880. Special Problems

Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 6 credits. Approval of department.

Individual study or research on selected topics.

890. Advanced Topics in Agricultural Engineering Technology

Fall, Winter, Spring. 3(3-0) May reenroll for a maximum of 12 credits if different topics are taken. Approval of department.

New developments in agricultural engineering technology.

899. Master's Thesis Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

999. Doctoral Dissertation Research

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

Building Construction Management BCM

200. American Housing and Building Industry

(B C 200.) Fall, Winter, Spring, Summer. 3(3-0)

Residential and light commercial construction industry in America. Impacts of government, finance, zoning ordinances, codes, asthetics, construction technology, demographics, energy and society.

215. Architectural Drafting I

(B C 215.) Fall, Summer. 4(2-4)

Residential design including site plans, floor plans, foundation plans, elevations, sections and details.

216. Architectural Drafting II

(B C 216.) Winter, Summer. 4(2-4) BCM 215.

Light commercial design including site plans, floor plans, foundation plans, elevations, sections and details, barrier free accessibility.

239. Housing Conservation

(B C 239.) Spring. 3(3-0) Interdepartmental with the Department of Human Environment and Design.

Skills and techniques in conserving, repairing and remodeling existing housing. Structural components of housing and evaluation of housing structure.

301. Energy Conservation Systems for Buildings

(B C 301.) Winter. 3(3-0) BCM 215, MTH 109 or MTH 111 or approval of department.

Solar energy, earth sheltered and energy conservation systems for buildings will be analyzed for operation, optimum size, construction, performance, climate, cost effectiveness and human comfort for northern climates.

312. Structural Design

(B C 312.) Winter. 4(5-0) PHY 237, BCM 215 or approval of department. Interdepartmental with Agricultural Engineering Technology.

Concepts of structural mechanics, material strengths and section properties are developed and applied to design using wood, steel and concrete.

313. Construction Systems

(B C 413.) Spring. 4(3-2) BCM 200, BCM 215, CPS 115.

Primary construction systems employed in the residential and light commercial construction industry. Interrelationships between planning, processes, costs and management.

412. Utilities Design

(B C 412.) Fall. 4(4-0) PHY 238, BCM 215 or approval of department.

Design and planning for mechanical and electrical utilities in residential and light commercial construction.

415. Building Materials

(B C 415.) Spring. 4(4-0) BCM 312 or approval of department.

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

416. Building Costs

(B C 416.) Winter. 4(2-4) BCM 312 or concurrently.

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

417. Construction Management Finance

(B C 416.) Winter. 4(4-0)

Financing methods for the construction, rehabilitation, and purchase of real estate.

418. Special Problems

(B C 418.) Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 11 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.

419. Senior Seminar

(B C 419.) Fall. 1(1-0) Senior majors.

Professional practices, business ethics, market trends, and structure of the construction industry.

420. Construction Management

(B C 420.) Spring. 4(4-0) Senior majors.

Systems management techniques for building organizations; development, operations, planning, scheduling and control, and administrative procedures.

820. Research Methods

(B C 820.) Fall. 1(1-0) Approval of department. Interdepartmental with and administered by Agricultural Engineering Technology.

Procedures for initiating, developing, carrying out and completing research projects.

880. Special Problems

(B C 880.) Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 6 credits. Approval of department.

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

890. Advanced Topics

Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 12 credits if different topics are taken. Approval of department.

Topics will be selected from: computer methods in construction management, advanced construction management, optimization techniques, solar energy buildings, advanced estimating, numerical structural analysis, new construction techniques and materials.

899. Master's Thesis Research

(B C 899.) Fall, Winter, Spring, Summer. Variable credit. Approval of department.

AGRICULTURAL ENGINEERING TECHNOLOGY

See Agricultural Engineering.

AGRICULTURE AND NATURAL RESOURCES ANR

College of Agriculture and Natural Resources

220. Plants and Their Environment

Winter. 3(3-0) Interdepartmental with and administered by the Department of Forestry.

Relationships between plants and fundamental climatic, edaphic, and biotic factors; structure and function of different ecosystems in relation to environmental factors.

275. Exploring International Agriculture

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.

350. Leadership Development for Agriculture and Natural Resources

Winter, Spring: 3(3-0) Given at W. K. Kellogg Biological Station Fall, Spring: 3 credits. 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.

399. Professional Internships in Agriculture and Natural Resources

Fall, Winter, Spring, Summer. 6 to 12 credits. May reenroll for a maximum of 12 credits. Juniors and approval of department.

Professionalized experiences in a student's major. Supervision and evaluation by faculty and cooperating agencies.

410. Environmental Toxicology

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

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.

445. Pest Management: Pesticide Chemistry and Application Systems for Plant Protection

Fall. 5(3-4) CEM 143, ENT 425, HRT 402 or CSS 402, BOT 405 or concurrently or approval of instructor. 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: Biological Systems for Plant Protection

Fall. 3(3-0) ENT 425, HRT 402 or CSS 402, BOT 405 or concurrently or approval of instructor. Interdepartmental with and administered by the College of Natural Science.

Management of plant pests utilizing host resistance, cultural practices, legislation, and biological systems.

447. Pest Management: Systems Management for Plant Protection

(ANR 444.) Winter. 4(3-2) NSC 445, NSC 446 or approval of instructor. 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.

450. Natural Resource Administration

Winter. 4(4-0) Seniors; not open to forestry majors. 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 wildland 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

Fall. 4(4-0) 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

Fall. 3(3-0) PAM 201 or EC 201; PAM 260 recommended. Interdepartmental with Public Affairs Management, and Food Systems Economics and Management. 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

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 reenroll for a maximum of 9 credits if different topics are taken. Approval of department. Juniors.

Exposition of special topics in agriculture and natural resources.

491. Natural Resources and Modern Society

Spring. 3(3-0) Juniors. Interdepartmental with the departments of Forestry, and Resource Development. 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.

AMERICAN STUDIES AMS

College of Arts and Letters

301. Issues in American Civilization

Fall. 3(3-0) May reenroll for a maximum of 9 credits. Sophomores.

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 School.

Interrelationships among elements of mass culture and technical change. Introduction to relevant research methods.

410. Perspectives in American Studies

Winter. 3(3-0) Juniors, approval of American Studies adviser.

Methods and significant works, for majors in the American Studies program. Offered by members of the relevant departments.

411. Problems in American Civilization

Spring. 3(3-0) May reenroll for a maximum of 6 credits if different topic is taken. Juniors, approval of American Studies adviser.

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

To satisfy the University General Education requirement, a student must take one course in each of the following groups. No courses may be taken for elective credit.

1. 1144, 121, 131, 141, 151, 161, 171, 181, 191H
2. 1154, 122, 132, 142, 152, 162, 172, 182, 192H
3. 1164, 123, 133, 143, 153, 163, 173, 183, 193H

0142. Writing Laboratory I

Fall, Winter, Spring. 0(0-2) [2(2-0) See page A-1 item 3.] ATL 0991 or admission by placement test; ATL 1144 concurrently.

An individualized program to develop composition skills by aiding students to discover how language functions in communication and by helping them to accept responsibility for learning to write correctly.

0152. Writing Laboratory II

Fall, Winter, Spring. 0(0-2) [2(2-0) See page A-1 item 3.] ATL 0142, ATL 1144 or approval of department; ATL 1154 concurrently.

Continuation of ATL 0142.

0162. Writing Laboratory III

Fall, Winter, Spring. 0(0-2) [2(2-0) See page A-1 item 3.] ATL 0152, ATL 1154 or approval of department; ATL 1164 concurrently.

Continuation of ATL 0152.

0991. Preparatory Writing Skills

Fall, Winter, Spring, Summer. 0(3-0) [3(3-0) See page A-1 item 3.] Admission by placement test.

Instruction and practice in writing. Emphasis on mastery of fundamental skills needed for a variety of writing assignments.

104. Writing for Science Majors

Fall. 3(3-0) Satisfactory grade in English proficiency exam; College of Natural Science majors. Interdepartmental with and administered by the Department of English.

Writing workshop for science students that develops and refines composition ability.

105. The Scientist as Writer

Winter. 3(3-0) ENG 104. Interdepartmental with and administered by the Department of English.

Study of various types of writing by scientists—fiction, poetry, and autobiography as well as professional papers and books. Students will write frequently about the readings.