

**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) *IRN 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.

†See 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. Ap-
proval of the college. Interdepartmental with
Natural Resources.

Study-travel experience emphasizing contem-
porary problems affecting agriculture in the world,
national, and local communities. Field trips,
case studies, interviews with leading experts,
government officials, community leaders. Super-
vised individual study.

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

For course description, see Interdisci-
plinary 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 appli-
cable 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 Com-
mittee.

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 Ameri-
can life employing the objectives and approaches
of interdisciplinary studies. Offered by members
of relevant departments, for majors in the Ameri-
can 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, Sum-
mer. 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 Ameri-
can heritage. Selected reading and theme topics.

122. American Expression

(112A.) Fall, Winter, Spring, Sum-
mer. 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, Sum-
mer. 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 Ameri-
can 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 satis-
factory 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 read-
ing 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 satis-
factory performance in Comprehensive English.

Literary and historical study of the major cul-
tural confrontations among groups and subcul-
tures in America's heterogeneous society. Sub-
ject matter is the focus for improving reading
and writing abilities.

141. American Humanities

(111C.) Fall, Winter, Spring, Sum-
mer. 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, Sum-
mer. 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 Sum-
mer. 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 Ameri-
can 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 read-
ings 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 per-
formance 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 read-
ings 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 per-
formance 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 read-
ings 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 con-
cerning radical social change, and to improve
his ability at reading and writing. Selected
readings and theme topics.