

**Descriptions – Agricultural Engineering  
of  
Courses**

**416. Light Structural Systems**  
*Fall. 4(4-0) PHY 237 or approval of department.*

Functional planning of animal structures. Properties of building materials and selecting building components to satisfy requirements of light structures.

**421. Electrical Energy Utilization**  
*Spring. 4(3-2) PHY 238 or approval of department.*

Efficient utilization of electrical energy; selection, operation and control of electrical equipment. Design of electrical systems.

**431. Irrigation, Drainage and Erosion Control Systems**  
*Spring. 4(3-2) CSS 210 or approval of department.*

Use of surveying, design, construction and cost estimates of drainage irrigation and water control systems.

**443. Machinery and Tractor Systems**  
*Fall, Spring. 4(3-2) A E 243 or approval of department.*

Characteristics of basic agricultural field machinery. Diesel engine, fuel injection and combustion chamber characteristics. Torque and power transmission, tractor stability and implement hitching.

**480. Special Problems**  
*Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 5 credits. Approval of department.*

Individual student research and study in: agricultural machines and tractors, waste management, food processing, structures and environment, materials processing and handling, water management, meteorology and climatology, agricultural systems analysis.

**804. Agricultural Mechanization in Developing Countries**  
*(A E 804.) Spring. 3(3-0) Approval of department.*

Appropriate agricultural mechanization with emphasis on hand, animal, and mechanical equipment for the smaller farms. Machine selection, local manufacturing, public and private costs, ownership patterns; increasing production and decreasing post production losses.

**805. Environmental Measurements**  
*(A E 805.) Fall. 4(3-3)*

Methods and techniques for accurate measurement and interpretation of environmental parameters. Temperature, humidity, wind and air flow characteristics, radiation, light intensity, gaseous and particulate concentrations in atmospheric microclimates will be discussed.

**806. Analysis of Agricultural Systems**  
*(A E 806.) Spring. 3(3-0) SYS 810.*

Identification and definition of systems problems in agriculture. Model formulation and estimation. Several models of current interest are considered.

**Building Construction B C**

**200. Dynamics of American Housing**  
*Fall, Winter, Spring, Summer. 3(3-0)*

Impact of housing on the economic and social welfare of America. Analysis of the residential building industry and its problems in providing adequate housing.

**312. Structural Design**  
*Winter. 4(4-0) PHY 237.*  
Consideration of structural design systems as used in light construction.

**412. Housing Utilities Design**  
*Winter. 4(4-0) EGR 364 or approval of department.*

Design of and planning for mechanical and electrical utilities in housing.

**413. Residential Construction Systems**  
*Spring. 4(3-2) B C 312 or approval of department.*

Analysis of the primary construction systems employed in the residential building industry, especially the economic and social aspects in meeting the housing goals of the U. S.

**415. Building Materials**  
*Spring. 4(4-0) B C 312 or approval of department.*

Properties of building materials pertinent to their application and performance in service.

**416. Building Costs**  
*Fall. 4(2-4) EGR 364 or approval of department.*

Methods of cost estimating. Effects of codes and production practices on costs.

**417. Residential Finance**  
*Winter. 4(4-0) AFA 395 or approval of department.*

Analysis of financial programs for the construction, rehabilitation, remodeling and purchase of homes; especially meeting the nation's goals for low to moderate income housing.

**418. Special Problems**  
*Fall, Winter, Spring, Summer. 1 to 3 credits. May reenroll for a maximum of 9 credits. Written approval of department.*

Special problems in the areas of acquisition and development of residential land, design, construction technology, building materials, finance, marketing, construction management and land use codes and regulations.

**420. Construction Management**  
*Spring. 4(4-0) Senior majors or approval of department.*

Systems management techniques for residential building organizations inclusive of organization development, operations, planning, scheduling and control, and administrative systems and procedures.

**835. Research in Building Construction**  
*Fall, Winter, Spring, Summer. Variable credit. Approval of department.*

**850. Special Problems**  
*Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 9 credits. Approval of department.*

Individual student research and study in land acquisition and development, design, construction, management, finance, marketing, and structural analysis.

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

**AGRICULTURE AND NATURAL RESOURCES ANR**

**College of Agriculture and Natural Resources**

**1245. Career Planning in Agriculture and Natural Resources for Secondary School Students**

*(AG 124A.) Fall. 2(1-2) Credits earned in this course are included in computation of GPA and MAPS but are not included in the 180 credits required for graduation. Interdepartmental with and administered by the College of Education.*

Introducing prospective teachers to the process of guiding high school students to careers in agriculture and natural resources.

**202. Soils and Man's Environment**  
*Winter. 3(3-0) Interdepartmental with the departments of Crop and Soil Sciences, Resource Development, and Fisheries and Wildlife and administered by the Department of Crop and Soil Sciences.*

Use of soil and water resources in a technological society as it relates to environmental quality. Nature of pollution problems and their possible solutions. Food production and world population.

**220. Plants and Their Environment**  
*(N R 220.) Winter. 3(3-0) Interdepartmental with and administered by the Department of Forestry.*

Fundamental ecological relationships between various climatic, edaphic and biotic environmental factors of the ecosystem and plant response, including structure, function and evaluation of species.

**275. Exploring International Agriculture**  
*(AG 275.) Spring. 3(3-0)*

Exploration of overseas assignments with international agencies; potential world food actualities and potentialities; special problems of the tropics compared with those in temperate regions.

**280. Selected Topics**  
*Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 6 credits if different topics are taken. Approval of department.*

**341. Energy in the Food System**  
*(AG 341.) Winter. 3(3-0) Juniors or approval of department. Interdepartmental with and administered by Agricultural Engineering Technology.*

Energy flow in the food system. Conversion principles and processes--solar, engines, fertilizers, pesticides, electrical, waste heat utilization. Environmental considerations, economic and social implications related to the food system. Alternatives. Conservation.

**350. Leadership Development for Agriculture and Natural Resources**  
*(AG 350.) Winter, Spring. 3(3-0) May reenroll for a maximum of 6 credits. Approval of department.*

Leadership development. Preparation for community leadership. Firsthand look at social, economic, and political problems. Series of seminars, interviews, field trips. Emphasis on awareness, action, and involvement. Field trips required.

**AMERICAN STUDIES      AMS**

**College of Arts and Letters**

- 301. Issues in American Civilization**  
*Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 9 credits. Not applicable to major requirements.*  
Selected issues in American life past and present, with materials drawn from such disciplines as history, social sciences, philosophy, literature and the arts. Topics vary.
- 378. Popular Culture and Technical Change**  
*Winter. 4(4-0) Juniors or approval of department. Interdepartmental with and administered by Lyman Briggs College.*  
Interrelationships among elements of mass culture and technical change. Introduction to relevant research methods.
- 410. Perspectives in American Studies**  
*Fall. 3 credits. Juniors in American Studies or approval of American Studies Committee.*  
Methods and significant works, for majors in the American Studies program. Offered by members of the relevant departments.
- 411. Problems in American Civilization**  
*Winter, Spring. 3 credits. Majors must reenroll for a maximum of 6 credits. AMS 410, Juniors in American Studies or approval of American Studies Committee.*  
Seminar approach to selected problems in American life employing the objectives and approaches of interdisciplinary studies. Offered by members of relevant departments, for majors in the American Studies program.

**AMERICAN THOUGHT AND LANGUAGE      ATL**

**College of Arts and Letters University College**

- To satisfy the University General Education requirement, a student must take one course in each of the following groups. Additional courses may be taken for elective credit.
1. 121 or 121E, 131, 141, 151, 161, 171, 181, 191H
  2. 122 or 122E, 132, 142, 152, 162, 172, 182, 192H
  3. 123 or 123E, 133, 143, 153, 163, 173, 183, 193H
- 101A. Comprehensive English**  
*Fall, Winter, Spring, Summer. 3(3-1) Admission by examination or approval of department. Students may not receive credit in more than one of the following courses: ATL 101A, ATL 101B, ATL 101E.*  
Instruction and practice in reading and writing. Emphasis upon mastery of fundamental skills needed for a variety of reading and writing assignments.
- 101B. Comprehensive English**  
*Fall, Winter, Spring, Summer. 3(3-1) Admission by examination or approval of department. Students may not receive credit in more than one of the following courses: ATL 101A, ATL 101B, ATL 101E.*  
Instruction and practice in reading and writing. Instruction in reading is emphasized.

- 399. Professional Internships in Agriculture and Natural Resources**  
*(AG 399.) Fall, Winter, Spring, Summer. Zero to 10 credits. (10 credits.) Juniors and approval of department.*  
Professionalized experiences in a student's major. Supervision and evaluation by faculty and cooperating agencies.
- 401. Agriculture and Natural Resources Communications**  
*(AG 401.) 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**  
*(AG 402.) Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 6 credits. AG 401, approval of college.*  
Internship with professionals in communications field with emphasis on student's areas of interest—writing, radio, TV, publications, etc.
- 410. Environmental Toxicology**  
*(AG 410.) Winter. 4(4-0) B S 212, BCH 401. Interdepartmental with and administered by the College of Natural Science.*  
Fate and effects of toxic chemicals in soil, plants, wildlife, and aquatic systems. Interactions between chemicals and the environment which influence their fate and ecological importance.
- 425. Agriculture and Natural Resources Seminar**  
*(AG 425.) Spring. 2(2-0)*  
Current agricultural, natural resources, and environmental problems and solutions as presented by discussion leaders from various disciplines, arranged by undergraduate students.
- 444. Pest Management I: Systems Management for Plant Protection**  
*(AG 437, AG 444.) Fall. 4(3-2) FSM 200 or EC 201. Interdepartmental with and administered by the College of Natural Science.*  
Designed to integrate knowledge and improve ability in arriving at pest management decisions of varying complexity involving the fields of agronomy, wildlife, horticulture, entomology, and plant pathology.
- 445. Pest Management II: Pesticide Chemistry and Application Systems for Plant Protection**  
*(AG 435, AG 445.) Winter. 5(3-4) CEM 132. Interdepartmental with and administered by the College of Natural Science.*  
A broad overview of pesticide chemistry, efficient usage, environmental fate, legislation and application techniques.
- 446. Pest Management III: Biological Systems for Plant Protection**  
*(AG 436, AG 446.) Spring. 3(3-0) ENT 430, BOT 405, HRT 402 or CSS 402. Interdepartmental with and administered by the College of Natural Science.*  
Management of plant pests utilizing host resistance, cultural practices, legislation, and biological systems.

- 450. Natural Resource Administration**  
*(N R 450.) Fall, Spring. 4(4-0) Seniors. Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Park and Recreation Resources and Resource Development. Administered by the Department of Forestry.*  
Concepts and methods of administering wild-land properties. The legal, economic and social environment. Benefit-cost analysis of management changes. Unit organization, personnel management and accounting. Presents a systems view of administration.
- 455. Natural Resource Economics**  
*(N R 455.) Winter. 4(4-0) FOR 450 or approval of department. Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Park and Recreation Resources and Resource Development. Administered by the Department of Forestry.*  
Basic economic and political principles and techniques that govern the production and consumption of forest land products, including basic forest valuation procedures.
- 462. Agricultural and Rural Development in Developing Nations**  
*(AG 462.) Fall. 3(3-0) PAM 201 or EC 201; PAM 260 recommended. Interdepartmental with Public Affairs Management and Food Systems Economics and Management and administered by 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.
- 475. International Studies in Agriculture and Natural Resources**  
*(AG 475.) Spring, Summer. 3 to 9 credits. Approval of college.*  
Study-travel experience emphasizing contemporary problems affecting agriculture in the world, national, and local communities. Field trips, case studies, interviews with leading experts, government officials, community leaders. Supervised individual study.
- 480. Selected Topics**  
*Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 9 credits if different topics are taken. Approval of department. Juniors.*  
Exposition of special topics in agriculture and natural resources.
- IDC. The Impact of Animal Resource Management Upon the World's Developing Nations**  
*For course description, see Interdisciplinary Courses.*
- 491. Natural Resources and Modern Society**  
*(N R 491.) Spring. 3(3-0) Juniors. Interdepartmental with the departments of Forestry and Resource Development and administered by the Department of Forestry.*  
A survey of the social and economic significance of natural resources in modern industrial and urban society. Current problems of natural resources management and use are examined in terms of the society in which they exist.