

Descriptions—Food Science of Courses

837. Food Rheology

Fall. 3 credits. Interdepartmental with Biosystems Engineering. Administered by Biosystems Engineering.

Definition, analysis, and measurement of rheological properties to describe the steady shear, dynamic, viscoelastic, extensional, and solid behavior of biological materials. Industrial applications of rheological methods with emphasis on fluid and semi-solid foods.

840. Advanced Food Microbiology

Spring of odd years. 3(3-0) P: FSC 440.

Detection, characterization, identification, and enumeration of food-associated pathogens. Applications and regulation of food biotechnology.

850. Analytical Techniques in Food Science

Summer of odd years. 2(1-2) R: Open only to graduate students in Food Science or Human Nutrition.

Theory and application of dynamic rheological testing, nucleic acid and protein analysis, and immunological techniques. Other new technologies related to food science.

860. Research in Food Processing Technology

Summer of even years. 2(1-2) R: Open only to graduate students in Food Science, Human Nutrition, Animal Science, and Horticulture.

Theory, application, and evaluation of food processing technology: ultrafiltration, food irradiation, and critical point extraction.

890. Special Problems in Food Science

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course. R: Open only to graduate students in Food Science. Approval of department; application required.

Individual investigation of an area of food science.

891. Selected Topics in Food Science

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate students in Foods or Food Science or Human Nutrition.

Topics of current interest and importance in basic and applied areas of food science.

892. Food Science Seminar

Fall, Spring. 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course. R: Open only to graduate students in Food Science.

Critical review of literature. Organization and communication of scientific data in food science.

898. Master's Research

Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course. R: Open only to graduate students in Food Science. Approval of department. Directed research in support of Plan B master's degree requirements.

899. Master's Thesis Research

Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to M.S. students in Food Science.

999. Doctoral Dissertation Research

Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course. R: Open only to Ph.D. students in Food Science.

FOOD SYSTEMS ECONOMICS AND MANAGEMENT

FSM

Department of Agricultural Economics College of Agriculture and Natural Resources

200. Introduction to Food Systems Management

Fall. 3(3-0)

Organization and operation of the industrialized food system: agricultural production, food processing, manufacturing, wholesaling, retailing and consumption. Application of economic and management principles to firms and the overall food system.

320. Agribusiness and Food Sales (W)

Spring. 3(3-0) P: FSM 200 or MSC 300. R: Not open to freshmen and sophomores. Completion of Tier I writing requirement.

Selling processes and activities within agribusiness and food firms. Principles and techniques of sales. Operation of sales organizations.

325. Agribusiness Labor and Personnel Management

Fall. 3(3-0) P: FSM 200 or MGT 302 or concurrently. R: Not open to freshmen and sophomores.

Labor for farms and agribusinesses: planning, recruiting, training, scheduling, motivating, supervising, and evaluating. Labor regulations, compensation, and records.

330. Farm Business Management

Spring. 3(4-0) P: FSM 200 or MGT 302. R: Not open to freshmen.

Management, planning, and control of farm production, marketing and financial activities. Problems and evaluation of alternative solutions. Economic principles, budgeting, financial statements.

335. Food Marketing Management

Spring. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. Administered by Marketing and Supply Chain Management. P: (FSM 200 or MSC 300) R: Open only to juniors or seniors.

Management decision-making in food industry organizations (processors, wholesalers, retailers). Marketing and sales in response to customer and consumer needs. Distribution and merchandising systems in domestic and international contexts. SA: ML 335, MTA 335

412. Financial Management in the Food System

Spring. 3(3-0) P: ACC 201 or ACC 230 R: Not open to freshmen or sophomores.

Analysis of agricultural business performance using financial statements. Capital budgeting of durable investments. Risk. Alternative methods to control capital asset services. Financial markets and credit institutions affecting agriculture.

421. Public Policy Issues in Food and Agribusiness

Spring. 3(3-0) P: EC 201, FSM 200. R: Not open to freshmen and sophomores.

Objectives, rationale, and consequences of public policy for food and agriculture. Analysis of economic implications for food and agribusinesses, farmers, consumers, and society.

429. Agribusiness Management (W)

Spring. 3(4-0) P: FSM 330. R: Open only to seniors and graduate students. Completion of Tier I writing requirement.

Analysis of agribusiness management functions including planning, organizing, and controlling. Integration of production, marketing, and financial aspects of agribusiness. Solutions to agribusiness managerial problems.

439. Food Business Analysis and Strategic Planning

Fall. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. Administered by Marketing and Supply Chain Management. P: (MSC 335 or FSM 335) and (STT 201 or STT 200 or STT 315) R: Open only to juniors or seniors.

Principles and techniques of business analysis and strategic planning applied to food firms. Food trend forecasts, market potential, competition and cost analyses, business and strategic planning.

SA: ML 439, MTA 439

441. Commodity and Futures Marketing

Spring. 3(3-0) P: FSM 200, EC 201; STT 200 or STT 201 or STT 315. R: Not open to freshmen and sophomores.

Supply, demand and prices in commodity markets. Futures and options and their role in forward pricing. Agricultural and food markets.

443. Food Industry and Cooperative Marketing

Spring. 3(3-0) P: FSM 200. R: Not open to freshmen and sophomores.

Multiple firm and cooperative marketing methods. Organization and operation of cooperatives, marketing orders, trade associations and other forms of group action in the food system.

462. Agricultural Development in Less Developed Countries

Fall. 3(3-0) Interdepartmental with Public Resource Management. P: EC 201; PRM 260 recommended. R: Not open to freshmen and sophomores. Factors responsible for agricultural growth, as well as technical and institutional change. Sustainable strategies for increasing food production and rural incomes.

490. Independent and Supervised Study
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 7 credits in all enrollments for this course. P: FSM 200; MSC 335 or FSM 330. R: Open only to FSM majors. Approval of department; application required.
 In-depth independent study of topics and issues affecting the food system. Complementary to previous coursework, adapted to career aspirations.

FORESTRY

FOR

Department of Forestry College of Agriculture and Natural Resources

101. Michigan's Forests
Spring. 3(3-0)
 Ecological, social and economic roles of Michigan's forests in historic and contemporary context. Geographic similarities and differences in forest resources.

201. Tenets of Forestry
Fall. 1(1-0) R: Open only to Forestry students. Completion of Tier I writing requirement.
 History, founding principles, and core concepts of forestry. Stewardship, conservation, professional ethics, and current forestry issues.

202. Introduction to Forestry
Fall, Spring. 3(3-0)
 Historical development of forestry. Forest growth, protection, management, and products. Relationship of national and world economy and policy to forestry. Emphasis on multiple uses of forests.

204. Forest Vegetation
Fall, Spring. 4(3-3)
 Nomenclature, classification, and identification of woody plants. Tree structure as it relates to growth and ecosystem dynamics.

206. Natural Resource Data Analysis
Spring. 3(2-2) P: CSE 101 or CSE 131 or approval of department. Interdepartmental with Resource Development.
 Quantitative analysis of natural resource data. Modeling and display of biophysical and socio-economic data related to natural resource systems.
SA: FOR 207

210. Fundamentals of Soil and Landscape Science
Fall, Spring. 3(2-3) Interdepartmental with Crop and Soil Sciences. Administered by Crop and Soil Sciences. P: (CEM 141)
 Agricultural and natural resource ecosystems: soil, vegetation and ground water components. Energy, water and nutrient cycles. Soil classification and mapping. Land management and use issues.

211. Introduction to Gender and Environmental Issues
Spring. 3(3-0) Interdepartmental with Fisheries and Wildlife; Public Resource Management; Resource Development; and Women's Studies. Administered by Fisheries and Wildlife. R: Not open to freshmen.
 The concept of gender. Overview of environment and habitat. Historical gender roles in environmental management. Gender-based theoretical perspectives. Case studies on developing and developed countries. Environmental management with emphasis on fisheries, wildlife and wetlands. Women environmental professionals.

220. Forests and the Global Environment
Fall. 3(3-0)
 Relationships between forests, climatic and edaphic factors, and human influences upon forest resources. Deforestation, biodiversity, sustainable forest management and timber trade.

230. Communicating Forestry Issues
Spring. 3(2-2) R: Open only to students in the Forestry major.
 Identification of targeted publics for forestry issues information strategies. Public presentations, press releases, public participation activities and organizational communication.

304. Wood Technology
Fall. 4(3-2) P: CEM 141, PHY 231, MTH 116 R: Not open to freshmen and sophomores.
 Structure and identification of wood. Physical and mechanical characteristics. Major industrial timber utilization processes including manufacture of lumber, furniture, composites, and paper.

306. Forest Biometry
Spring. 4(3-2) P: FOR 204, FOR 207; MTH 124 or MTH 132. R: Not open to freshmen and sophomores.
 Describing location and area of forest resources. Quantification of site, stand, and tree characteristics. Sampling and inventory. Predicting growth and yield.

310. Foundations of Forest Conservation
Spring. 2(2-0) R: Not open to freshmen and sophomores.
 Analysis of current forest conservation issues. Synthesis of classical forest conservation literature.

404. Forest and Agricultural Ecology
Fall. 4(3-3) Interdepartmental with Crop and Soil Sciences. P: CSS 210; BOT 105 or BS 110
 Structure and function of ecosystems managed for crop and wood production. Productivity, nutrient cycling, community dynamics as affected by management intensity and natural disturbance. Dynamics of managed versus natural ecosystems.

406. Silviculture
Spring. 4(3-3) P: FOR 204, FOR 404 R: Not open to freshmen and sophomores.
 Ecophysiology of tree growth and reproduction. Stand structure, composition and growth. Intermediate stand treatments. Natural and artificial reproduction. Silvicultural techniques.

408. Forest Management
Spring. 4(3-2) P: FOR 206, FOR 406.
 Management of forests for timber production in a multiple-use context. Yield projections, harvest scheduling, management prescriptions, project analysis and administration.

409. Forest Hydrology
Spring. 3(2-2) Interdepartmental with Crop and Soil Sciences; and Resource Development. P: CSS 210, MTH 116 R: Not open to freshmen or sophomores.
 Science and technology of the hydrologic cycle and water resources in forest, wildland, wetland, and rural watersheds.

410. Forest Conservation Thesis (W)
Fall, Spring. 3(3-0) P: FOR 310 R: Open only to seniors in the Forestry major.
 Selecting, researching, and evaluating a forest conservation issue and communicating findings in a thesis and a departmental seminar.

419. Applications of Geographic Information Systems to Natural Resources Management
Spring. 4(2-4) Interdepartmental with Fisheries and Wildlife; Geography; Park, Recreation and Tourism Resources; Resource Development; and Biosystems Engineering. Administered by Fisheries and Wildlife. P: (GEO 231)
 The application of geographic information systems, remote sensing, and global positioning systems to integrated planning and management for fish, wildlife, and related resources.

420. Forestry Field Studies
Spring. 3 credits. Spring: Offered at Huron-Manistee Ntl Frst.. P: FOR 306, FOR 404, FOR 406, or concurrently. R: Open only to juniors or seniors in the College of Agriculture and Natural Resources.
 Ecological and silvicultural assessments and planning for multiple uses of forest lands. Forest management concepts including soils, biometry, harvesting and protection.

430. Law and Resources
Fall. 3 credits. Interdepartmental with Resource Development; and Public and Resource Management. Administered by Resource Development. P: RD 200; EC 201 or GBL 395.
 Legal principles applied to natural resource use. Sovereignty, property rights, land and water use, jurisdiction, public trust doctrine, fish and game law, mineral rights, and eminent domain. Case and statutory law analysis.

441. Plant Breeding and Biotechnology
Spring of even years. 4(3-2) Interdepartmental with Crop and Soil Sciences; and Horticulture. Administered by Crop and Soil Sciences. P: (CSS 350)
 Plant improvement by genetic manipulation. Genetic variability in plants. Traditional and biotechnological means of creating and disseminating recombinant genotypes and cultivars.