FOOD INDUSTRY MANAGEMENT FIM

Department of Agricultural Economics
College of Agriculture and Natural Resources

100 Decision-making in the Agri-Food System
Fall, Spring. 3(3-0) Interdepartmental with Agribusiness Management. Administered by Department of Agricultural Economics. SA: FSM 200
Organization and operation of the agri-food system. Economic analysis of agri-food firms and consumers. Management functions and decision-making of agri-food firms.

210 Professional Seminar in Food Industry Management
Spring. 1(1-0) P:M: (ABM 100 or concurrently or ABM 130 or concurrently) R: Open only to Food Industry Management majors.
Industry trends in food industry management. Verbal, written, and visual communication techniques applied to professional situations, including professional development and career planning.

220 Food Product Marketing
Fall. 3(3-0) P:M: (ABM 100 or concurrently)
Structure of the food marketing system including food processors, manufacturers, retailers and food service. Impact of consumer behavior and buying patterns. International food product marketing. Strategic planning in food marketing.

222 Agribusiness and Food Industry Sales (W)
Fall, Spring. 3(3-0) Interdepartmental with Agribusiness Management. Administered by Department of Agricultural Economics. P:M: (ABM 100 or ABM 130 or EC 201 or EC 202) and completion of Tier I writing requirement. R: Open only to sophomores or juniors or seniors. SA: FSM 320
Selling processes and activities within agribusiness and food firms. Principles and techniques of sales. Operation of sales organizations.

335 Food Marketing Management
Spring. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. P:M: (FIM 220 or MSC 300) SA: ML 335, MTA 335, FSM 335
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.

337 Labor and Personnel Management in the Agri-Food System
Fall. 3(3-0) Interdepartmental with Agribusiness Management. Administered by Department of Agricultural Economics. P:M: (ABM 100 or ABM 130) R: Open only to juniors or seniors. SA: FSM 325
Human resource management principles for farms, agribusinesses and food firms: planning, recruiting, training, scheduling, motivating, supervising and evaluating. Labor regulations, compensation and records.

351 Retail Management
Fall, Spring, Summer. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. Administered by Department of Marketing and Supply Chain Management. P:M: (MSC 300 or MSC 327) R: Open only to juniors or seniors in the Eli Broad College of Business or the Food Industry Management or Merchandising Management major. SA: ML 351, MTA 351
Domestic and international retailing structure, environment, and development. Managerial strategy. Locational, purchasing, organizational, personnel and promotional techniques. Retail budgeting and control. Social and ethical considerations.

400 Public Policy Issues in the Agri-Food System
Spring. 3(3-0) Interdepartmental with Agribusiness Management. Administered by Department of Agricultural Economics. P:M: (ABM 100) R: Open only to juniors or seniors. SA: FSM 421
Objectives, alternatives and consequences of public policy in the agri-food system. Analysis of economic implications for food and agribusiness firms, farmers, consumers and society.

410 Advanced Professional Seminar in Food Industry Management
Fall. 1(1-0) P:M: (ABM 210 or FIM 210) R: Open only to Food Industry Management juniors or seniors.
Advanced professional problems and reestablishment of career planning in the agri-food system. Industry trends, career alternatives, and job search strategies. Enhanced verbal, written and visual communication techniques.

422 Vertical Coordination in the Agri-Food System
Fall. 3(3-0) Interdepartmental with Agribusiness Management. Administered by Department of Agricultural Economics. P:M: (ABM 100 and EC 201) R: Open only to juniors or seniors. SA: FSM 443
Analysis of vertical coordination in the industrialized agri-food system. Agricultural cooperatives, contracts, marketing orders, and trade associations. Analysis of imperfect competition and methods of conducting business. Interaction with legal systems and government.

427 Global Agri-Food Industries and Markets
Fall. 3(3-0) Interdepartmental with Agribusiness Management. Administered by Department of Agricultural Economics. P:M: (FIM 220 or ABM 225)
Strategic understanding of the international agri-food system. Analysis of global production, marketing, and consumption. Knowledge of changing conditions in international industries and markets. Global trends and opportunities.

439 Food Business Analysis and Strategic Planning(W)
Fall. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. P:M: (FIM 220) R: Open only to juniors or seniors SA: ML 439, MTA 439, MSC 439
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.

490 Independent Study in Food Industry Management
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (ABM 100) R: Open only to sophomores or juniors or seniors in the Food Industry Management major. Approval of department: Application required. Students are limited to a combined total of 6 credits in ABM 490 and FIM 490. SA: FSM 490
Independent supervised study in topics in food industry management.

493 Professional Internship in Food Industry management
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: (ABM 100) R: Open only to juniors or seniors in the Food Industry Management major. Approval of department; application required. A student may earn a maximum of 6 credits in all enrollments for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CSS 493, EEP 493, FIM 493, FW 493, HRT 493, PKG 493, PLP 493, PRR 493, and RD 493.
Supervised professional experience in the food industry.

FOOD SCIENCE FSC

Department of Food Science and Human Nutrition
College of Agriculture and Natural Resources

120 What's for Dinner: Science on Your Plate
Fall, Spring. 1(2-0) Not open to students with credit in FSC 211 or FSC 229.
Relationship between science and food. Current issues and future challenges in food science, technology, government, consumers and the media.

150 Introduction to Human Nutrition
Fall, Spring, Summer. 3(3-0) Interdepartmental with Human Nutrition and Foods. Administered by Department of Food Science and Human Nutrition.
Nutrition needs in life stages from a human ecological perspective. Domestic and international factors affecting the availability of a safe, nutritious food supply. Relationships of food choices to health and disease.

211 Principles of Food Science
Fall. 3(3-0)
Scientific principles, historical perspective, and current status of technology related to food composition, safety, toxicology, processing, preservation, and distribution.

229 Unit Operations in Food Processing
Fall. 3(3-0)
Principles, technologies, and applications involved in conversion of raw products into high quality foods. Processing principles such as thermal processing, irradiation, freezing, membrane concentration, enzyme technologies, dehydration, and refrigeration.

275 Seafood Systems Management
Spring. 3(3-0) Interdepartmental with Fisheries and Wildlife; Animal Science. Administered by Department of Fisheries and Wildlife.
Domestic and international perspectives on major aquatic foods. Cultural and nutritional value; wild harvest; aquaculture; processing technology; food handling and food safety.

320 Muscle Foods
Spring. 3(2-3) Interdepartmental with Animal Science. Administered by Department of Animal Science. P:M: (ANS 210 or FSC 211 or HNF 150)
Structure of muscle. Meat technology and merchandising concepts.

329 Fundamentals of Food Engineering
Spring. 3(3-0) Interdepartmental with Biosystems Engineering. Administered by Department of Agricultural Engineering. P:M: (FSC 229) and (MTH 126 or LBS 118) and (PHY 231 or LBS 164) RB: (FSC 211) SA: FE 329
Unit operations in food industry: fluid mechanics, heat transfer, rate processes, refrigeration, freezing, and dehydration. Thermal process calculations.

339 Food Processing and Engineering Laboratory
Spring. 2(0-6) P:M: (FSC 329 or concurrently) and completion of Tier I writing requirement. RB: (FSC 229)
Application of principles of material and energy balance, fluid flow, heat transfer, and water activity to the batch and continuous processing of raw product into high quality food.

342 Food Safety and Hazard Analysis Critical Control Point Program
Fall. 3(3-0) RB: (FSC 211 or concurrently or FSC 229 or concurrently or HNF 150 or concurrently or HNF 311 or concurrently) or a prior or concurrent basic course in microbiology, chemistry or biological sciences. SA: FSC 442
Sources of microbiological, chemical and physical hazards; minimizing microbial growth and survival; good manufacturing, cleaning and sanitation practices; Hazard Analysis Critical Control Point Programs in food processing and foodservice.

401 Food Chemistry
Fall. 3(3-0) P:M: (BMB 200 or CEM 352) or (BMB 401 or concurrently) R: Not open to freshmen or sophomores.
Organic and biological reactions of food constituents. Chemical changes in foods during processing and storage affecting texture, color, flavor, stability, and nutritive qualities.

402 Food Chemistry Laboratory
Fall. 1(0-3) P:M: (FSC 401 or concurrently) and completion of Tier I writing requirement.
Chemical changes in food constituents which affect stability of food products and properties such as color, flavor and texture.

407 Food and Animal Toxicology
Fall. 3(3-0) Interdepartmental with Animal Science. Administered by Department of Animal Science. P:M: (BMB 200 and BMB 401 and PSL 250) R: Not open to freshmen or sophomores.
Fate and effects of chemicals in the food chain. Impact on animal production. Residues in food products. Food safety assessment. Control methods.

407L Toxicology Methods Laboratory
Fall. 2(0-4) Interdepartmental with Animal Science. Administered by Department of Animal Science. RB: (ANS 407 or concurrently) R: Not open to freshmen or sophomores.
Laboratory techniques for evaluating potential toxicity of chemicals to living systems. Field trip to industrial toxicology laboratory required.

417 Topics in Toxicology
Spring. 1(1-0) Interdepartmental with Animal Science. Administered by Department of Animal Science. RB: (ANS 407) R: Not open to freshmen or sophomores.
Selected topics including regulatory toxicology, risk assessment, environmental toxicology, food safety, and safe handling of toxic substances.

420 Quality Assurance
Fall. 2(2-0) P:M: (STT 200 or STT 201 or STT 231 or STT 315 or STT 351) and (FSC 229 or concurrently or ANS 210 or concurrently or HRT 203 or concurrently or FSC 211 or concurrently) R: Open only to juniors or seniors or graduate students in the Department of Food Science and Human Nutrition or in the Food Processing and Technology Specialization.
Theory and application of quality assurance programs for food processing industries.

421 Food Laws and Regulations
Spring. 3(3-0) P:M: (HNF 150 or HNF 311 or FSC 211 or FSC 229 or FSM 200)
Adoption, interpretation, and enforcement of laws and regulations governing food processing and foodservice systems. Impact of regulation on food production, availability, marketing, and safety.

430 Food Processing: Fruits and Vegetables
Fall. 3(2-3) P:M: (FSC 211 or FSC 229) R: Not open to freshmen or sophomores. SA: FSC 330
Fruit and vegetable composition and quality indices. Harvest technology, postharvest physiology, and preparatory systems. Principles and applications of thermal processing, freezing, and specialized techniques.

431 Food Processing: Cereals
Spring. 3(2-3) P:M: (FSC 211 or FSC 229) R: Not open to freshmen or sophomores. SA: FSC 331
Classification and composition of cereals. Milling processes. Cereal product manufacture.

432 Food Processing: Dairy Foods
Spring. 3(2-3) P:M: (FSC 211 or FSC 229 or ANS 210) R: Not open to freshmen or sophomores. SA: FSC 332
Principles for production and processing of safe and wholesome dairy foods. Practical experience in safety and quality assurance systems and in the processing of fluid milk, cultured products, cheese, and frozen desserts.

433 Food Processing: Muscle Foods
Fall. 3(2-3) P:M: (FSC 211 or FSC 229 or ANS 210) R: Not open to freshmen or sophomores. SA: FSC 333
Manufacturing practices and principles of fresh, frozen, and cured meats and fish. Processed products from muscle foods. Egg characteristics. Product formulation and quality control.

440 Food Microbiology
Spring. 3(3-0) Interdepartmental with Microbiology and Molecular Genetics. P:M: (MMG 205 or MMG 301) and completion of Tier I writing requirement. R: Not open to freshmen or sophomores. SA: MPH 440
Major groups of microorganisms of importance to the food industry. Emphasis on ecological, physiological, and public health aspects.

441 Food Microbiology Laboratory
Spring. 2(0-4) Interdepartmental with Microbiology and Molecular Genetics. P:M: (FSC 440 or concurrently) and completion of Tier I writing requirement. RB: (MMG 206 or MMG 302) SA: MPH 441
Methods for studying major groups of microorganisms important to the food industry. Isolation, enumeration, characterization, identification, and use of microorganisms.

455 Food Analysis
Fall. 3(2-3) P:M: (BMB 200) or (BMB 401 or concurrently) and completion of Tier I writing requirement.
Principles and application of analytical techniques. Analysis for fats, proteins, carbohydrates, minerals, vitamins, and additives. Techniques include spectroscopy, fluorimetry, chromatography, electrophoresis, and proximate composition.

470 Integrated Approaches to Food Product Development
Fall, Spring. 3(2-3) P:M: (FSC 402 or concurrently or FSC 441 or concurrently or FSC 455 or concurrently) RB: (FSC 339) R: Open only to seniors or graduate students.
Food product development including obtaining, screening, and selection of ideas. Integration of food processing, chemistry, analysis, and microbiology for the design, production, and evaluation of a food product.

477 Food Engineering
Fall. 3(2-2) Interdepartmental with Biosystems Engineering. Administered by Department of Agricultural Engineering. P:M: (BE 350 and BE 351 and CE 321) SA: FE 465
Unit operations, process engineering, equipment, and industrial practices of the food industry. Manufactured dairy products: thermal processing, pipeline design, heat exchange, evaporation, dehydration, aseptic processing, membrane separation, cleaning, and sanitation.

490 Special Problems in Food Science
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Not open to freshmen or sophomores. Approval of department; application required.
Individual study of selected topics in food science. Supervised independent study.

493 Professional Internship in Food Science
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors in Food Science. Approval of department: application required. A student may earn a maximum of 6 credits in all enrollments for any or all of these courses: ABM 493, AEE 493, ANR 493, ANS 493, CSS 493, EEP 493,FSC 493, FIM 493, FW 493, HRT 493, PKG 493, PLP 493, PRR 493, and RD 493.
Supervised professional experiences in agencies and businesses related to food science.

801 Chemistry of Food Lipids
Fall of odd years. 3(3-0) RB: (FSC 401 and BMB 461)
Composition and structure of lipids: physical and chemical properties in relation to their function in foods.

802 Food Proteins
Spring of even years. 3(3-0) RB: (BMB 461 and FSC 401)
Use of proteins and enzymes in the food industry. Functional properties of proteins and enzymes in food systems.

807 Advanced Food Toxicology
Fall of even years. 3(3-0) Interdepartmental with Animal Science; Human Nutrition and Foods. R: Approval of department.
Toxicology related to food safety. Metabolism of toxicants as influenced by food constituents, mutagenesis, and chemical carcinogenesis. Risk assessment.

831 Advanced Cereal Science
Fall of even years. 3(3-0) RB: (BMB 401 and FSC 331 and FSC 401) or approval of department.
Physico-chemical properties of major constituents in cereal grains. Relationship of constituent structures to functionality in the processing of cereal grains into food products, with emphasis on wheat.

840 Advanced Food Microbiology
Spring of odd years. 3(3-0) RB: (FSC 440)
Detection, characterization, identification, and enumeration of food-associated pathogens. Applications and regulation of food biotechnology.

842 Foodborne Diseases
Spring of odd years. 3(3-0) RB: (FSC 440 or FSC 840)
Epidemiology, isolation, characterization, clinical manifestations, pathogenicity, incidence and control of bacterial, parasitic and viral foodborne pathogens and associated toxins.

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 master's 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.
Master's thesis research.

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.
Doctoral dissertation research.

FORENSIC SCIENCE FRS

School of Criminal Justice
College of Social Science

809 Issues in Forensic Science
Fall, Spring. 2 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
Forensic science research, practice and legal processes.

890 Independent Study
Fall, Spring. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
Individual research and writing under faculty supervision.

894 Practicum
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
Observation, study, and work in selected forensic science agencies.

899 Master's Thesis Research
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
Planned research and writing directed by student's thesis committee.

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 students in the Department of Forestry.
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. 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) RB: (CSE 101 or CSE 131) SA: FOR 207
Quantitative analysis of natural resource data. Modeling and display of biophysical and socio-economic data related to natural resource systems.

210 Fundamentals of Soil and Landscape Science
Fall, Spring. 3(2-3) Interdepartmental with Crop and Soil Sciences. Administered by Department of Crop and Soil Sciences. RB: (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; Environmental Economics and Policy; Resource Development; Women's Studies. Administered by Department of Fisheries and Wildlife. R: Not open to freshmen. SA: PRM 211
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.