

**212. The Development and Employment of Aerospace Forces**  
Spring. 1(1-1)  
Continuation of A S 211.

**320. U.S. Air Force Communication and Management**  
Fall. 3(3-1)  
Application of communication and management skills for Air Force officers.

**321. Concepts of U.S. Air Force Leadership**  
Winter. 3(3-1)  
Leadership theory, functions, and practices. Applications of leadership concepts by junior officers.

**322. U.S. Air Force Management and Leadership**  
Spring. 3(3-1)  
Traditional Air Force management functions and current practices. Emphasizes need for leadership and professionalism in modern officer corps.

**420. The Military and American Society**  
Fall. 3(3-1)  
Role of the professional officer in a democratic society; socialization process within the Armed Services; political economic and social constraints upon the national defense structure.

**421. Strategy and the Management of Conflict**  
Winter. 3(3-1)  
The formation and implementation of defense policy and strategy. The bureaucratic interplay and impact of nuclear technology. An investigation of limited and insurgency warfare.

**422. National Defense Policy and Military Justice**  
Spring. 3(3-1)  
Broad range of American civil-military relations and the environmental context in which defense policy is formulated. Military justice and the laws of war.

**499. Independent Study**  
Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 6 credits. Juniors and approval of instructor.  
Investigation of an aspect of aerospace activities of specific interest to the student and a faculty member.

(Name change effective July 1, 1983. Formerly Agriculture and Natural Resources Education Institute.)  
**College of Agriculture and Natural Resources**

**360. Developing Concurrent Work-Education Programs**  
Fall. 1(2-0) Approval of department.  
Planning, organizing and implementing effective concurrent work-education programs for secondary vocational agribusiness and natural resources education students.

**361. FFA in Agribusiness and Natural Resources Education**  
Winter. 1(2-0) Approval of department.  
Planning and organizing an effective FFA program as an integral part of a secondary vocational agribusiness and natural resources education program.

**362. Developing a Five-Year Plan**  
Spring. 1(2-0) Approval of department.  
Developing and organizing a five-year plan for a comprehensive secondary vocational agribusiness and natural resources education program.

**401. Agriculture and Natural Resources Communications**  
(ANR 401.) Fall, Winter, Spring. 3(2-2) JRN 201 or other writing course and approval of department.  
Techniques, strategies and practices in development of agricultural and natural resources information programs. Including writing, public relations, TV and radio production for specialized and general audiences.

**402. Agriculture and Natural Resources Communications Internship**  
(ANR 402.) Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 6 credits. AEE 401, approval of department.  
Internship with professionals in communications field with emphasis on student's areas of interest—writing, radio, TV, publications, etc.

**483. Readings and Independent Study**  
Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 6 credits. Juniors; approval of department.  
Study on an individual basis in the various areas of emphasis in agricultural and extension education.

**802. Agricultural Education in Rural Development**  
(ED 821F., ANR 821.) Winter. 3(3-0) Approval of department.  
Agricultural education at various levels and in different forms for rural development. Formal and non-formal education: planning, conducting and evaluating. Case studies from selected developing countries.

**806. Education Through Cooperative Extension**  
Winter. 3(3-0) AEE 828 or EAD 860 or approval of department. Interdepartmental with the Department of Educational Administration.  
Cooperative extension programs in the United States with emphasis on Michigan model: philosophy, history, scope, organizational structure, programs and methods.

**810. Planning Programs**  
Spring of even-numbered years. 3(3-0) AEE 806 or approval of department.  
Principles, theories and practices in developing state and local agricultural and extension education programs.

**812A. Externship: Beginning Professionals in Agricultural and Extension Education**  
Fall, Winter, Spring. 1 to 3 credits. May reenroll for a maximum of 3 credits. Approval of department.  
Current assignments of beginning professionals used for identifying roles and program characteristics; inventory of school and community resources; establishing mentor networks.

**812B. Externship: Experienced Professionals in Agricultural and Extension Education**  
Fall, Winter, Spring. 1 to 3 credits. May reenroll for a maximum of 3 credits. AEE 810, AEE 812A.  
Current assignments of experienced professionals for identifying problems and proposing possible solutions; review of trends in society and technology with application to local programs.

**820. Developing Courses**  
Summer. 3(3-0) Approval of department.  
Developing and utilizing survey instruments to identify community instructional needs in agricultural and extension education, and designing courses to assist in meeting those needs.

**822. Principles and Practices in Directing Concurrent Work Education**  
Summer of odd-numbered years. 3(3-0) AEE 820 or approval of department.  
Principles and practices involved in directing agricultural students in ownership, placement or school land laboratory programs.

**824. Instructional Strategies**  
Spring. 3(3-0) AEE 820 or approval of department.  
Strategies and methods for teaching agriculture and natural resources: objectives, mastery learning, demonstrations and others. Application of learning theory.

**826. Methods of Teaching Agricultural Mechanics**  
(ED 830C., ANR 826.) Fall of odd-numbered years. 3(3-0) Approval of department.  
Methods of instruction including program planning, scheduling, use of teaching aids, management of buildings, facilities and equipment; the selection, organization, and evaluation of activities in farm mechanics.

**828. Teaching Farmer Classes in Agriculture**  
(ED 828B., ANR 828.) Fall of even-numbered years. 3(3-0) Approval of department.  
Objectives of adult education in agriculture, organizing and promoting classes, course planning, instructional procedures, follow-up and evaluation.

**830. Effective Communications in Agriculture**  
Fall, Winter. 3(3-0)  
Scientific writing for professional lay agricultural and natural resources publications; grant writing; organizing, preparing and delivery of professional scientific presentations.

**AFRICAN LANGUAGES**

See Linguistics and Germanic, Slavic, Asian and African Languages.

**AGRICULTURAL AND EXTENSION EDUCATION**

**AEE**

## Descriptions — Agricultural and Extension Education

### of Courses

- 851. Program Administration and Supervision**  
*Spring of odd-numbered years. 3(3-0) ANR 806, EAD 851A.*

Principles and practices for developing, supervising and administering agricultural and extension educational programs.

- 858. Leadership Development in Agricultural and Extension Education**  
*Winter. 3(3-0) Approval of department.*

Sociological and philosophical bases for leadership development for agricultural and extension education in a democratic society.

- 860. Program Evaluation**  
*Summer of even-numbered years. 3(3-0) AEE 820 or approval of department.*

Principles of evaluating agricultural and extension education programs.

- 881. Selected Topics**  
*Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 9 credits if different topics are taken. Approval of department.*

Topics will be selected to meet needs of graduate students in agricultural and extension education.

- 883. Readings and Independent Study**  
*Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 6 credits. Approval of department.*

Study on an individual and group basis in the various areas of agricultural and extension education.

- 899. Master's Thesis Research**  
*Fall, Winter, Spring, Summer. 1 to 12 credits. May reenroll for a maximum of 12 credits. Approval of department.*

- 999. Doctoral Dissertation Research**  
*Fall, Winter, Spring, Summer. Variable credit. Approval of department.*

## AGRICULTURAL ECONOMICS

AEC

### College of Agriculture and Natural Resources

- 805. Agricultural Production Economics I**  
*Fall. 4(4-0) PAM 340 or EC 325.*

Economic principles of production. Industry supply and factor demand analysis. Management concepts and choice criteria. Interrelationship of production and consumption decisions. Welfare economics. Agricultural economics applications.

- 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 emphasizing 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, commonwealth, income and power distribution, grants, welfare criteria and market failure.

- 811. Public Program Analysis**  
*Spring, Summer of odd-numbered years. 3(3-0) EC 324 or approval of department. Interdepartmental with the departments of Economics and Resource Development.*

Application of benefit-cost analysis to public programs of resources development. Issues and case studies in budgeting, investment criteria, pricing, externalities, and coordination.

- 831. Food Marketing Management**  
*Fall, Spring. 4(4-0) May reenroll 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 internal company environment. Managerial principles and techniques applied to food processing and distribution. Student interaction with industry, labor and government representatives.

- 835. Introduction to Econometrics**  
*Spring, Summer. 3(3-0) EC 325, STT 422; not open to students with credit in EC 836. 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 cohort analysis, queuing, Monte-Carlo techniques, elementary simulation.

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

Market organization and evaluation of performance. Pricing and market coordination problems. Group action in agricultural markets. Role of marketing in economic development.

- 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 firm 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.

- 861. Agricultural Trade Policies**  
*Fall of odd-numbered years; Summer of even-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) PAM 462 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.

- 868. 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 805A; 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.*

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**  
*Winter. 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.*

Specification interpretation and estimation of simultaneous equation models. Nonlinear models. Bayesian approach to estimation problems. Recent developments in econometrics.