BCH 200 or BCH 451 and BCH 804.

813C. Special Studies in Food Service Management
Fall, Winter, Spring. Variable credit. Approval of department.
Special studies in facility management, manpower coordination and tools and methods of operational control.

816. Applied Human Nutrition
Spring. 3(3-0) HNF 462.
FORESTRY FOR

College of Agriculture and Natural Resources

In 305, 306, 402 and 430, field trips are scheduled for several consecutive days away from the campus for integrated field experience, primarily in the second half of spring term of the junior year, so that these courses must be taken concurrently. This precedes enrollment in other courses during that term. The approximate cost of these field trips is $200.

202. Introduction to Forestry
Fall, Spring. 3(3-0)
Forestry in its broadest sense, including: historic development, forest growth, protection and management, products, national and world economy and policy. Emphasis on multiple use concepts. One-day field trip required.

204. Forest Vegetation
Fall, Spring. 3(3-0)
Nomenclature, classification, and identification of important trees, shrubs, and herbaceous plants of forest and field.

220. Plants and Their Environment
Winter. 3(3-0) Interdepartmental with Agriculture and Natural Resources.
Fundamental ecological relationships between various climatic, edaphic and biotic environmental factors of the ecosystem and plant response, including structure, function and evaluation of species.

301. Quantitative Methods for Natural Resources
Winter. 4(3-0) MTH 100 or MTH 111.
Collection and analysis of information pertaining to natural resources. Survey design, field procedures, equipment, and analytical techniques.

304. Forest Ecology
Fall. 4(3-3) FOR 204; BOT 205; CSS 210 or concurrently.
The forest is viewed as a biological community. Forest site relationships are quantified by examining the existing physical environment and relating it to the forest species occupying that community.