Food Processing: Fruits and Vegetables
Fall. 3(2-3) P:M: (FSC 211) R: Not open to freshmen or sophomores. SA: FSC 330

Food Processing: Cereals
Spring. 3(2-3) P:M: (FSC 211) R: Not open to freshmen or sophomores. SA: FSC 332

Food Processing: Dairy Foods
Spring. 3(2-3) P:M: (FSC 211 or ANS 210) R: Not open to freshmen or sophomores. SA: FSC 333

Food Processing: Muscle Foods
Fall. 3(2-3) P:M: (FSC 211 or ANS 210) R: Not open to freshmen or sophomores. SA: FSC 333

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

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. NB: (MMG 206 or MMG 302) SA: MPH 441

Food Analysis
Fall. 3(2-3) P:M: (MBM 200) or (MBM 401 or concurrently) and completion of Tier I writing requirement.

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) R: (FSC 325 and BE 329) R: Open only to seniors or graduate students.

Food Engineering: Fluids
Fall. 3(2-2) Interdepartmental with Biosystems Engineering. Administered by Department of Agricultural Engineering. P:M: (BE 350 and BE 351) RB: (CE 321 or CH 311 or CH 332) SA: FE 465

Food Microbiology Laboratory
Spring. 3(3-0) Interdepartmental with Microbiology and Molecular Genetics. P:M: (FSC 402 or concurrently) and completion of Tier I writing requirement.

Food Analysis
Fall. Spring. 3(2-3) P:M: (FSC 402 or concurrently or FSC 441 or concurrently or FSC 455 or concurrently) R: (FSC 325 and BE 329) R: Open only to seniors or graduate students.

Food Engineering: Fluids
Fall. 3(2-2) Interdepartmental with Biosystems Engineering. Administered by Department of Agricultural Engineering. P:M: (BE 350 and BE 351) RB: (CE 321 or CH 311 or CH 332) SA: FE 465

Food Microbiology Laboratory
Spring. 3(3-0) Interdepartmental with Microbiology and Molecular Genetics. P:M: (FSC 402 or concurrently) and completion of Tier I writing requirement.

Food Analysis
Fall. Spring. 3(2-3) P:M: (FSC 402 or concurrently or FSC 441 or concurrently or FSC 455 or concurrently) R: (FSC 325 and BE 329) R: Open only to seniors or graduate students.

Food Engineering: Fluids
Fall. 3(2-2) Interdepartmental with Biosystems Engineering. Administered by Department of Agricultural Engineering. P:M: (BE 350 and BE 351) RB: (CE 321 or CH 311 or CH 332) SA: FE 465

Food Microbiology Laboratory
Spring. 3(3-0) Interdepartmental with Microbiology and Molecular Genetics. P:M: (FSC 402 or concurrently) and completion of Tier I writing requirement.
404 Forest and Agricultural Ecology
Fall. 3(3-0) Interdepartmental with Crop and Soil Sciences. P.M. (CSS 210) and (BOT 105 or BS 110) RB: (ZOL 355)
Ecological interactions crucial to the sustainable management of crop and forest ecosystems. Plant resources, competition, community development and dynamics, biodiversity, primary productivity, nutrient cycling, ecosystem structure and function, and impacts of global environmental change.

404L Forest and Agricultural Ecology Laboratory
Fall. 10(3-0) Interdepartmental with Crop and Soil Sciences. P.M. (CSS 210) and (BOT 105 or BS 110) and (FOR 404 or concur- rently) RB: (ZOL 355)
Field studies and data analysis of ecological processes central to the sustainable management of forest and agricultural resources. Field exercises cover primary production, community structure, soil resources, biodiversity, succession, nutrient cycling, critiques of primary literature. Two weekend field trips required.

406 Silviculture
Spring. 4(3-3) P.M.: (FOR 204 and FOR 404) R: Not open to freshmen or sopho- mores

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

410 Forest Conservation Thesis (W)
Fall, Spring. 3(3-0) P.M.: Completion of Tier I writing requirement. RB: (FOR 310) R: Open only to seniors in the Department of Forestry. 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 Fish- eries and Wildlife; Geography; Park, Rec- reation and Tourism Resources; Resource Development; Biosystems Engineering. Administered by Department of Fisheries and Wildlife. RB: (GEO 221)
The application of geographic information systems, remote sensing, and global positioning systems to integrated planning and management for fish, wild- life, and related resources.

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

430 Law and Resources
Fall. 3(3-0) Interdepartmental with Re- source Development; Environmental Eco- nomics and Policy. Administered by De- partment of Resource Development. R: Open only to juniors or seniors or graduate students. SA: PRM 430
Legal principles applied to the environment and natural resources. Sovereignty, property rights, land and water use, jurisdiction, public trust doctrine, wetland law, and eminent domain. Case and statu- tory law analysis.

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

450 Forestry in International Development
Fall. 3(3-0) Interdepartmental with Sociol- ogy. RB: (FOR 404) R: Open only to seniors or graduate students.
Biophysical, social and economic factors influencing design and implementation of farm, village and community level forestry and agroforestry projects.

451 Cellular and Molecular Principles and Techniques for Plant Sciences
Spring. 4(2-6) Interdepartmental with Crop and Soil Sciences; Horticulture. Adminis- tered by Department of Crop and Soil Sci- ences. RB: (CSS 350 or ZOL 341)
Principles, concepts, and techniques of agricultural plant biotechnology. Recombinant DNA technology, plant molecular biology, transformation, cell tissue, and organ culture in relation to plant improvement.

452 Watershed Concepts
Fall, Spring, Summer. 3(3-0) Interdepart- mental with Resource Development; Bio- systems Engineering; Crop and Soil Sci- ences; Fisheries and Wildlife. Administered by Department of Resource Development. P.M.: (RD 324 and ZOL 355) RB: organic chemistry
Watershed hydrology and management. The hydro- logic cycle, water quality, aquatic ecosystems and social systems. Laws and institutions for managing water resources.

460 Arboriculture
Fall. 3(2-2) P.M.: (BOT 105) and (FOR 204 or HRT 211) R: Not open to freshmen or 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.

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

464 Natural Resource Economics and Social Science (W)
Fall. 3(2-2) Interdepartmental with Fisheries and Wildlife; Park, Recreation and Tourism Resources; Resource Development. P.M.: (EC 201 or EC 202) and completion of Tier I writing requirement. R: Not open to fresh- men or sophomores.

466 Natural Resources Planning and Policy
Spring. 3(2-2) Interdepartmental with Fish- eries and Wildlife, Park, Recreation and Tourism Resources; Resource Develop- ment. R: Open only to seniors or graduate students in the Department of Forestry or Department of Fisheries and Wildlife or De- partment of Park, Recreation and Tourism Resources or Department of Resource De- velopment.
Scientific, environmental, social, and institutional factors affecting planning and policy-making. Focus on ecosystem-based planning and policy issues through development of a multiple-use plan. Case studies.

478 Pest Management II: Biological Components of Management Systems (W)
Spring of even years. 3(2-3) Interdepart- mental with Entomology; Crop and Soil Sciences; Fisheries and Wildlife; Horticultu- re. Administered by Department of Ento- mology. P.M.: (ENT 404 or ENT 470 or PLP 405 or CSS 402 or FW 328) and completion of Tier I writing requirement.
Principles of host plant resistance and biological control and their relationship to the design of agroecosystems. Classification of insect biological control agents.

480 Woody Plant Physiology
Spring. 3(3-0) Interdepartmental with Horti- culture. Administered by Department of Hor- ticulture. P.M.: (PLB 105 or BS 110) R: Not open to freshmen or sophomores.
Physiology of carbon utilization. Effects of water, temperature, nutrition, and light on apical, vegeta- tive, and reproductive growth of woody plants.

486 Biotechnology in Agriculture: Applications and Ethical Issues
Fall of even years. 3(3-0) Interdepartmental with Horticulture; Crop and Soil Sciences; Philosophy. Administered by Department of Horticulture. P.M.: (BOT 105 or BS 111) RB: (CSS 350 or ZOL 341) R: Not open to freshmen or sophomores.
Current and future roles of biotechnology in agricul- ture: scientific basis, applications. Environmental, social, and ethical concerns.

490 Independent Study in Forestry
Fall, Spring, Summer. 1 to 3 credits. A stu- dent may earn a maximum of 8 credits in all enrollments for this course. R: Open only to juniors or seniors. Approval of department. Special problems course for students qualified for advanced study in some phase of forestry.