

**212. Development of Air Power - II**  
*Spring, 1(1-2)*  
Air Force leaders. Role of technology in the growth of air power; introduction to Quality Air Force; group leadership problems; continuing application of communication skills. Leadership laboratory.

**321. U.S. Air Force Communication and Ethics**  
*Fall, 3(3-2)*  
Communication, management, and ethical skills for Air Force officers. Emphasizes standards and professionalism in the modern officer corps. Leadership laboratory.

**322. Management and Leadership**  
*Spring, 3(3-2)*  
*P: AS 321.*  
Leadership theory, traditional Air Force management functions, and current practices. Emphasizes the application of leadership concepts by junior officers. Leadership laboratory.

**421. American Defense Policy and the Management of Conflict**  
*Fall, 3(3-2)*  
*P: AS 322.*  
Formation and implementation of defense policy and strategy. Bureaucratic interplay and impact of nuclear technology. Investigation of current defense issues. Leadership laboratory.

**422. The Military and Society**  
*Spring, 3(3-2)*  
*P: AS 421.*  
Role of the professional officer in a democratic society. Global security issues. Military justice and the laws of war. Leadership laboratory.

**490. Independent Study**  
*Fall, Spring, Summer, 1 to 3 credits. A student may earn a maximum of 3 credits in all enrollments for this course.*  
*R: Open only to juniors and seniors. Approval of department.*  
Investigation of a particular aspect of aerospace studies.

## AFRICAN LANGUAGES AFR

Department of Linguistics and  
Germanic, Slavic, Asian and  
African Languages  
College of Arts and Letters

**101A. Elementary Swahili I**  
*Fall, 4(4-1)*  
Speaking, reading, and writing Swahili, with emphasis on developing oral proficiency.

**101B. Elementary African Language I**  
*Fall, 4(4-1)*  
African language at the elementary level. Speaking, reading, and writing, with emphasis on developing oral proficiency skills. Specific language varies.

**102A. Elementary Swahili II**  
*Spring, 4(4-1)*  
*P: AFR 101A or approval of department.*  
Further work on speaking, reading, and writing Swahili, with continued emphasis on developing oral proficiency skills.

**102B. Elementary African Language II**  
*Spring, 4(4-1)*  
*R: Approval of department.*  
Further work on speaking, reading, and writing an African language, with continued emphasis on developing oral proficiency skills.

**151. Beginning Individualized African Language I**  
*Fall, 4(4-1)*  
*R: Approval of department.*  
Individualized study of an African language at the elementary level. Speaking, reading, and writing, with emphasis on developing oral proficiency skills.

**152. Beginning Individualized African Language II**  
*Spring, 4(4-1)*  
*R: Approval of department.*  
Further individualized work on speaking, reading, and writing an African language, with continued emphasis on developing oral proficiency skills.

**201A. Second Year Swahili I**  
*Fall, 4(4-1)*  
*P: AFR 102A or approval of department.*  
Intermediate-level work on speaking, reading, and writing Swahili, with emphasis on developing oral proficiency skills.

**201B. Second Year African Language I**  
*Fall, 4(4-1)*  
*R: Approval of department.*  
Intermediate-level work on speaking, reading, and writing an African language, with continued emphasis on developing oral proficiency skills.

**202A. Second-Year Swahili II**  
*Spring, 4(4-1)*  
*P: AFR 201A or approval of department.*  
Further intermediate-level work on speaking, reading, and writing Swahili, with continued emphasis on developing oral proficiency skills.

**202B. Second-Year African Language II**  
*Spring, 4(4-1)*  
*R: Approval of department.*  
Further intermediate-level work on speaking, reading, and writing an African language, with continued emphasis on developing oral proficiency skills.

**251. Intermediate Individualized African Language I**  
*Fall, 4(4-1)*  
*R: Approval of department.*  
Intermediate-level individualized work on speaking, reading, and writing an African language, with emphasis on developing oral proficiency skills.

**252. Intermediate Individualized African Language II**  
*Spring, 4(4-1)*  
*R: Approval of department.*  
Further intermediate-level individualized work on speaking, reading, and writing an African language, with continued emphasis on developing oral proficiency skills.

**290. Independent Study**  
*Fall, Spring, 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.*  
*R: Approval of department.*  
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

**450A. Advanced Swahili**  
*Fall, Spring, 1 to 5 credits. A student may earn a maximum of 20 credits in all enrollments for this course.*  
*P: AFR 202A or approval of department.*  
Advanced study of Swahili. Speaking, reading, and writing, with emphasis on developing oral proficiency skills.

**450B. Advanced African Language**  
*Fall, Spring, 1 to 5 credits. A student may earn a maximum of 24 credits in all enrollments for this course.*  
*R: Approval of department.*  
Advanced study of an African language. Speaking, reading, and writing, with emphasis on developing oral proficiency skills. Language varies.

**490. Independent Study**  
*Fall, Spring, 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.*  
*R: Not open to freshmen and sophomores. Approval of department.*  
Special projects arranged by an individual student and a faculty member in areas supplementing regular course offerings.

**491. Special Topics in African Studies**  
*Fall, Spring, 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.*  
*R: Approval of department.*  
Special topics supplementing regular course offerings proposed by faculty on a group study basis.

## AGRICULTURAL AND EXTENSION EDUCATION AEE

Department of Agricultural and  
Extension Education  
College of Agriculture and  
Natural Resources

**101. Introduction to Education and Communications in Agriculture and Natural Resource**  
*Fall, 3(3-0)*  
*R: Open only to freshmen and sophomores in the College of Agriculture and Natural Resources.*  
Historical and philosophical foundations of agriscience education and Agriculture and Natural Resources communications. Theories and principles of learning, inductive teaching, communication, and leadership in the context of the land-grant system.

**201. Visual Communications in Agriculture and Natural Resources**  
*Spring, 3(2-2)*  
*P: AEE 101. R: Open only to students in the College of Agriculture and Natural Resources.*  
Understanding, use, design, and production of visual communications in agriculture and natural resources. Posters, print advertisements, and presentation graphics.

**203. American Agrarian Movements**  
*Spring, 3(3-0)*  
Historical perspectives of America by pioneers, farmers, ranchers and others who cultivated the land from 1700s to 1930. Agricultural movements, trends and development.

**301. Exploring World Agriculture and Natural Resources**  
*Fall, 3(3-0)*  
*P: AEE 101 or CSS 101 or FSM 200 or RD 201. R: Not open to freshmen and sophomores.*  
International dimensions of agriculture and natural resources. Social, economic, geographic, natural and political constraints.

**Descriptions — Agricultural and Extension Education  
of  
Courses**

**302. Developing and Managing Agriscience and Natural Resources Education Programs**  
Fall. 3(2-2)

P: AEE 101 or TE 150.

Development, management and relationships of key components in effective agriscience and natural resources education programs. Community resource use, leadership development, program evaluation.

**303. Issues in Agricultural and Environmental Education Programs**  
Fall. 3(2-2)

P: AEE 101 or TE 150; FW 203. R: Not open to freshmen and sophomores.

Assessment and analysis of current issues and their impact on agricultural and environmental education programs.

**312. American Agricultural Development and the Land-Grant System**  
Fall. 3(3-0)

P: AEE 203. R: Not open to freshmen.

Historical overview of the evolution of American agricultural development and the land-grant system. Relationship between federal legislation and agrarian institutions such as farm organizations and land grant colleges.

**401. Agricultural and Natural Resources Communications Campaigns (W)**  
Fall, Spring, Summer. 3(3-0)

R: Open only to juniors or seniors in the College of Agriculture and Natural Resources or College of Communication Arts and Sciences. Completion of Tier I writing requirement.

Planning and execution of agricultural and natural resource communication campaigns. Emphasis on theories, strategies and techniques using mass and controlled media channels.

**403. Agricultural and Natural Resources Leadership and Education**  
Fall, Spring, Summer. 3(3-0)

R: Open only to juniors or seniors.

Characteristics of leadership, group dynamics, and development of personal leadership skills. Educational methods and learning styles.

**490. Independent Study**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.

P: AEE 401. R: Open only to Agriscience or Agriculture and Natural Resources Communications majors. Approval of department; application required.

Individual study in areas of agriscience, extension education, or agricultural and natural resources communications.

**491. Selected Topics**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.

P: AEE 101 or AEE 401. R: Open only to Agriscience or Agriculture and Natural Resources Communications majors. Approval of department.

Topics selected to meet student needs in agriculture and natural resources communications or agriscience and natural resources education.

**801. Global Development through Agricultural and Extension Education**  
Fall. 3(3-0)

Application of education theories: principles and practices in planning, conducting, and evaluating formal and nonformal education programs on international development.

**802. Program Administration in Agricultural and Extension Education**  
Fall. 3(3-0)

Organizational and management concepts and practices in agricultural and extension education.

**803. Instructional Strategies in Agricultural and Extension Education**  
Spring. 3(3-0)

Assessment of learning needs. Development, selection, use and evaluation of teaching strategies. Emphasis on agriscience education and adult learners.

**804. Communication Strategies in Agricultural and Extension Education**  
Fall. 3(3-0)

R: Open only to seniors and graduate students in College of Agriculture and Natural Resources.

Information delivery systems and presentation techniques for varied agricultural and extension audiences.

**805. Leadership Development in Agricultural and Extension Education**  
Spring. 3(3-0)

Assessment of values, style, behavior, principles. Philosophical and sociological bases for leadership development. Applications.

**806. Program Planning and Evaluation in Agricultural and Extension Education**  
Spring of odd-numbered years, Summer of even-numbered years. 3(3-0)

Principles, theories, and practices in developing and evaluating state and local agricultural and extension education programs.

**807. Research in Agricultural and Extension Education**  
Fall. 3(3-0)

R: Open only to graduate students in College of Agriculture and Natural Resources.

Planning, designing, conducting, and reporting research in agricultural and extension education.

**811. Education Through Extension**  
Fall. 3(3-0)

Function, organization, and operation of extension education programs.

**821. Principles and Philosophies of Agriscience Education**  
Summer. 3(3-0)

Principles and philosophies for analyzing and developing agriscience education courses, curricula, and programs.

**822. Teaching Supervised Agriscience Experiences**

Summer of odd-numbered years. 3(3-0)

R: Open only to graduate students in Agricultural and Extension Education.

Principles and practices of agriscience laboratory teaching in high schools.

**890. Independent Study in Agricultural and Extension Education**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.

R: Approval of department.

**891. Selected Topics in Agricultural and Extension Education**

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.

R: Open only to graduate students in Agricultural and Extension Education.

Contemporary issues and problems in agricultural and extension education.

**892. Seminar in Agricultural and Extension Education**

Fall, Spring. 1(1-0) A student may earn a maximum of 2 credits in all enrollments for this course. Selected issues in agricultural and extension education.

**893. Professional Field Experience in Agricultural and Extension Education**  
Fall, Spring, Summer. 1 to 4 credits. A student

may earn a maximum of 4 credits in all enrollments for this course.

R: Open only to graduate students in Agricultural and Extension Education.

Practice, observation, and analysis through field experiences.

**898. Master's Research**

Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course.

R: Open only to master's degree students in Agricultural and Extension Education.

Master's Plan B Research.

**899. Master's Thesis Research**

Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 99 credits in all enrollments for this course.

R: Open only to master's degree students in Agricultural and Extension Education.

**901. International Agricultural and Extension Education Systems**  
Spring. 3(3-0)

P: AEE 801 or AEE 811 or AEE 821.

Systems of agricultural and extension education in different countries. Philosophical and structural differences and similarities.

**907. Research Project Design and Implementation**  
Spring. 3(3-0)

P: AEE 807 or approval of department.

Selection and development of research instruments. Quantitative and qualitative data analysis in agricultural and extension education.

**911. Nonformal Learning**

Fall of even-numbered years, Summer of odd-numbered years. 3(3-0)

P: AEE 811.

Theories and philosophies of learning in out-of-school settings. Alternative strategies.

**912. Advanced Extension Administration**  
Spring. 3(3-0)

P: AEE 802. R: Open only to graduate students in College of Agriculture and Natural Resources.

Advanced practices and applications necessary for effective management and administration within extension education.

**999. Doctoral Dissertation Research**  
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 99 credits in all enrollments for this course.  
R: Open only to Ph.D. students in Agricultural and Extension Education.

## **AGRICULTURAL ECONOMICS**

**AEC**

### **Department of Agricultural Economics College of Agriculture and Natural Resources**

**481. Agricultural Research Systems in  
Developing Countries**

Summer. 2(2-0) Interdepartmental with Agriculture and Natural Resources, Animal Science, and Crop and Soil Sciences. Administered by Agriculture and Natural Resources.

R: Open only to seniors and graduate students in the College of Agriculture and Natural Resources.

Planning, organizing and managing agricultural research systems. Problems and alternative reforms to improve research productivity. Adapting new agricultural technology in developing countries.

**800. Foundations of Agricultural Economics**  
Fall. 3(3-0)

Concepts of agricultural economics drawn from economic and management theory. Applications to economic decisions and policy issues related to agricultural, food, and natural resource firms, markets, and institutions.

**800A. Mathematical Applications in  
Agricultural Economics**

Fall. 1(1-0)

C: AEC 800 concurrently.

Basic mathematical tools for use in agricultural economics applications.

**810. Institutional and Behavioral Economics**

Fall. 3(3-0) Interdepartmental with Economics and Resource Development.

Relationships among institutions, individual and collective actions, and economic performance. Public choice, property rights, and behavioral theories of firms and bureaucracies.

**815. Applied Welfare Economics in  
Agriculture**

Fall of odd-numbered years. 3(3-0)

P: EC 801, EC 805 or EC 812A; EC 809 or EC 813A. Concepts and issues in welfare economics with application to agricultural development, policy and trade, marketing and finance, and environmental policy.

**817. Political Economy of Agricultural and  
Trade Policy**

Spring. 3(3-0)

P: EC 805 or EC 812A; EC 809 or EC 813A.

Concepts of policy analysis and decision. Agricultural sector problems, behavior, and policy in the development process. Macroeconomic and trade impacts. International policies affecting trade and development. Current policy issues.

**820. Econometrics I**

Spring. 3(3-0) Interdepartmental with Economics and Statistics and Probability. Administered by Economics.

P: EC 801, STT 430.

The single equation regression model. Properties of least-squares estimators under various specifications. Multicollinearity, generalized least-squares, errors in variables, seemingly unrelated regressions. Identification and estimation in simultaneous equations models.

**821. Econometrics II**

Fall. 3(3-0) Interdepartmental with Economics and Statistics and Probability. Administered by Economics.

P: EC 820, STT 442.

Estimation and hypothesis testing. Asymptotic properties of optimization estimators. Analysis of cross-sectional economic data. Qualitative and limited dependent variables. Probit, logit, tobit, and sample selectivity. Duration models. Count data.

**822. Econometrics III**

Spring. 3(3-0) Interdepartmental with Economics and Statistics and Probability. Administered by Economics.

P: EC 820, STT 442.

Dynamic models and time series data. ARMA models. ARCH models. Unit roots, cointegration and error correction. Rational expectations models.

**829. The Economics of Environmental  
Resources**

Fall. 3(3-0) Interdepartmental with Resource Development; Forestry; Park, Tourism and Recreation Resources; and Economics.

Economic principles related to environmental conflicts and public policy alternatives. Applications to water quality, land use, conservation, development, and global environmental issues.

**831. Food Marketing Management**

Spring. 3(3-0) Interdepartmental with Marketing and Supply Chain Management. Administered by Marketing and Supply Chain Management.

P: MBA 820 or MSC 805.

Marketing management decisions in food firms. Consumer orientation, computer technologies, food system cost reduction, global opportunities, environmental and social issues.

SA: ML 831

**832. Environmental and Natural Resource  
Law**

Fall. 3(3-0) Interdepartmental with Resource Development, Forestry, Crop and Soil Sciences, and Geography. Administered by Resource Development.

P: RD 430.

Origin and development of environmental law. Theories of power, jurisdiction, sovereignty, property interests, pollution, and other bases for legal controls of natural resources. Common law and constitutional limitations on governmental power.

**835. Introductory Econometrics**

Summer. 3(3-0)

P: STT 430.

Estimation and interpretation of multiple regression models and their modifications when usual assumptions are not valid. Applications focus on problems faced by agricultural economists.

**837. Water Law**

Spring. 3(3-0) Interdepartmental with Resource Development and Forestry. Administered by Resource Development.

P: RD 430.

Legal principles applicable to surface water and groundwater, private and public water rights, and controls over water resources. Cases, statutes, and administrative procedures.

**838. Land Use Law**

Spring. 3(3-0) Interdepartmental with Resource Development, Forestry, and Urban Planning. Administered by Resource Development.

P: RD 430.

Public and private land use controls in the U.S. Civil rights, housing, energy problems, growth management, waste management, and land conservation. Cases, statutes and other regulations.

**841. Organization and Performance of  
Agricultural Markets**

Spring. 3(3-0)

R: Open only to graduate students in College of Agriculture and Natural Resources.

Analytical approaches. Institutions and processes for coordinating food and agricultural systems. Issues of organization, control and public policy.

**845. Commodity Market Analysis**

Fall. 3(3-0)

P: AEC 835.

Applied econometric analysis of commodity markets. Emphasis on specification and estimation of demand and supply models for forecasting. Modeling for policy evaluation. Futures and options markets. Microcomputer applications.

**851. Agricultural Firm Management**

Summer. 3(3-0)

Managerial processes for planning and controlling agricultural firms. Applications of financial concepts, budgets, simulations, and cognitive and information systems to developed and developing countries. Predictive and prescriptive analysis.

**855. Agricultural Production Economics**

Spring. 3(3-0)

P: EC 801, EC 805.

Agricultural applications of static production economics, including study of capital inputs that yield services over several time periods. Investment and disinvestment models. Methods for incorporating risk and technological change.

**861. Agriculture in Economic Development**

Fall. 3(3-0)

Role of agriculture in economic development of low- and middle-income countries. Theories of agricultural growth. Policy issues. Case studies.

**865. Agricultural Benefit-Cost Analysis**

Spring. 3(3-0)

Benefit-cost analysis of agricultural and natural resource projects, including financial and economic analysis. Case studies in project design and appraisal in low and high income countries.

**890. Independent Study**

Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 8 credits in all enrollments for this course.

R: Open only to graduate students in Agricultural Economics. Approval of department.

Independent study of selected topics in agricultural economics.

**891. Topics in Agricultural Economics  
(MTC)**

Fall, Spring, Summer. 2 to 3 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

R: Open only to graduate students in colleges of Agriculture and Natural Resources, Social Science and Business.

Selected topics such as agribusiness management, applied operations research, or rural development policy.

**898. Master's Research**

Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.

R: Open only to graduate students in Agricultural Economics. Approval of department.

Master's degree Plan B research.