Agricultural Economics

404. Social Accounts and Community Choice
Winter. 3(3-0) 303 or approval of department.

Social accounting as a framework for problem definition and measurement of policy effectiveness. Conceptualization of social accounts. Use of selected social indicators in policy formulation and decision making.

Fall, Spring. 4(4-0) 201 or 210. Interdepartmental with and administered by the Economics Department.

Expenditure theory; objectives and rationale of government activity in the market system; efficiency criteria in government decision-making; planning-programming-budgeting systems and cost-benefit analysis.

417. Land Economics
Fall, Spring. 4(4-0) Interdepartmental with the Resource Development and Economics Departments and Food Systems Economics and Management administered by the Resource Development Department.

Factors affecting man's economic use of land and space resources; input-output relationships; development, investment, and enterprise location decisions; land markets; property rights; area planning; zoning and land use controls.

460. Location Analysis
Winter. 4(4-0) 417 or 401 or EC 324. Interdepartmental with the Resource Development and Economics Departments, and Food Systems Economics and Management administered by the Resource Development Department.

Forces affecting location decisions of firms, households and governments. Applications to agricultural, industrial, and regional developments.

462. Rural Transformation in Developing Societies
(AEC 462.) Fall, 3(3-0) 201 or EC 201; PAM 290 recommended. Interdepartmental with Agriculture and Food Systems Economics and Management administered by Food Systems Economics and Management.

Traditional agricultural systems and the incentive environment for economic growth in rural areas. Adjustment to technological, institutional and human changes. Strategies for rapid agricultural transformation.

473. Introduction to Systems Analysis
Spring. 3(3-0) MTH 111. Interdepartmental with Food Systems Economics and Management.

Principles of systems analysis applied to ecological, physical, economic and social phenomena. Case studies. Interpretation and design of systems models. Systems concepts in decision making.

480. Independent and Supervised Study
Fall, Winter, Spring, Summer. 1 to 9 credits. Supervised for a maximum of 9 credits. Approval of department.

AGRICULTURAL ENGINEERING

College of Agriculture and Natural Resources

202. Physical Principles of Mechanical Processes
Fall, Spring. 3(1-4)
Theory and skills in metallurgy, heat treating, cold metal, sheet metal, plumbing, arc and oxyacetylene welding and machine operations.

220. Engineering Principles Applied to Agriculture
Winter. 4(3-2) MTH 108.
Physical principles and their application to agricultural production, distribution and processing.

252. Introduction to Agricultural Engineering I
Fall. 1(1-0)
An introduction to the Agricultural Engineering profession with an examination of existing problems.

253. Introduction to Agricultural Engineering II
Winter. 1(1-0)
Communication techniques, library use, letter and technical reporting, and writing techniques as used in the Agricultural Engineering profession.

254. Introduction to Agricultural Engineering III
Spring. 1(1-0)
An analysis of the Agricultural Engineering profession with an examination of educational requirements and employment in various areas of the profession.

352. Physical Principles of Biological Processes
Fall. 3(3-0) MTH 215, PHY 289.
Basic scientific principles and engineering theory applied to biological systems and products.

353. Physical Principles of Plant Environment
Winter. 3(3-0) 352.
Physical processes and properties of the biosphere as related to engineering the plant environment.

354. Physical Principles of Animal Environment
Spring. 3(2-2) 352.
Interrelationship of environmental factors and physiological responses of animals for planning, design and control of optimum environmental systems.

355. Principles of Structures and Machines
Winter. 3(3-0) MMM 211.
Stress and deflection analysis of simple structures and machinery. Estimation of loads and selection of materials. Course will be oriented towards applications in agricultural engineering.

402. Teaching Agricultural Mechanics
Winter, Spring. 5(3-6) Juniors.
Teaching theory and developing skills in agricultural mechanics in secondary and vocational schools. School and farm shop planning and management. Emphasis on equipment and material selection, metallurgy, metal work and welding.

416. Agricultural Structures
Fall, Spring. 4(2-2) Juniors.
Functional planning and principles of environmental control, cost estimation, structural component analysis and properties of building materials.

421. Electric Power
Fall, Spring. 4(3-2) 220.
Application of electric energy to production and living; selection, installation, operation and control of electrical equipment.

423. Principles of Processing Equipment
Winter. 3(2-2) 290.
Principles of equipment used in the processing and storage of biological products.

425. Farmstead Materials Handling
Spring. 4(2-2) Juniors.
Systems and equipment for handling grain, hay, fertilizer, water and wastes on the farm. Systems design and evaluation.

431. Principles of Irrigation, Drainage and Erosion Control
Spring. 4(3-2) SLS 210.
Use of surveying, design, construction and cost estimates of drainage, irrigation and water control systems.

432. Introduction to Meteorology
For course description, see Interdisciplinary Courses.

433. Introductory Meteorology Laboratory
For course description, see Interdisciplinary Courses.

435. Micrometeorology
For course description, see Interdisciplinary Courses.

437. Principles of Food Engineering
Winter. 3(3-2) 200.
Principles and use of electricity, steam, refrigeration and hydraulics in food plants. Emphasis will be placed on specialized processing equipment, their design features, materials of construction and automatic control.

443. Internal Combustion Engines
Fall, Spring. 3(3-2) 230.
Introduction to spark ignition and compression ignition engines with emphasis on principles of operation, combustion, fuels, lubricants and engine performance.

444. Agricultural Production Machinery
Spring. 3(3-2) 220.
Basic principles of agricultural machines. Selection, care and operation of agricultural machinery for obtaining optimum conditions for crop production.

445. Hydraulic Power Transmission
Winter. 3(3-2) MTH 211, PHY 237.
Pressures, flows and losses in hydraulic power transmission systems. Operation and performance of pumps, valves, actuators, and complete systems found on agricultural and light industrial mobile equipment.

459. Special Problems
Fall, Winter, Spring, Summer. 1 to 9 credits. May re-enroll for a maximum of 9 credits. Approval of department.

462. Pollution Control
Winter of even-numbered years. 4(3-2) 352.
Application of biological, chemical, physical and engineering principles of pollution control to optimize the production and processing of food and fiber with respect to the quality of the total environment.

471. Electric Power and Control
Fall. 4(3-2) E E 345.
Electric motors, controls and circuits; switching logic, devices and circuit design.

474. Processing Biological Products
Winter of odd-numbered years. 4(3-2)
352, M E 311.
Engineering principles of unsteady-state heat transfer, heat exchangers, drying, storage and refrigeration as applied to the processing of biological products.
475. Introduction to Operations Research
Winter. 4(4-0) MTH 215, CFS 120.
Interdepartmental with Systems Science.
Methodology and basics of operations research; formulation and analysis of probabilistic models of inventory, waiting line, and reliability processes; random process simulation and network planning models.

476. Food Process Engineering
Spring of odd-numbered years. 4(3-2)
Description and analysis of systems utilized in processing of foods for human consumption.

481. Soil and Water Engineering
Spring of even-numbered years. 4(3-2) M E 332 or C E 321.
Engineering analysis, design and construction of drainage, irrigation and erosion control systems.

493. Energy Conversion Systems
Spring. 4(3-2) M E 311.
Principles of energy conversion with emphasis on the internal combustion engine. Thermo-dynamic analysis, performance characteristics, and power transmission.

494. Systems of Agricultural Machines
Spring of even-numbered years. 4(3-2)
Systems of machines used in field and farm-stead operations. Engineering principles for machines dealing with biological materials.

AGRICULTURE
College of Agriculture and Natural Resources

275. Exploring International Agriculture
Spring. 3(3-0) Interdepartmental with Natural Resources.
Exploration of overseas assignments with international agencies; potential world food actualities and potentialities; special problems of the tropics compared with those in temperate regions.

401. Agriculture and Natural Resources Communications Internship
Fall, Winter, Spring, Summer. 1 to 6 credits. May re-enroll for a maximum of 6 credits.
Internship with professionals in communications or radio, TV, publications, etc.

450. United States Agriculture for Overseas Students
Fall. 3(3-0) Advanced undergraduate or graduate students from countries other than the United States or Canada.
Orientation courses for overseas students. Development of United States agriculture. Institutions serving agriculture with emphasis on Land Grant University system. Scientific developments and their impact on agriculture. Field trips.

AMERICAN STUDIES
College of Arts and Letters

301. Issues in American Civilization
Fall, Winter. Spring. 3(3-0) May re-enroll for a maximum of 6 credits. Not applicable to major requirements.
Selected issues in American life past and present. Articles drawn from such disciplines as history, social sciences, philosophy, literature and the arts. Topics vary.