**African Languages**

See Linguistics and Oriental and African Languages.

**Agricultural Economics**

College of Agriculture and Natural Resources

805. **Agricultural Production Economics I**

- Fall, 4(4-0) PAM 340 or EC 325

809. **Institutions Behavior and Performance**

- Fall, 3(3-0) Approval of department.

810. **Economics of Public Choice**

- Winter, 3(3-0) Approval of department.
- Economics of alternative institutions for collective action. Emphasis on property rights and natural resources. Public goods, externalities, non-marginal change, commonwealth, income and power distribution, grants, welfare criteria and market failure.

811. **Public Program Analysis**

- Spring, Summer of even-numbered years, 3(3-0) EC 324 or approval of department. Interdepartmental with the departments of Resource Development and Economics.
- 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.

831. **Food Marketing Management**

- Fall, Spring, 4(4-0) May recertify for a maximum of 8 credits. Interdepartmental with and administered by the Department of Marketing and Transportation Administration.
- Food industry adjustment to changing social, economic and dietary company environment. Managerial principles and techniques applied to food processing and distribution. Student interaction with industry, labor and government representatives.

833. **Mathematical Programming**

- Spring, 3(3-0) EC 800 or EC 812A, MTH 334. Interdepartmental with the departments of Economics, and Statistics and Probability.
- Linear programming. Theory of linear economic models. Topics in nonlinear programming.

835. **Introduction to Econometrics**

- Fall, Spring, Summer, 3(3-0) EC 325, STT 425.
- Interdepartmental with and administered by the Department of Economics.

837. **Applied Operations Research I**

- Spring, 3(3-0) 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, cohort analysis, queuing, 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, EC 325.
- Economic forecasting in agricultural commodity markets, short run and long run. Futures markets, hedging, speculation, Plant location and size. Selected topics. Emphasis on techniques of use to farm manager.

851. **Advanced Farm Management**

- Summer, 3(2-2) 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, Spring of odd-numbered years, 3(3-0) EC 428 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) FAM 482 or approval of department.
- Agricultural and industrial sector interactions in the development process. Theories and models of the agricultural 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 structures through which rural development activities are formulated and implemented in less-developed countries.

869. **Data Collection in Developing Countries**

- Spring of even-numbered years, Summer of odd-numbered years. 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 proposal, methodologies for data collection, processing and analysis. Field research administration.

876. **Statistical Inference in Economics I**

- Fall, 3(3-0) EC 812A or EC 891; STT 443 or STT 863; or approval of department.
- Interdepartmental with the departments of Economics, and Statistics and Probability. Administered by the Department of Economics.

877. **Statistical Inference in Economics II**

- Spring, 3(3-0) EC 876 or approval of department. Interdepartmental with the departments of Economics, and Statistics and Probability. Administered by the Department of Economics.

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.
884. Selected Topics
Fall, Winter, Spring, Summer. 1 to 4 credits. May be repeated for a maximum of 12 credits if different topics are taken. Approval of department.

899. Doctoral Dissertation Research
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

900. Agricultural Production Economics II
Winter. 4(4-0) AEC 505.
Resource allocation and efficiency in agriculture related to management under conditions of both price and output. Knowledge of price, institutional, technological and human change. Advanced topics.

901. Resource Economics Seminar
Spring. 3(3-0) May be repeated for a maximum of 9 credits. Approval of department. Interdepartmental with the departments of Forestry, 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.

904. Seminar in Food Systems Organization and Policy
Spring of odd-numbered years, Summer of even-numbered years. 3(3-0) Approval of department. Interdepartmental with the departments of Agriculture, and Resource Development. Policy and program analysis. Development and presentation of position papers.

905. Agricultural Policy in Developing Economies
Winter. 3(3-0) FSM 451 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.

906. Development Planning and Agricultural Sector Analysis
Spring. 3(3-0) AEC 502, one year of graduate study in agricultural economics or economics or approval of department. Seminar in development planning with special reference to sectoral interrelationships. Agricultural sector analysis. Project preparation and appraisal.

907. Methodological Approaches to Research
Fall of even-numbered years. Summer of odd-numbered years. 3(3-0) Two terms of graduate study in social science or approval of department. Interdepartmental with the Department of Economics. Selection, planning and conduct of research. Alternative research approaches. Role of theory, beliefs and values. Critical appraisal of research studies.

900C. Mathematical Economics and Econometrics Workshop
Fall, Winter, Spring. 3 to 16 credits. EC 112A, EC 522, 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.

Agricultural Economics - Descriptions of Courses

430. Advanced Food Production Management
Fall. 3(3-0) FSM 539.
Management principles and techniques applied to food production firms including farms, 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 535. Interdepartmental with and administered by the Department of Marketing and Transportation Administration. Interdepartmental with and administered by the Department of Economics. Management principles and techniques applied to food processing and distribution. Emphasizes adjustment to changing social, economic and international environment. Student interaction with industry, labor and government representatives. Field trips, special projects.

443. Cooperatives: Group Action in Marketing
Spring. 3(3-0) EC 206, Juniors, or approval of department. Organization and operation of cooperatives. Emphasis on economics, legal foundations, and feasibility of cooperatives and other forms of group action in the U.S. food system.

460. Regional Economics
Winter. 4(4-0) R D 417 or EC 324. Interdepartmental with Public Affairs Management and the departments of Economics, and Resource Development. Administered by the Department of Resource Development. Forces affecting location decisions of firms, households and governments. Applications to agricultural, industrial, and regional development.

461. Regional Economics Laboratory
Spring. 10(10-2) R D 450 and approval of department. Interdepartmental with Public Affairs Management and the departments of Economics, and Resource Development. Administered by the Department of Resource Development. Evaluation and use of analytical models designed to solve regional economic problems.

462. Agriculture and Rural Development in Developing Nations
Fall. 3(3-0) PAM 201 or EC 201, PAM 260 recommended. Interdepartmental with Public Affairs Management and Agriculture and Natural Resources. Interdepartmental with and administered by Public Affairs 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 and administered by Public Affairs Management. Principles of systems analysis applied to ecological, physical, economic and social phenomena. Case studies. Interpretation and design of systems models. System concepts in decision making.

480. Independent and Supervised Study
Fall, Winter, Spring. Summer. 1 to 9 credits. May be repeated for a maximum of 9 credits. Approval of department.
Public Affairs Management  

201. Introduction to Community Economics  
Fall, Spring. 3(3-0)  
Identification and analysis of problems faced by public decision makers in making public revenue and service and of controlling private resource use. Impact of political and economic structures on resource use.

260. World Food, Population and Poverty  
Winter. 4(4-0)  
Description, analysis and alternative solutions of food, technology transfer, population and poverty problems, emphasizing trade and aid programs and the role of multinational firms in low income nations.

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.

306. Government Programs for Workers  
(459) Winter. 4(4-0) EC 201. Interdepartmental with and administered by the Department of Economics.  
Economics of selected government institutions and programs for workers. Social security, worker's compensation, unemployment insurance, OSHA, employment and training programs, wages and hours legislation, antidiscrimination programs.

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. Alternative processes 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 201.  
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.

383. Economic Development of Tropical Africa  
Spring. 3(3-0) or CSE 206 and EC 201, or EC 210. Interdepartmental with and administered by the Department of Economics.  

401. Groundwater and Water Supply  
Fall. 3(3-0) PAM 201.  
Groundwater and water supply development and management. Analysis of aquifer characteristics, water supply capabilities, and consumer demand for water. Planning and management of water resources.

402. Politics for Business and Government  
Fall. 3(3-0) PAM 201.  
A study of political phenomena and processes and their impact on business and government decisions. Focus on the decision making processes, politics of various departments, and strategies for coping with political influence.

457. Human Resource and Organizational Development  
Fall. 3(3-0) PAM 201.  
Human resource and organizational development. Analysis of the design and implementation of human resource and organizational development programs. Interdepartmental with and administered by the Department of Economics.

461. Regional Economics Laboratory  
Evaluation and use of simulation models designed to solve regional economic problems.

473. Introduction to Systems Analysis  
Fall, Winter. 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.

484. Selected Topics  
Fall, Winter, Spring. 1 to 4 credits. May reenroll for a maximum of 9 credits. Approval of department.

490. Supervised Field Experience  
Fall, Winter, Spring. 3 to 9 credits. May reenroll for a maximum of 9 credits. Approval of department.

Agricultural Engineering