

Descriptions — Agricultural Economics of Courses

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 graduate students in Agricultural Economics. Approval of department.

923. Theory of Resource and Environmental Economics
Spring of even-numbered years. 3(3-0) Interdepartmental with Resource Development; Forestry; Park, Recreation and Tourism Resources; and Economics.
P: AEC 829, EC 805.
 Economic theory of environmental change and control. Market and non-market allocation mechanisms. Temporal issues of conservation and growth. Contemporary issues in research and policy.

947. Analysis of Food Systems Organization
Summer. 3(3-0)
P: AEC 810, AEC 841, AEC 845.
 Public and private policy issues related to the organization and performance of food systems.

991. Advanced Topics in Agricultural Economics (MTC)
Fall, Spring, Summer. 2 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Open only to Ph.D. students in the colleges of Agriculture and Natural Resources, Business, and Social Science.
 Topics such as international agricultural development, environmental economics, and trade policy.

992. Seminar in Agricultural Economics
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 Ph.D. students in Agricultural Economics. Approval of department; application required.
 Price analysis, development, risk, trade, dynamic modeling research methods, finance and environmental economics.

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 Economics. Approval of department.

AGRICULTURAL TECHNOLOGY AND SYSTEMS MANAGEMENT ATM

**Department of Agricultural Engineering
 College of Agriculture and Natural Resources
 College of Engineering**

315. Occupational and Personal Safety
Spring. 2(2-0)
P: CSS 101 or ANS 110 or AEE 101 or HRT 201. R: Open only to College of Agriculture and Natural Resources majors.
 Principles of safety problem solving. Accident causation and prevention. Laws and regulations. Machinery, electrical, chemical and fire safety. Security. Safety program development.

326. Principles of Animal Environments
Spring. 2(2-0)
P: MTH 116 or MTH 120; CPS 101 or CPS 131. R: Open only to College of Agriculture and Natural Resources majors.
 Heat and moisture balances for confined livestock. Interior environment and its control. Waste management.

431. Irrigation, Drainage and Erosion Control Systems
Fall. 3(2-2)
P: MTH 116 or MTH 120; CSS 210. R: Not open to freshmen and sophomores.
 Principles of soil and water conservation engineering including: land and soil surveying, basic hydraulics, hydrology, soil moisture, and soil and water conservation practices with applications to irrigation, drainage and erosion control systems.

490. Independent Study
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
P: ATM 231 or ATM 240 or BCM 311. R: Open only to majors in Agricultural Technology and Systems Management. Approval of department; application required.
 Supervised individual student research and study in agricultural technology and systems management.

491. Special Topics in Agricultural Technology and Systems Management
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
P: ATM 231 or ATM 240 or BCM 311. R: Open only to majors in Agricultural Technology and Systems Management.
 Special topics in agricultural technology and systems management.

804. Agricultural Mechanization in Developing Countries
Fall of odd-numbered years. 3(3-0)
R: Open only to graduate students in College of Agriculture and Natural Resources or College of Engineering.
 Human, animal and mechanical power for smaller farms. Machine selection, local manufacturing, ownership patterns.

807. Human Factors Engineering
Fall of even-numbered years. 3(3-0)
R: Open only to graduate students in College of Agriculture and Natural Resources or College of Engineering.
 Ergonomics. Analysis of machine designs, operation, and working environment in relation to human limitations and capabilities. Procedures to develop maximum human-machine compatibility and performance.

831. Water, Technology and International Development
Spring of even-numbered years. 3(3-0)
P: AE 481 or ANR 489 or ATM 431 or CSS 210. R: Open only to graduate students in College of Agriculture and Natural Resources or College of Engineering.
 Water resources planning and development for irrigated agriculture. Technological, agronomic, environmental, social and political constraints. Case studies.

840. Analysis of Physical Systems
Fall. 3(3-0)
P: ATM 440 or BCM 311 or MGT 306. R: Open only to graduate students in College of Agriculture and Natural Resources.
 Identification and definition of systems problems in agricultural and construction industries. Model formulation and estimation.

845. Process Network Theory Applied to Agroecosystems
Spring of odd-numbered years. 4(4-0)
R: Open only to graduate students in College of Agriculture and Natural Resources or College of Engineering.
 Numerical framework for the technical, economic and environmental analysis of agricultural and biological systems.

890. Special Problems
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.
 Individual study of selected topics.

891. Advanced Topics in Agricultural Technology and Systems Management
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
R: Open only to graduate students in College of Agriculture and Natural Resources or College of Engineering.
 New developments in agricultural technology and systems management.

899. Master's Thesis Research
Fall, Spring, Summer. 1 to 10 credits. A student may earn a maximum of 99 credits in all enrollments for this course.
R: Open only to graduate students in Agricultural Technology and Systems Management.

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 Technology and Systems Management.

AGRICULTURE AND NATURAL RESOURCES ANR

College of Agriculture and Natural Resources

101. Preview of Science
Fall. 1(1-0) Interdepartmental with Natural Science, Engineering, and Social Science. Administered by Natural Science.
R: Approval of college.
 Overview of natural sciences. Transitional problems. Communications and computer skills. Problem solving skills. Diversity and ethics problems in science and society.

192. Environmental Issues Seminar
Fall, Spring. 1(1-0) A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Natural Science, Engineering, and Social Science. Administered by Natural Science.
R: Open only to students in the College of Agriculture and Natural Resources, College of Engineering, College of Natural Science, and College of Social Science. Approval of college.
 Environmental issues and problems explored from a variety of perspectives, including legal, scientific, historical, political, socio-economic, and technical points of view.

350. Leadership Development for Agriculture and Natural Resources
Spring. 2(2-0)
R: Not open to freshmen and sophomores. Approval of college; application required.
 Preparation for community leadership. Field observation of social, economic and political problems. Emphasis on awareness, action and involvement. Seminars and interviews.

392. Agriculture and Natural Resources Seminar
Spring. 1(2-0)
R: Not open to freshmen and sophomores.
 Current agricultural, natural resources and environmental problems and solutions. Discussion leaders from various disciplines.

475. International Studies in Agriculture and Natural Resources
 Fall, Spring, Summer. Given at various off campus sites. 2 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of college; application required. Study-travel experience emphasizing contemporary problems affecting agriculture and natural resources in the world, national and local communities. Case studies and interviews with officials, community leaders and leading professionals.

481. Agricultural Research Systems in Developing Countries
 Summer. 2(2-0) Interdepartmental with Agricultural Economics, Animal Science, and Crop and Soil Sciences. 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.

489. Integrated Approaches to Agriculture and Natural Resources Problems (W)
 Fall, Spring. 3(2-2)
 P: MTH 110 or MTH 116; EC 201 or EC 202. R: Open only to seniors in the College of Agriculture and Natural Resources. Completion of Tier I writing requirement. Holistic solutions to resource management and allocation: an integrated, multidisciplinary team approach to case study problems.

491. Selected Topics
 Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Not open to freshmen and sophomores. Special topics in agriculture and natural resources.

493. Professional Internship in Agriculture and Natural Resources
 Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors and seniors in the College of Agriculture and Natural Resources. Approval of department; application required. Supervised professional experiences in agencies and businesses related to a student's major field of study.

AMERICAN STUDIES AMS

College of Arts and Letters

332. Technology and Culture
 Fall. 4(4-0) Interdepartmental with Lyman Briggs School. Administered by Lyman Briggs School. R: Open only to juniors and seniors in American Studies and Lyman Briggs School, and to graduate students in American Studies. Completion of Tier I writing requirement. History of technology with special emphasis on the interaction of technical innovation and other elements of culture.

335. The Natural Environment: Perceptions and Practices
 Spring. 4(4-0) Interdepartmental with Lyman Briggs School. Administered by Lyman Briggs School. R: Not open to freshmen. Open only to students in American Studies and in Lyman Briggs School. Completion of Tier I writing requirement. American attitudes toward the natural environment and related public and private institutions.

338. Eighteenth-Century American Art
 Fall. 3 credits. Interdepartmental with History of Art. Administered by History of Art. R: Not open to freshmen. Artistic production in North America in the Colonial and early Republican cultural contexts. SA: HA 438

348. Nineteenth-Century American Art
 Spring. 3 credits. Interdepartmental with History of Art. Administered by History of Art. R: Not open to freshmen. Nineteenth-century artistic production in North America in its cultural context. SA: HA 448

358. Twentieth-Century American Art Through Midcentury
 Fall. 3 credits. Interdepartmental with History of Art. Administered by History of Art. R: Not open to freshmen. Twentieth-century artistic production in North America in its cultural context. SA: HA 458

441. American Genre Painting
 Fall, Spring. 3 credits. Interdepartmental with History of Art. Administered by History of Art. P: HA 438 or HA 448 or HA 458. Genre painting produced in the United States between 1790 and the early decades of the 20th century.

442. The Art of Winslow Homer
 Fall, Spring. 3 credits. Interdepartmental with History of Art. Administered by History of Art. P: HA 438 or HA 448 or HA 458. R: Not open to freshmen and sophomores. Detailed consideration of Homer's career and his work in a variety of media and genres in the context of a changing nation between 1860 and 1910.

491. Perspectives in American Studies
 Fall. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. R: Not open to freshmen and sophomores. Methods and significant works in American Studies. Topics vary.

492. Seminar in American Studies
 Spring. 3(3-0) A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to majors in Arts and Letters, James Madison College, and Lyman Briggs School. Selected topics in American life emphasizing interdisciplinary approaches. Topics vary.

881. American Studies Theory, Methods, and Bibliography
 Fall. 3(3-0)
 Methods and bibliographical sources of American Studies research. Interdisciplinary approaches to studying American culture.

890. Independent Study
 Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of college. Special projects, directed reading, and research arranged by an individual graduate student and a faculty member in areas supplementing regular course offerings.

891. Special Topics in American Studies
 Fall, Spring, Summer. 4(4-0) A student may earn a maximum of 12 credits in all enrollments for this course. R: Approval of college. Special topics supplementing regular course offerings proposed by faculty for graduate students on a group study basis.

899. Master's Thesis Research
 Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of college. Directed research leading to a master's thesis in partial fulfillment of Plan A master's degree requirements.

999. Doctoral Dissertation Research
 Fall, Spring, Summer. 1 to 12 credits. A student may earn a maximum of 30 credits in all enrollments for this course. R: Approval of college.

AMERICAN THOUGHT AND LANGUAGE ATL

Department of American Thought and Language College of Arts and Letters

0102. Preparation for College Writing
 Fall, Spring. 0 credit. [1(0-2) See page A-2, item 3.] C: ATL 1004 concurrently. R: Designated score on English placement test. Practice in applying the principles of English grammar, syntax, and word usage to writing.

1004. Preparation for College Writing
 Fall, Spring. 3(3-0)
 C: ATL 0102 concurrently. R: Designated score on English placement test. Composing, revising, and editing. Active reading and pre-writing strategies. Style, mechanics, and usage. Organization and proofreading.

101. Library Resources
 Fall, Spring, Summer. 1(1-0)
 Use of libraries for researching college assignments and papers. Emphasis on bibliographic and reference tools.

110. Writing: Science and Technology
 Fall, Spring. 4(4-0)
 P: Designated score on English placement test or ATL 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 135 or ATL 140 or ATL 145 or ATL 150 or ATL 195H or AL 192 or AL 192H. Drafting, revising, and editing compositions derived from readings on American science and technology to develop skills in narration, persuasion, analysis, and documentation.

115. Writing: Law and Justice in the United States
 Fall, Spring. 4(4-0)
 P: Designated score on English placement test or ATL 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or AL 192 or AL 192H or ATL 110 or ATL 120 or ATL 125 or ATL 130 or ATL 135 or ATL 140 or ATL 145 or ATL 150 or ATL 195H. Drafting, revising, and editing compositions derived from readings on American law and justice to develop skills in narration, persuasion, analysis and documentation.

120. Writing: American Philosophy, Literature, and the Arts
 Fall, Spring. 4(4-0)
 P: Designated score on English placement test or ATL 1004. R: Not open to students with credit in MC 111 or MC 112 or LBS 133 or ATL 110 or ATL 115 or ATL 125 or ATL 130 or ATL 135 or ATL 140 or ATL 145 or ATL 150 or ATL 195H or AL 192 or AL 192H. Drafting, revising, and editing compositions derived from readings on American philosophy, literature, and the arts to develop skills in narration, persuasion, analysis, and documentation.