

FOOD SYSTEMS ECONOMICS AND MANAGEMENT

429*. Agribusiness Management
 Spring. 3(4-0)
 P: FSM 330. R: Open only to seniors and graduate students.
 Analysis of agribusiness management functions including planning, organizing, and controlling. Integration of production, marketing, and financial aspects of agribusiness. Solutions to agribusiness managerial problems.
 QP: FSM 200

441*. Commodity and Futures Marketing
 Spring. 3(3-0)
 P: FSM 200, STT 201, EC 201. 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.
 QP: STT 201 EC 201FSM 200 QA: FSM 441

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.
 QP: FSM 200 QA: FSM 443

462*. Agricultural Development in Less Developed Countries
 Fall. 3(3-0)
 P: EC 201; PAM 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.
 QP: EC 201 QA: FSM 462

490*. Independent and Supervised Study
 Fall, Spring, Summer. 1 to 6 credits.
 May reenroll for a maximum of 7 credits.
 P: FSM 200; FSM 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.
 QP: FSM 200 FSM 335ORFSM 330 QA: FSM 480

FORESTRY FOR

201*. Tenets of Forestry
 Fall. 1(1-0)
 R: Open only to Forestry majors. 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.
 QA: FOR 202

204. Structure and Function of Woody Plants
 Fall. 4(3-2)
 Nomenclature, classification, and identification of woody plants. Tree structure as it relates to growth and ecosystem dynamics.

220. Plants and their Environment
 Spring. 3(3-0)
 Relationships between plants and fundamental climatic, edaphic, and biotic factors. Structure and function of different ecosystems in relation to environmental factors.

304*. Wood Technology
 Fall. 3(2-2)
 P: CEM 141, MTH 116, PHY 231. 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.
 QP: PHY 237 CEM 141MTH 111 QA: FOR 209 FOR 430 FOR 431

306*. Forest Biometry
 Spring. 4(3-2)
 P: MTH 116 and FOR 201 and FOR 204
 R: Juniors and above
 Describing location and area of forest resources. Quantification of site, stand, and tree characteristics. Sampling and inventory. Predicting growth and yield.
 QP: MTH 111 QA: FOR 320 FOR 420

404. Forest and Agricultural Ecology
 Fall. 4(3-3) Interdepartmental with the Department(s) of Crop and Soil Sciences.
 P: CSS 210, BOT 105.
 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.
 QA: FOR 304 CSS 412

406*. Silviculture
 Spring. 4(3-3)
 P: CSS 210, FOR 204. 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.
 QP: FOR 204 CSS 210 QA: FOR 305

408*. Forest Management
 Fall. 4(3-2)
 P: FOR 420.
 Management of forests for timber production in a multiple-use context. Yield projections, harvest scheduling, management prescriptions, project analysis and administration.
 QP: FOR 305 FOR 455 QA: FOR 458

409*. Watershed Hydrology
 Spring of odd-numbered years. 3(2-3)
 Interdepartmental with the Department(s) of Crop and Soil Sciences, Resource Development, Geography.
 P: CSS 210; MTH 116; CPS 100 or CPS 130 or CPS 131 R: Juniors and above
 Science and technology of the hydrologic cycle and water resources in forest, wildland, wetland and rural watersheds.
 QP: CSS 210 MTH 108CPS 100ORCPS 115 QA: FOR 409

420*. Forestry Field Studies
 Summer. 3(1-4)
 P: FOR 304 and FOR 306 and FOR 404 and FOR 406 R: Junior or senior CANN
 Major forest management concepts including forest ecology, silviculture, forest soils, biometry, timber harvesting and utilization, and forest protection. Field trips required.
 QP: FOR 209 FOR 320FOR 305FOR304FOR 204 QA: FOR 304 FOR 305 FOR 329 FOR 320

422*. Woody Plant Genetics
 Fall. 3(2-2)
 P: BOT 105, BOT 301, CSS 250
 Applications of plant breeding and genetic principles to achieve improvement of tree species and to preserve biological diversity in forest ecosystems for the benefit of mankind.
 QP: BOT 205 BOT 301 QA: FOR 410

450*. Forestry in International Development
 Fall. 4(3-2) Interdepartmental with the Department(s) of Sociology.
 P: FOR 404 or FOR 464 R: Seniors and above
 Basic biophysical, social and economic factors influencing design and implementation of farm, village and community level forestry and agroforestry projects.
 QA: FOR 464 FOR 474

460*. Arboriculture
 Fall. 3(2-2)
 P: BOT 105; FOR 204, or HRT 211. R: Not open to freshmen and sophomores.
 Tree selection and planting to fit climatic, space and edaphic conditions. Diagnosing tree abnormalities. Cultural practices used in the care and maintenance of shade and ornamental trees. Field trip required.
 QP: FOR 204 BOT 205 QA: FOR 460

461*. Urban Forestry
 Fall. 3(3-0)
 P: FOR 204 or HRT 211. R: Not open to freshmen and sophomores.
 Trees in improving the urban environment. Principles of urban forest management: legal, economic, organizational, and cultural. Street tree planning and inventory systems. Utility forestry and commercial arboriculture. Field trips required.
 QP: FOR 202 ORHRT 211 QA: FOR 461

464*. Natural Resource Economics and Social Science
 Fall. 3(2-2) Interdepartmental with the Department(s) of Park and Recreation Resources, Fisheries and Wildlife, Resource Development.
 P: One EC course at 200 level R: Juniors

and above
 Basic economic and social science principles and techniques that govern human consumption and production of natural resources, including benefit-cost analysis, regional impact analysis, and social impact assessment.
 QP: EC 201 OREC 202 QA: FOR 455

466*. Natural Resources Planning and Policy
 Spring. 3(2-2) Interdepartmental with the Department(s) of Fisheries and Wildlife, Park and Recreation Resources, Resource Development.
 P: FOR 408, 464 or FW 434 or FW 424, 472 or PRR 443 or RD 415 or RD 460 R: Seniors, graduate students ANR

Planning and policy-making in the context of scientific, environmental, social and institutional factors. Focus on ecosystem-based planning & policy issues through development of a multiple-use plan and use of case studies.
 QP: FOR 455 ORRD 417 QA: FOR 466 FOR 491

490*. Independent Study in Forest and Wood Science
 Fall, Spring, Summer. 1 to 3 credits.
 May reenroll for a maximum of 8 credits.
 R: Open only to juniors and seniors.
 Approval of department.
 Special problems course for students qualified for advanced study in some phase of forestry or wood science
 QA: 465

FORESTRY

801*. **Forestry Research**
 Fall, 1(1-0)
 R: Graduate standing
 The philosophy, nature and workings of the research process in the forest sciences.

804*. **Forest Ecology**
 Spring of even-numbered years. 3(3-0)
 P: FOR 404 or equivalent
 Theories, methods of analysis and discussion of forest productivity, competition, succession, gap, wave and landscape regeneration, wildfire, nutrient cycling, timber management and biodiversity.
 QA: FOR 804

807*. **Forestry Special Problems**
 Fall, Spring, Summer. 1 to 5 credits.
 May reenroll for a maximum of 9 credits.
 P: Instructors signature
 Advanced study in any area of forestry.
 QA: 807

809*. **Advanced Wood Technology**
 Spring of even-numbered years. 3(2-2)
 P: FOR 304 R: Seniors and graduate students CANR FOR
 Selected topics of wood technology including in depth discussion of sorption, mechanical and physical properties, composite technology, industry practices.
 QP: FOR 209

824*. **Forest Soils**
 Fall of odd-numbered years. 3(2-2)
 P: CSS 430; CSS 470; FOR 404
 Evaluation and inventory of forest soils and landscape ecosystems. Physical, water, biological, chemical processes. Nutrient cycling, diagnosis, fertilization. Variability, geography, landscape ecology considerations.

835*. **Silviculture**
 Fall of even-numbered years. 3(3-0)
 P: FOR 304, FOR 305 R: Graduate students only
 Explore the silvicultural research literature to understand the ecological, genetic, physiological and societal impacts of silvicultural practices. Current problems are examined in stand management, forest regeneration, and temperate and tropical zones.
 QP: FOR 304 FOR 305 QA: FOR 835

845*. **Forest Policy**
 Spring of even-numbered years. 3(3-0)
 Models, processes and analysis methods in forest resource policy. Interaction of markets, government, and citizens in policy issue development, formulation, implementation and evaluation.

864*. **Agroforestry Systems**
 Spring of even-numbered years. 3(3-0)
 P: FOR 450, FOR 404 C: FOR 804, FOR 801 R: Graduate standing CANR FOR, CSS, HRT, BOT
 Emphasis on critical review of the literature on agro-ecology, nutrient cycling, soil-root-tree/crop interface, nitrogen fixing trees, tree selection, improvement and management, IPM, and microclimatology, as related to agroforestry.

866*. **Economics of Renewable Resources**
 Spring of odd-numbered years. 3(3-0)
 Interdepartmental with the Department(s) of Resource Development.
 P: AEC 821 R: Graduate standing
 Applications of economic theory and analysis to renewable natural resources problems. Emphasis on joint production and forest-related resource interactions, including multiple-use forestry and agroforestry.
 QP: FOR 809

899*. **Masters Thesis Research**
 Fall, Spring, Summer. 1 to 16 credits.
 May reenroll for a maximum of 24 credits.
 Research for Masters Thesis

910*. **Modeling for Natural Resources Management**
 Spring of even-numbered years. 3(2-2)
 Interdepartmental with the Department(s) of Resource Development.
 P: AEC 892B Applied Operations Research (Harsh) or course in Systems Sci.
 R: Graduate standing
 Role of simulation and optimization models in developing resource management strategies. Applications of computer-based modeling in natural resources. Modeling of decision systems.
 QP: FOR 960

930*. **Advanced Forest Genetics**
 Fall of odd-numbered years. 2(1-2)
 Interdepartmental with the Department(s) of Horticulture, Crop and Soil Sciences.
 P: FOR 420 or a plant breeding course.
 C: FOR 420
 In depth applications of the science of genetics, plant breeding, and biotechnology to preservation of diversity and improvement of important tree species.

976*. **Applied Multivariate Analysis**
 Spring. 4(4-0)
 P: MTH 334, STT 423 R: Graduate Students CANR
 Application of multivariate methods to research problems. Hotellings T, profile analysis, discriminant analysis, canonical correlation, principal components, principal coordinates, correspondence analysis, and cluster analysis.
 QP: MTH 334 STT 423 QA: FOR 976

999*. **Doctoral Dissertation Research**
 Fall, Spring, Summer. 1 to 16 credits.
 Research for doctoral dissertation

FRENCH FRN

101*. **Elementary French I**
 Fall, Spring. 4(4-1)
 R: No previous experience in French or designated score on French placement test. Not open to students with credit in FRM 150.
 Practice in using and understanding French to develop listening, speaking, reading, and writing skills. Pronunciation, grammar, vocabulary, and cultural topics.
 QA: FRN 101 FRN 102

102*. **Elementary French II**
 Fall, Spring. 4(4-1)
 P: FRN 101 or designated score on French placement test. R: Not open to students with credit in FRM 150.
 Further practice in using and understanding French to develop listening, speaking, reading, and writing skills. Pronunciation, grammar, vocabulary, and cultural topics.
 QP: FRN 102 QA: FRN 103

150*. **Review of Elementary French**
 Fall, Spring. 3(3-1)
 R: Open to students with high school credit in French and designated score on French placement test. Not open to students with credit in FRM 101 or FRN 102.
 Review of college first-year French for students who had the language in high school and who need to strengthen communication skills, vocabulary, grammar, and pronunciation before study at the 200 level.
 QA: FRN 190

201*. **Second-Year French I**
 Fall, Spring. 4(4-0)
 P: FRN 102 or FRN 150 or designated score on French placement test.
 Intermediate-level review and development of aural comprehension, speaking, reading, and writing skills. Topics in the cultures of the French-speaking world.
 QP: FRN 103 QA: FRN 201 FRN 202

202*. **Second-Year French II**
 Fall, Spring. 4(4-0)
 P: FRN 201.
 Further review and development of aural comprehension, speaking, reading, and writing skills. Topics in the cultures of the French-speaking world.
 QP: FRN 202 QA: FRN 203

290*. **Independent Study**
 Fall, Spring, Summer. 1 to 4 credits.
 May reenroll for a maximum of 4 credits.
 R: Approval of the Department
 Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.
 QA: FRN 299

320*. **Grammar and Composition**
 Fall, Spring. 3(3-0)
 P: FRN 202 or designated score on French placement test.
 Systematic review of grammar. Extensive writing in French.
 QP: FRN 203 QA: FRN 321 FRN 322

330*. **French Phonetics**
 Fall, Spring. 3(3-0)
 P: FRN 202 or designated score on French placement test.
 Analysis of French pronunciation for listening and speaking.
 QP: FRN 203 QA: FRN 300

340*. **Introduction to Reading French Literature**
 Fall, Spring. 3(3-0)
 P: FRN 202 or designated score on French placement test.
 Close reading and interpretation of French drama, poetry, fiction, and other prose forms.
 QP: FRN 203 QA: FRN 361

350*. **The Contemporary French Scene**
 Fall. 3(3-0)
 P: FRN 320, FRN 340.
 Institutions, history, arts, and major sociopolitical issues of France and its former colonies from 1945 to the present, with an emphasis on the Fifth Republic; class conducted in French.
 QP: FRN 321 FRN 322 QA: FRN 327

355*. **French Literature in English Translation**
 Spring of even-numbered years. 3(3-0)
 R: Not open to freshmen.
 Representative works and themes of French literature.
 QA: FRN 341

400*. **Reading French for Graduate Students**
 Spring. 3(3-0)
 R: Not open to freshmen and sophomores.
 Intensive study of French for graduate students needing a reading knowledge of the language.
 QA: FRN 411 FRN 412

410*. **Survey of French Literature I**
 Fall. 3(3-0)
 P: FRN 320, FRN 340.
 French literature from the Middle Ages to the Enlightenment.
 QP: FRN 322 FRN 361 QA: FRN 362