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 be repeated for a maximum of 6 credits. Approval of department.


390. Professional Internships in Agriculture and Natural Resources
Fall, Winter, Spring, Summer; 6 to 12 credits. May be repeated 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) S 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; 0(0-0) Current agricultural, natural resources, and environmental problems and solutions as presented by discussion leaders from various disciplines, arranged by undergraduate students.

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

432. Pest Management: Biological Systems for Plant Protection
Fall, 3(3-0) ENT 425, HRT 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 441) Winter, 4(3-2) NSC 445, NSC 446 or approval of instructor. Interdepartmental with and administered by the College of Natural Science.

Described 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
Spring; 4(4-0) Juniors. Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Park and Recreation Resources and Resource Development. Administered by the Department of Forestry.


455. Natural Resource Economics
Fall; 4(3-2) EC 500 or EC 501. Interdepartmental with the departments of Fisheries and Wildlife, Forestry, and Recreation Resources and Resource Development. Administered by the Department of Forestry.

Basic economic and institutional principles and techniques that govern the production and consumption of renewable natural resources. Natural resource evaluation, project analysis, and distributional considerations.

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; 3.9 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 leaders, government officials, and community leaders. Supervised individual study.

490. Selected Topics
Fall, Winter, Spring; 1 to 4 credits. May be repeated for a maximum of 6 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 be repeated 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.

377. The Natural Environment: Perceptions and Practices
Fall; 4(4-0) Sophomores. Interdepartmental with Lyman Briggs School. Administered by Lyman Briggs School.

Factors which have influenced U.S. environmental attitudes as reflected in art and literature. Ways in which changing attitudes have led to changes in legislation and practice.
114. Developmental Writing I
Fall, Winter, Spring. 3(3-0) ATL 0991 or admission by placement test; ATL 0142 concurrently.
Students engage in expressive writing to respond to reading in clear and direct prose. Students write personal essays and read autobiographical materials, making use of college-level readings.

115. Developmental Writing II
Fall, Winter, Spring. 3(3-0) ATL 0142 or approval of department; ATL 0152 concurrently.
Interpretive, analytical, and expository writing in response to college-level readings.

116. Developmental Writing III
Fall, Winter, Spring. 3(3-0) ATL 0152; ATL 1154 or approval of department; ATL 0152 concurrently.
Students write analytical/critical/persuasive papers and undertake a research project. Reading of college-level materials.

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. Writing: American Expression
Fall, Winter, Spring. 3(3-0) Satisfactory performance on the placement test. Writing course to improve composition and critical reading abilities. Writing based on American literary and historical materials from Puritan times through the Enlightenment. Emphasis on unity and structure of essays.

122. Writing: American Expression
Fall, Winter, Spring. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and critical reading abilities. Writing based on American literary and historical materials of the nineteenth century. Emphasis on style and development of essays.

123. Writing: American Expression
Fall, Winter, Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and research abilities. Writing based on American literary and historical materials of the twentieth century. Research project required.

131. Writing: Major Currents in American Experience
Fall. 3(3-0) Satisfactory performance on the placement test.
Writing course to improve composition and critical reading abilities. Writing based on materials concerning the individual's search for meaning in America. Emphasis on unity and structure of essays.

132. Writing: Major Currents in American Experience
Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and critical reading abilities. Writing based on materials concerning American dreams and realities. Emphasis on style and development of essays.

133. Writing: Major Currents in American Experience
Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and research abilities. Writing based on materials concerning cultural pluralism in America. Research project required.

141. Writing: American Humanities
Fall. 3(3-0) Satisfactory performance on the placement test.
Writing course to improve composition and critical reading abilities. Writing based on American literature, painting, music, and architecture before 1800. Emphasis upon unity and structure of essays.

142. Writing: American Humanities
Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and critical reading abilities. Writing based on American literature, painting, music, architecture and sculpture of the nineteenth century. Emphasis upon unity and development of essays.

143. Writing: American Humanities
Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and research abilities. Writing based on innovation in twentieth century American literature and the visual, plastic, musical, and dramatic arts. Research project required.

151. Writing: American Minorities
Fall. 3(3-0) Satisfactory performance on the placement test.
Writing course to improve composition and critical reading abilities. Writing based on minority literature from Reconstruction, Indian wars and end of European immigration. Emphasis upon unity and structure of essays.

152. Writing: American Minorities
Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and critical reading abilities. Writing based on minority literature from Reconstruction, Indian wars and end of European immigration. Emphasis upon unity and development of essays.

153. Writing: American Minorities
Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and research abilities. Writing based on minority literature, modern fiction and cultural pluralism emphasized; a research project is required.

161. Writing: American Radical Thought
Fall. 3(3-0) Satisfactory performance on the placement test.
Writing course to improve composition and critical reading abilities. Writing based on dissenting thought from the colonial to the early national period. Emphasis upon unity and structure of essays.

162. Writing: American Radical Thought
Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and critical reading abilities. Writing based on the literature of dissent in American society from 1830 to 1940. Emphasis upon style and development of essays.

163. Writing: American Radical Thought
Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and research abilities. Writing based on the literature and history of the New Left and contemporary dissent in America. Research project required.

171. Writing: America on Film
Fall. 3(3-0) Satisfactory performance on the placement test.
Writing course to improve composition abilities. Writing and readings based on American films and film adaptations of American literature. Emphasis upon unity and structure of essays.

172. Writing: America on Film
Winter. 3(3-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition abilities. Writing and readings based on American films genres (e.g., Western, Gangster). Emphasis on style and development of essays.

173. Writing: America on Film
Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
Writing course to improve composition and research abilities. Writing and readings based on analysis of major social issues as reflected in American film: e.g., war, women, minorities. Research project required.

181. Writing: Women in America
Fall. 3(3-0) Satisfactory performance on the placement test.
Writing course to improve composition and critical reading abilities. Writing based on critical works introducing contemporary and historic American feminist issues. Emphasis on unity and structure of essays.
Description — American Thought and Language of Courses

182. Writing: Women in America
   Winter. 3(0-0) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.
   Writing course to improve composition and critical reading abilities. Writings based on American women from pre-Colonial times through First Wave Feminism. Emphasis on style and development of essays.

183. Writing: Women in America
   Spring. 3(3-0) Three credits in the second term of any ATL sequence numbered 121 or higher or approval of department.
   Writing course to improve composition and critical reading abilities. Writings based on women in American life and literature from 1920 to the present. Research project required.

191H. Honors Writing: The American Experience
   Fall. 3(0-0) Satisfactory performance on the placement test.
   Writing course to improve composition and critical reading abilities. Writings based on analysis of selections from Colonial to early nineteenth century topics.

192H. Honors Writing: The American Experience
   Winter. 3(0-0) Satisfactory grade in the first term of any ATL sequence numbered ATL 121 or above.
   Writing course to improve composition and critical reading abilities. Writings based on analysis of selections from the late nineteenth and early twentieth centuries.

193H. Honors Writing: The American Experience
   Spring. 3(3-0) Satisfactory grade in the second term of any ATL sequence numbered ATL 121 or above.
   Writing course to improve composition and research abilities. Writings based on analysis of twentieth century materials reflecting American issues.

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. Variable elective credit will be determined when the student secures instructor, advisor, and department approval.

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. H M 505 concurrently.
   Exercises in which students study systemic anatomy in a physical diagnosis contest. Preparatory self-instruction precedes exercises.

510. Veterinary Gross Anatomy
   Fall. 6(3-0) First-term Veterinary Medicine students.
   Gross anatomy of a representative animal, the dog, is studied. Lecture, dissection of embalmed specimen, study of projections, 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. 5(2-4) Second-term Veterinary Medicine students.
   Gross anatomy of the central nervous system in animals emphasizing functional and dysfunctional aspects of anatomy and made 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
   (529.) Spring. 5(4-4) Third-term Veterinary Medicine students.
   Lecture, dissection of embalmed specimens and the study of projections, 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.

543. Human Histology
   Fall. 4(2-4) Human Medicine students; approval of department for graduate students.
   The structure and function of human cells, tissues, and organs.

544. Human Ontogenesis
   Fall. 3(3-0) Admission to a college of medicine; graduate students with approval of department.
   Formal lectures, class conferences and student reports on the normal and abnormal ontogenesis of the human embryo and fetus with emphasis on clinical correlations.

545. Neuroanatomy
   Winter. 3(4-0) Admission to medical school or approval of Neuroscience Committee.
   Introduction to gross and microscopic anatomy of the human nervous system, to related basic neurophysiologic concepts and to a problem-solving approach to the diagnosis of nervous system disease.

560. Medical Histology
   Fall. 4(3-4) Admission to a college of medicine or approval of department.
   Structural and functional characteristics of basic cells, tissues and organ systems. Emphasis on core concepts and visual discrimination.

563. Osteopathic Medical Neuroanatomy
   Spring. 4(3-4) Admission to a college of medicine; graduate students with approval of department.
   Medically oriented problem-solving neuroanatomy with laboratory. Structure of the human nervous system is correlated with normal function, clinical testing and classical lesions encountered in medical practice.

565. Introduction to Human Gross Anatomy
   Fall. 6(4-6) Admission to a college of medicine or approval of department.
   Core concepts in regional, systemic and topographical human gross anatomy; Prosection, discussion and lecture methods using audiovisual aids and frequent review.

580. Special Problems
   Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 15 credits. Admission to professional program in the College of Human Medicine, College of Osteopathic Medicine or the College of Veterinary Medicine, and approval of department.
   Biomedical research, gross anatomy, histology, neurology, immunology or embryology.

813. Problems in Anatomy
   Fall, Winter, Spring, Summer. 1 to 5 credits. May reenroll for a maximum of 15 credits. Basic disciplines in various areas and approval of department.
   Various anatomical fields such as gross anatomy, histology, hematology, tissue culture, cytology, neurology and embryology will be studied.

814. Graduate Student Seminar
   Spring. 1 to 3 credits. May reenroll for a maximum of 6 credits. Admittance to Ph.D. program in Department of Anatomy.
   Supervised practice in delivering and evaluating written abstracts and public oral presentations of anatomical science; techniques of organization, timing, and effective illustrations.