

**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 special-interest 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.

## 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.

**Descriptions – American Thought and Language  
of  
Courses**

**102. Comprehensive English**

Fall, Winter, Spring, Summer. 3(3-1)  
ATL 101A or ATL 101B or approval of department. Students may not receive credit in both ATL 102 and ATL 102E.

Continuation of ATL 101 with emphasis on writing and reading.

**103. Comprehensive English**

Fall, Winter, Spring, Summer. 3(3-1)  
ATL 102 or approval of department. Students may not receive credit in both ATL 103 and ATL 103E.

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

**117. Use of Libraries**

Fall, Winter. I(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**

Fall, Winter, Spring, Summer. 3(3-0)  
Satisfactory grade on English proficiency examination or in Comprehensive English. Students may not receive credit in both ATL 121 and ATL 121E.

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**

Fall, Winter, Spring, Summer. 3(3-0)  
Three credits in the first term of any ATL sequence numbered ATL 121 or above; or satisfactory performance in Comprehensive English. Students may not receive credit in both ATL 122 and ATL 122E.

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**

Fall, Winter, Spring, Summer. 3(3-0)  
Three credits in the second term of any ATL sequence numbered ATL 121 or above; or satisfactory performance in Comprehensive English. Students may not receive credit in both ATL 123 and ATL 123E.

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**

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**

Fall, Winter, Spring, Summer. 3(3-0)  
Three credits in the first term of any ATL sequence numbered ATL 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**

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

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

**141. American Humanities**

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**

Fall, Winter, Spring, Summer. 3(3-0)  
Three credits in the first term of any ATL sequence numbered ATL 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**

Fall, Winter, Spring, Summer. 3(3-0)  
Three credits in the second term of any ATL sequence numbered ATL 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**

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**

Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered ATL 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**

Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered ATL 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**

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.

**162. American Radical Thought**

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

**163. American Radical Thought**

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

**171. America on Film**

Fall. 3(3-2) Satisfactory grade on English proficiency examination or in Comprehensive English.

Aims to acquaint the student with cinematic and fictional representation of experience, and to improve his ability at reading and writing. Selected readings and theme topics.

**172. America on Film**

Winter. 3(3-2) Three credits in the first term of any ATL sequence numbered ATL 121 or above; or satisfactory performance in Comprehensive English.

Aims to acquaint the student with cinematic and fictional representation of experience, and to improve his ability at reading and writing. Selected readings and theme topics.

**173. America on Film**

Spring. 3(3-2) Three credits in the second term of any ATL sequence numbered ATL 121 or above; or satisfactory performance in Comprehensive English.

Aims to acquaint the student with cinematic and fictional representation of experience, and to improve his ability at reading and writing. Selected readings and theme topics.

**181. Women in America**

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

Aims to acquaint the student with women's experience in America, and to improve the student's ability at reading and writing. Selected readings and theme topics.

**182. Women in America**

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

Aims to acquaint the student with women's experience in America, and to improve the student's ability at reading and writing. Selected readings and theme topics.

**183. Women in America**

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

Aims to acquaint the student with women's experience in America, and to improve the student's ability at reading and writing. Selected readings and theme topics.

**191H. Honors Work in American Experience**  
Fall. 3(3-0) Satisfactory grade in entrance examination.

Students read and write on selected topics to improve their knowledge of the American heritage and their ability at reading and writing.

**192H. Honors Work in American Experience**  
Winter. 3(3-0) Satisfactory grade in the first term of any ATL sequence numbered ATL 121 or above.

Students read and write on selected topics to improve their knowledge of the American heritage and their ability at reading and writing.

**193H. Honors Work in American Experience**  
Spring. 3(3-0) Satisfactory grade in the second term of any ATL sequence numbered ATL 121 or above.

Students read and write on selected topics to improve their knowledge of the American heritage and their ability at reading and writing.

**205. Reading for University-Level Understanding**  
Fall, Winter, Spring. 2(0-4) May reenroll for a maximum of 4 credits.

Individualized instruction in techniques for improving vocabulary, comprehension, rate, study skills and test taking skills in order to achieve a better understanding of university-level materials.

**232. American Humor**  
Winter. 4(4-0) Sophomores.

An interdisciplinary study of the relationship between American humor and the developing American experience, especially of the nineteenth and twentieth centuries.

**300. Supervised Individual Study**  
Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 12 credits. 9 credits in a composition course; approval of department.

Selected students requesting individual study of interdisciplinary problems will work under supervision of University College professors. Variable elective credit will be determined when the student secures instructor, adviser, and department approval.

**329. Advanced Writing: The Prose Essay**  
Spring 4(4-0) Completion of ATL sequence, ENG 213 or approval of department.

Provides instruction in the acquiring of knowledge from the prose essay, making sophisticated inferences from the ideas collected, and formulating and supporting logical theses in the writing of such essays.

**350. American Film**  
Fall, Winter, Spring. 4(2-4) May reenroll for a maximum of 8 credits if different topic is taken. Sophomores.

American films as they reflect and influence society.

**380. The Role of Women in America: Arts and Self**  
Winter of even-numbered years. 4(4-0) Juniors.

Various art forms by women and the exploration of a feminine sensibility; sex, race, and class interactions, sexual stereotypes; male views of women and themselves; the impact of the media.

**381. The Role of Women in America: Movements and Ideology**  
Spring of odd-numbered years. 4(4-0) Juniors.

Key personalities and philosophical currents in the women's movement; biological and cultural myths and realities; the historical role of the family, 'The Culture of Romance.'

**439. Writing the Research Report**  
Winter, Spring. 4(4-0) Juniors.

Advanced methods and organization of written research reports will be taught by providing examples, exercises, and writing practice based on research submitted by the students.

**449. Technical Report Writing**  
Winter, Spring. 4(4-0) Completion of ATL requirement, Juniors or approval of instructor.

Use and understanding of language through writing and editing clear, concise, purposeful technical reports, letters, instructions, proposals.

## ANATOMY ANT

**College of Human Medicine  
College of Osteopathic Medicine  
College of Veterinary Medicine**

**216. Applied Human Anatomy**  
Fall, Spring. 5(4-3) HPR major or minor.

Structural anatomy of the various systems of the human body. Concepts of kinesiological applications.

**316. General Anatomy**  
Fall, Spring. 5(5-0) B S 211 or B S 212 or approval of department.

Designed to impart the basic concepts of the broad field of anatomy. Special requirements of the various disciplines will be met in their respective laboratories.

**420. Microscopic Anatomy**  
Winter. 5(2-8) Medical Technology students or approval of department.

Microscopic study of the structure of cells, tissues and organs.

**480. Special Problems**  
Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 15 credits. Approval of department.

Individual study or project under the direction of a faculty member in biomedical research, gross anatomy, histology, neurology, or embryology.

**505A. Anatomy in Physical Diagnosis**  
Fall. 1 to 3 credits. HM 505 concurrently.

Exercises in which students study systemic anatomy in a physical diagnosis context. Preparatory self-instruction precedes exercises.

**505B. Anatomy in Physical Diagnosis**  
Winter. 1 to 3 credits. ANT 505A or approval of department.

Exercises in which students study regional anatomy in a physical diagnosis context. Preparatory self-instruction precedes exercises.

**505C. Anatomy in Physical Diagnosis**  
Spring. 1 to 3 credits. ANT 505B or approval of department.

Exercises in which students study regional anatomy in a physical diagnosis context. Preparatory self-instruction precedes exercises.

**510. Veterinary Gross Anatomy**  
Fall. 6(3-9) First-term Veterinary Medicine students.

Gross anatomy of a representative animal, the dog, is studied. Lecture, dissection of embalmed specimen, study of prosections, slides, models and living animals.

**511. Veterinary Histology**  
Fall. 5(3-6) First-term Veterinary Medicine students.

A general histology course for veterinary students which includes a survey of the tissue of the animal body.

**512. Veterinary Neuro Anatomy**  
Winter. 2(2-0) Second-term Veterinary Medicine students.

Gross anatomy of the central nervous system in animals emphasizing functional and dysfunctional aspects of pathways and nuclei in dogs as a foundation for clinical neurology.

**513. Veterinary Microscopic Anatomy**  
Winter. 4(2-4) Second-term Veterinary Medicine students.

Microscopic anatomy of the digestive, urinary, respiratory, male and female reproductive systems, integumentary system, central nervous system and special sense organs of domesticated animals.

**514. Veterinary Comparative Anatomy**  
(523.) Spring. 5(4-4) Third-term Veterinary Medicine students.

Lecture, dissection of embalmed specimens and the study of prosections, models and live animals related to the anatomy of the domestic animals.

**540. Gross Biomedical Structure**  
Winter. 1 to 15 credits. May reenroll for a maximum of 15 credits. Admission to a college of medicine; graduate students with approval of department.

Regional gross anatomy of the back, thorax, abdomen, pelvis and perineum.

**541. Gross Biomedical Structure**  
Spring. 1 to 15 credits. Admission to a college of medicine; graduate students with approval of department.

Regional gross anatomy of the head and neck.

**542. Gross Biomedical Structure**  
Fall. 1 to 15 credits. Admission to a college of medicine; graduate students with approval of department.

Regional gross anatomy of the limbs.

**543. Microscopic Anatomy**  
Winter. 3(1-3) Human Medicine students; approval of department for graduate students.

The principles of microscopic anatomy, utilizing self-instructional units and laboratory experience with organ sections viewed through the light microscope.