Agricultural Economics

College of Agriculture and Natural Resources

805. Agricultural Production Economics I
Fall. 4(4-0) FSM or PAM 340; not open to students with credit in FSM or PAM 401.

809. Institutions Behavior and Performance
Fall. 3(3-0) Approval of department.
Relationships among institutional structure, behavior, and performance. Concepts of behavioral sciences useful in public policy and program analysis; interactions of preferences, incentives and institutions.

810. Economics of Public Choice
Winter. 3(3-0) Approval of department.
Interdepartmental with the departments of Resource Development and Economics. Economics of alternative institutions for collective action. Emphasis on property rights and natural resources. Public goods, externalities, non-marginal change, social costs, income and power distribution, grants, welfare criteria and market failure.

811. Public Program Analysis
Spring, Summer of odd-numbered years. 3(3-0) FSM 401 or EC 324 or approval of department. Interdepartmental with the departments of Economics and Resource Development. Application of benefit-cost analysis to public programs of resource development. Issues and case studies in budgeting, investment criteria, pricing, externalities, and coordination.

830. Data Generation and Analysis
Winter. 4(4-0) STT 421.
Organization of information systems in relation to economics of information. Use of published data and samples. Index numbers. Regression, hypothesis testing and decision making. Emphasis on social science applications.

Methods of analysis and design. Linear programming. Theory of linear economic models. Topics in nonlinear programming.

835. Introduction to Econometrics
Fall, Spring, Summer. 3(3-0) EC 325, STT 422. Interdepartmental with and administered by the Department of Economics. Specification, estimation and interpretation of economic models. Applications to empirical problems.

837. Applied Operations Research I
Spring. 4(4-0) MTH 113 or MTH 228. Approval of department.
Use and interpretation of operations research techniques for problems encountered by agricultural economists. Emphasis on linear programming and its variations such as transportation models, network analysis, spatial equilibrium models.

838. Applied Operations Research II
Summer. 2(2-0) MTH 113 or MTH 228, STT 422. Approval of department. Use and interpretation of operations research techniques for problems encountered by agricultural economists. Emphasis on techniques such as Markov processes, dynamic programming, and Monte-Carlo techniques, elementary simulation.

841. Industrial Organization of Agricultural Markets
Fall. 3(3-0) Approval of department.

843. Commodity Market Analysis
Winter. 3(3-0) STT 422 and FSM 401 or EC 325.

851. Advanced Farm Management
Summer. 3(3-2) FSM 430 or approval of department.
Emphasizes identification, analysis, and methods of solving problems of farm organization and operation: new technology, specialization and scale. Farm case studies, role-playing, computer games and farm business simulation.

860. Rural Welfare and Development Policy
Spring. 3(3-0) Approval of department.

861. Agricultural Trade Policies
Fall or odd-numbered years. Summer. 3(3-0) EC 427 or approval of department.
International trade in agricultural products, areas of competition, changes in comparative advantage, interrelationship of national and international policy regional groupings, trade and economic development, current policy proposals.

862. Agriculture in Economic Development
Winter. 3(3-0) PAM 462 or approval of department.
Agricultural and industrial sector interactions in the development process. Theories and models of the development process. Transformation of agriculture in less-developed countries.

865. Rural Development Administration
Winter. 3(3-0) Approval of department. Concepts and principles of development administration and their application in the analysis of the processes and procedures through which rural development activities are formulated and implemented in less developed countries.

868. Data Collection in Developing Countries
Spring, Summer of even-numbered years. Summer. 3(3-0) AEC 830 or STT 825 or approval of department.
Principles for conducting household/village level studies of production and marketing in developing countries. Preparing research proposals, methodologies for data collection, processing and analysis. Field research administration.

876. Statistical Inference in Economics I
Winter. 3(3-0) EC 812A or EC 801; STT 443 or STT 863; or approval of department. Interdepartmental with the departments of Economics, and Statistics and Probability and administered by the Department of Economics. Review and extension of single-equation regression models. Properties of least-squares estimators under alternative specifications. Problems of analyzing nonexperimental data. Errors in variables, autoregressive and heteroscedastic models.

877. Statistical Inference in Economics II

878. Statistical Inference in Economics III
Spring. 3(3-0) EC 877 or approval of department. Interdepartmental with the departments of Economics, and Statistics and Probability. Administered by the Department of Economics. Validation and application of dynamic econometric models. Bayesian approach to estimation problems. Recent developments in econometric methods and in applied econometric research.

882. Independent and Supervised Study
Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of department. Arranged seminars initiated by faculty or students; supervised readings; individual study of special problems.

899. Master's Thesis Research
Fall, Winter, Spring. Summer. Variable credit. Approval of department.

906. Agricultural Production Economics II
Winter. 4(4-0) AEC 830 or FSM 401.
Resource allocation and efficiency in agriculture as related to management under conditions of both perfect and imperfect knowledge of price, institutional, technological and human change. Advanced topics.
### AGRICULTURAL ECONOMICS - Descriptions of Courses

**910. Resource Economics Proseminar**
Spring 3(3-0) May reenroll for a maximum of 12 credits. Approval of department. Interdepartmental with the departments of Forest and Resource Development. Administered by the Department of Forestry.

A seminar wherein advanced graduate students in the fields of resource economics participate with faculty in the joint conduct of a major research project in resource economics and policy.

**941. Seminar in Food Systems Organization and Policy**
Spring of odd-numbered years, Summers of even-numbered years. 3(3-0) Approval of department.

Alternative methods of organization and control of food systems. Policy and program analysis. Development and presentation of position papers.

**960. Agricultural Policy in Developed Economies**
Winter. 3(3-0) FSM 421 and one year of graduate work in social science or approval of department.

Sectoral interrelationships and the impact of economic policies relating to agriculture in advanced economies. Public decision processes. Current issues in food and fiber policy.

**962. Development Planning and Agricultural Sector Analysis**
Spring. 3(3-0) AEC 862; one year of graduate study in agricultural economics or economics or approval of department.


**972. Methodological Approaches to Research**
Fall of even-numbered years, Summer of odd-numbered years. 3(3-0) Two terms of graduate study in agricultural economics or economics or approval of department.

Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for AEC 999.

**990C. Mathematical Economics and Econometrics Workshop**
Fall, Winter, Spring. 3 to 16 credits. EC 812, EC 832, or approval of department. Interdepartmental with and administered by the Department of Economics.

Critical evaluation of research reports by staff and other students. Students writing doctoral dissertations in the appropriate areas are encouraged to participate in workshop and may do so while registered for AEC 999.

**330. Food Production Management**
Fall 3(3-0)
Description and analysis of problems faced by managers of input supply, farm, and packing and handling firms. Emphasis on planning, organization, adjustment to technological change, growth and personnel management.

**335. Food Processing and Distribution Management**
Winter. 3(3-0) FSM 200 or MTA 300.

Interdepartmental with and administered by the Department of Marketing and Transportation Administration.

Analysis of problems faced in the food processing and distribution system. Includes functional interrelationships, consumer orientation and future development.

**370. Applied Statistics**
Winter. 3(3-0) Students may not receive credit in both FSM 370 and AEC 820. One course in statistics, one course in food systems economics and management or public affairs management with and administered by Public Affairs Management.

Interpretation and use of statistical results in decision making including sampling, index numbers, tabular analysis, trend estimation, regression models, decision theory.

**412. Financing the Food System**
Spring. 3(3-0) FSM 200 or EC 201.

Capital, sources and requirements in the food system. Sources and terms of credit. Credit instruments. Interest rates. Credit policy issues. Principles of financial management and real estate appraisal.

**417. Land Economics**
Fall. Spring. 4(4-0) Interdepartmental with Public Affairs Management and the departments of Resource Development, and Econometrics. Administered by the Department of Resource Development.

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.

**421. Public Policy and the Food System**
Winter. 3(3-0) FSM 200 or EC 201.

PAM 320 recommended. Policy issues identified and analyzed in relation to performance goals of society and groups within the food system. Emphasis on price and income policies and regulations affecting the food system.

**430. Advanced Food Production Management**
Fall. 3(3-0) FSM 330

Management principles and techniques applied to food production firms. Includes firms, input suppliers, packers and handlers. Emphasis on planning, growth, finance and decision processes. Case studies and gaming.

**439. Advanced Food Processing and Distribution Management**
Fall. 3(3-0) MTA 335.

Interdepartmental with and administered by the Department of Marketing and Transportation Administration.

Managerial principles and techniques applied to food processing and distribution. Emphasizes adjustment to changing social, economic and internal environment. Student interaction with industry, labor and government representatives. Field trips, special projects.

**443. Group Action in Marketing**
Spring. 3(3-0) FSM 200.

Characteristics, problems and strategies of cooperatives, unions, bargaining groups, trade associations and other voluntary organizations. Effects of group actions on farmers, marketing firms and consumers. Legal restraints and facilitation of group action.

**460. Regional Economics**
Winter. 4(4-0) RD 417 or FSM 401 or EC 324.


Forests affecting land use decisions of firms, households and governments. Applications to agricultural, industrial, and regional developments.

**461. Regional Economics Laboratory**

Description, analysis and alternative solutions of collective action problems faced by public decision makers in managing public revenue and services and governing private resource use. Impact of political and economic structures on resource use.

**480. Agriculture and Rural Development in Developing Nations**
Fall, Winter, Spring. 3(3-0) PAM 201 or EC 201; PAM 260 recommended. Interdepartmental with Public Affairs Management and Agriculture and Natural Resources.

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

**473. Introduction to Systems Analysis**
Spring. 3(3-0) MTH 110.

Interdepartmental with and administered by Public Affairs Management.

Principles of systems analysis applied to ecological, physical, biological, 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. May reenroll for a maximum of 9 credits. Approval of department.

**Public Affairs Management PAM**

**201. Introduction to Community Economics**
Fall, Spring. 3(3-0)

Identification and analysis of problems faced by public decision makers in managing public revenue and services and governing private resource use. Impact of political and economic structures on resource use.

**260. World Food, Population and Poverty**
Winter. 3(3-0)

Description, analysis and alternative solutions of food, population and poverty problems, especially in relation to trade and aid programs. Special emphasis on problems of low income nations.
Award: AGRICULTURAL ECONOMICS of Courses

303. Welfare, Health and Education Policy Fall, 3(3-0) PAM 201 or EC 200. Evaluation of selected welfare, health, and education policies and alternatives. Role of public and private sectors. Impact of values, beliefs, costs, benefit distributions, political power and other factors on policy.

320. Economic Policy Processes I Fall, 3(3-0) PAM 201 or EC 201. Analysis of processes by which public economic policy is established at various levels of government. Role of economic interests and pressures. Alternatives for economic policy formulation. Case studies.

321. Economic Policy Processes II Winter, 3(3-0) PAM 320 or approval of department. Analysis of socioeconomic forces as they affect the public decision processes for economic policy. Means of increasing effectiveness of staff persons in the decision process. Case studies.

340. Managerial Economics Spring, 3(3-0) EC 202. Production, consumption decisions and their interrelation. Pricing of market and non-market goods. Effects of monetary and fiscal policies. Applications to problems in food system or community management.


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

431. Law and Social Change (460.) Fall, Spring, 3(3-0) BOA 440. Interdepartmental with the departments of Resource Development, and Urban and Metropolitan Studies. Administered by the Department of Urban and Metropolitan Studies. Law as applied to urban and rural context of social change. A review of both formal and informal aspects of systems accessibility, institutional formation, government, civil rights, and human service.

453. Women and Work: Issues and Policy Analysis Winter, 3(3-0) PAM 201 or EC 200 or EC 210. Interdepartmental with the Department of Economics. Quantity and quality of labor force participation by women, current status and past trends. Issues analyzed include differential earnings and occupations of men and women, employment discrimination and labor legislation.


461. Regional Economics Laboratory Spring, 1(0-2) R D 460 and approval of department. Interdepartmental with Food Systems Economics and Management and the Department of Resource Development and Economics. Administered by the Department of Resource Development. Evaluation and use of analytical models designed to solve regional economic problems.

462. Agricultural and Rural Development in Developing Nations Fall, 3(3-0) PAM 201 or EC 201; PAM 260 recommended. Interdepartmental with Agriculture and Natural Resources, and Food Systems Economics and Management. Traditional agricultural systems and the incentive environment for economic growth in rural areas. Adjustment to technological, institutional and human change. 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.

490. Independent and Supervised Study Fall, Winter, Spring, Summer. 1 to 9 credits. May re enr ol for a maximum of 9 credits. Approval of department.

490. Supervised Field Experience Fall, Winter, Spring, Summer. 3 to 9 credits. May re enroll for a maximum of 9 credits. PAM Juniors, approval of department. Supervised field work in federal, state, or local government or organizations dealing with government.

AGRICULTURAL ENGINEERING

College of Agriculture and Natural Resources

152. Introduction to Agricultural Engineering Fall, Spring, 1(1-0) Interdepartmental with Agricultural Engineering Technology. An introduction to the agricultural engineering profession with an examination of existing problems.

250. Introduction to Agricultural Engineering Problems Fall, 2(1-2) MTH 214 or concurrently. Examination and solution of problems shown from typical areas of agricultural engineering.

352. Physical Principles of Biological Processes Winter, 2(3-0) A E 352. Basic scientific principles and engineering theory applied to biological systems and products.


356. Electric Power and Control (471.) Fall, 4(3-2) PHY 268. Alternating current calculations; sizing conductors of single- and three-phase loads; electric motors, their control and protection; switching logic; microprocessor applications. Examples drawn from agricultural applications.