

**Physical Systems in Agriculture
and Natural Resources**

PSA

**223. Commercial Food Processing
Systems**

Fall. 3(3-0) *Interdepartmental with the Department of Food Science and Human Nutrition.*

Processes and systems used in handling, processing and distribution of food; the need for processing systems and their influence on food quality.

258. Technical Skills

Fall, Winter. 2 to 7 credits. *May re-enroll for a maximum of 10 credits. Majors and approval of department.*

Selection, operation, and maintenance of physical components of electrical, mechanical, environmental and water management systems in agriculture and natural resources industries, including system design and component installation.

**322. Systems Analysis in Agricultural
Production**

Fall. 3(3-0) *MTH 111 or 109, CPS 110 or 120.*

Simulation of processes and operations for food, feed, fiber and energy flow in agriculture and natural resources. Analysis of interrelationships between physical systems.

**323. Mechanical Systems in
Agriculture and Natural
Resources**

Winter. 4(4-0) *PHY 237, 257.*

Phenomenological aspects of the laws of mechanics and their influence on the design of mechanical and structural systems encountered in agriculture and natural resources.

**324. Processing Systems for Biological
Products**

Spring. 4(4-0) *MTH 109 or 111, PHY 238.*

Physical processes which influence biological products during production, handling, processing and distribution. Mass and heat balances, fluid flow, steam generation, psychrometrics, heat exchange, refrigeration and dehydration will be discussed.

416. Light Structural Systems

(A E 416.) 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

(A E 421.) 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**

(A E 431.) 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

(A E 443.) 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 re-enroll 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.

AGRICULTURE

AG

College of Agriculture and
Natural Resources

**124A. Introduction to Careers in
Vocational and Practical Arts
Education—Agriculture**

Fall. 2(1-2) *Interdepartmental with and administered by the College of Education.*

**275. Exploring International
Agriculture**

Spring. 3(3-0) *Interdepartmental with Natural Resources.*

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

**350. Leadership Development for
Agriculture and Natural
Resources**

Winter, Spring. 3(3-0) *May re-enroll for a maximum of 6 credits. Approval of department. Interdepartmental with Natural Resources.*

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. Agriculture Internship

Fall, Winter, Spring, Summer. Zero to 10 credits. [10 credits.] *Juniors and approval of department. Interdepartmental with Natural Resources.*

Professionalized experiences in a student's major. Supervision and evaluation by faculty and co-operating agencies.

**401. Agriculture and Natural
Resources Communications**

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.

†Sec page A-2, item 3.

**402. Agriculture and Natural
Resources Communications
Internship**

Fall, Winter, Spring, Summer. 1 to 6 credits. *May re-enroll for a maximum of 6 credits. 401, approval of college.*

Internship with professionals in communications field with emphasis on student's areas of interest—writing, radio, TV, publications, etc.

**425. Agriculture and Natural
Resources Seminar**

Spring. 2(2-0) *Interdepartmental with Natural Resources.*

Current agricultural, natural resources, and environmental problems and solutions as presented by discussion leaders from various disciplines, arranged by undergraduate students.

**435. Pest Management I: Pesticide
Chemistry and Application
Systems for Plant Protection**

Fall. 5(3-4) *CEM 132. Interdepartmental with Natural Resources and the College of Natural Science. Administered by the College of Natural Science.*

A broad overview of pesticide chemistry, efficient usage, environmental fate, legislation and application techniques.

**436. Pest Management II: Biological
Systems for Plant Protection**

Winter. 3(3-0) *ENT 430, BOT 405, HRT 402 or CSS 402. Interdepartmental with Natural Resources and the College of Natural Science. Administered by the College of Natural Science.*

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

**437. Pest Management III: Systems
Management for Plant
Protection**

Spring. 4(3-2) *NSC 435 and 436, FSM 200 or EC 201. Interdepartmental with Natural Resources and the College of Natural Science. 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.

**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 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.

**471. Environmental Topics in
Nonmetropolitan Regions**

Fall. 4(4-0) *Nomination of students by own department and approved by participating faculty. Interdepartmental with the College of Natural Science and Natural Resources and administered by Natural Resources.*

Environmental topics in nonmetropolitan regions including issues on: production agriculture, service industries, non-agricultural uses, rural urban balance, discussion topics and case studies.

**Descriptions — Agriculture
of
Courses**

**475. International Studies in
Agriculture and Natural
Resources**

Spring, Summer. 3 to 9 credits. Approval of the college. Interdepartmental with Natural Resources.

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.

**IDC. The Impact of Animal Resource
Management Upon the World's
Developing Nations**

For course description, see Interdisciplinary Courses.

AMERICAN STUDIES AMS

College of Arts and Letters

301. Issues in American Civilization

Fall, Winter, Spring. 3(3-0) May re-enroll 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.

**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 re-enroll for a maximum of 6 credits. 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**

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

101A. Comprehensive English

Fall, Winter, Spring, Summer. 3(3-1) No student may receive credit in both 101A and 101B. Admission by examination or approval of department.

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) No student may earn credit in both 101A and 101B. Admission by examination or approval of department.

Instruction and practice in reading and writing. Instruction in reading is emphasized.

102. Comprehensive English

Fall, Winter, Spring, Summer. 3(3-1) 101A or 101B.

Continuation of 101 with emphasis on writing and reading.

103. Comprehensive English

Fall, Winter, Spring, Summer 3(3-1)

102.

Continuation of 102 with emphasis on reading and writing on American cultural topics.

117. Use of Libraries

Fall, Winter. 1(1-0)

The use of libraries, with emphasis on MSU Library. Course will stress knowledge and use of bibliographic and reference resources.

121. American Expression

(111A.) Fall, Winter, Spring, Summer. 3(3-0) Satisfactory grade on English proficiency examination or in Comprehensive English.

Aims to improve the student's ability to read and write and to acquaint him with his American heritage. Selected reading and theme topics.

122. American Expression

(112A.) Fall, Winter, Spring, Summer. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Aims to improve the student's ability to read and write, and to acquaint him with his American heritage. Selected reading and theme topics.

123. American Expression

(113A.) Fall, Winter, Spring, Summer. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Aims to improve the student's ability to read and write, and to acquaint him with his American heritage. Selected reading and theme topics.

**131. Major Currents in American
Experience**

(111B.) Fall, Winter, Spring, Summer. 3(3-0) Satisfactory grade on English proficiency examination or in Comprehensive English.

Investigation into the significance Americans place on individual search for meaning and its effect on our American heritage. Subject matter is the focus for improving reading and writing abilities.

**132. Major Currents in American
Experience**

(112B.) Fall, Winter, Spring, Summer. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

The dreams and realities by which Americans have been inspired and betrayed are emphasized. Subject matter is the focus for improving reading and writing abilities.

**133. Major Currents in American
Experience**

(113B.) Fall, Winter, Spring, Summer. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Literary and historical study of the major cultural confrontations among groups and subcultures in America's heterogeneous society. Subject matter is the focus for improving reading and writing abilities.

141. American Humanities

(111C.) Fall, Winter, Spring, Summer. 3(3-0) Satisfactory grade on English proficiency examination or in Comprehensive English.

Aims to acquaint the student with his American heritage with emphasis on artistic and literary expression; and to improve his ability to read and write.

142. American Humanities

(112C.) Fall, Winter, Spring, Summer. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Aims to acquaint the student with his American heritage with emphasis on artistic and literary expression; and to improve his ability to read and write.

143. American Humanities

(113C.) Fall, Winter, Spring Summer. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Aims to acquaint the student with his American heritage with emphasis on artistic and literary expression and to improve his ability to read and write.

151. American Minorities

(111D.) Fall. 3(3-0) Satisfactory grade on English proficiency examination or in Comprehensive English.

Aims to acquaint the student with the experience of minorities in America, and to improve his ability at reading and writing. Selected readings and theme topics.

152. American Minorities

(112D.) Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Aims to acquaint the student with the experience of minorities in America, and to improve his ability at reading and writing. Selected readings and theme topics.

153. American Minorities

(113D.) Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or above; or satisfactory performance in Comprehensive English.

Aims to acquaint the student with the experience of minorities in America, and to improve his ability at reading and writing. Selected readings and theme topics.

161. American Radical Thought

(111E.) Fall. 3(3-0) Satisfactory grade on English proficiency examination or in Comprehensive English.

Aims to acquaint the student with ideas concerning radical social change, and to improve his ability at reading and writing. Selected readings and theme topics.