

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

**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. Writings based on the literature of dissent in American society from 1850 to 1946. Emphasis on 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. Writings 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(3-2) Satisfactory performance on the placement test.  
Writing course to improve composition abilities. Writings 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(3-2) Three credits in the first term of any ATL sequence numbered 121 or higher or approval of department.  
Writing course to improve composition abilities. Writings and readings based on American film genres (e.g., Western, Gangster). Emphasis on style and development of essays.

**173. Writing: America on Film**  
Spring. 3(3-2) 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. Writings 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. Writings based on critical works introducing contemporary and historic American feminist issues. Emphasis on unity and structure of essays.

**182. Writing: Women in America**  
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. 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(3-0) Satisfactory performance on the placement test.  
Writing course to improve composition and critical reading abilities. Writings based on analysis of selected material from Colonial to early nineteenth century topics.

**192H. Honors Writing: The American Experience**  
Winter. 3(3-0) 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, adviser, and department approval.

**ANATOMY**

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

**216. Applied Human Anatomy**  
Fall. 5(4-3) HCP major or coaching minor, approval of department. Interdepartmental with the School of Health Education, Counseling Psychology and Human Performance.  
Structural anatomy of the various systems of the human body. Concepts of kinesiological applications.

**316. General Anatomy**  
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.

**ANT**

**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.  
Approved through Fall 1989.

**541. Gross Biomedical Structure**  
Spring. Admission to a college of medicine; graduate students with approval of department.  
Regional gross anatomy of the head and neck.  
Approved through Winter 1990.

**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 organogenesis of the human embryo and fetus with emphasis on clinical correlations.

**545. Neuroanatomy**  
Winter. 4(3-3) Admission to medical school or approval of the course coordinator.  
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.

547. **Human Gross Anatomy**  
Fall. 4(3-3) Admission to a college of medicine; graduate students with approval of department.  
Regional gross anatomy of the limbs, abdomen, pelvis and perineum.

548. **Human Gross Anatomy**  
Winter. 4(3-3) Admission to a college of medicine; graduate students with approval of department.  
Regional gross anatomy of the back, thorax, head and neck.

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.

802. **Clinical Surgical Anatomy**  
Spring. 6(4-4) Master's student in surgery or approval of department. Interdepartmental with and administered by the Department of Surgery.  
Review of surgical anatomy; the opportunity to obtain detailed anatomical information through lecture and dissection sessions; and the clinical interpretation of anatomy and surgical approaches.

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.

820. **Advanced Neuroanatomy: Structure and Function of Cells of CNS**  
Summer. 1 to 5 credits. May reenroll for a maximum of 15 credits. ANT 815 and approval of instructor.  
Correlated anatomy and physiology of CNS cells and their processes including current concepts and principles of cytology, ultrastructure, development and plasticity, axonal transport mechanisms, electrical properties and functional connections.

839. **Systems Neuroscience**  
(PSL 839.) Winter of odd-numbered years. 5(4-2) Approval of department. Interdepartmental with the departments of Pharmacology and Toxicology, and Physiology.  
Physiology, anatomy and pharmacology of sensory, somatomotor and autonomic neural systems.

885. **Vertebrate Neural Systems I**  
Winter of odd-numbered years. 3(2-2) ANT 839 or approval of department. Interdepartmental with the departments of Physiology, Psychology, and Zoology.  
Structure and function of major component systems of vertebrate brains, their evolution, ontogeny and comparative analysis in mammals, birds, reptiles, amphibians and fish. Interrelation of behavioral, anatomical and physiological studies.

886. **Vertebrate Neural Systems II**  
Spring of odd-numbered years. 3(2-2) ANT 885. Interdepartmental with the departments of Physiology, Psychology, and Zoology.  
Continuation of ANT 885. Major component systems of vertebrate brains, their evolution, ontogeny, and comparative analysis in mammals, birds, reptiles, amphibians and fish. Interrelation of behavioral, anatomical, and physiological studies.

899. **Master's Thesis Research**  
Fall, Winter, Spring, Summer. Variable credits. Majors.

999. **Doctoral Dissertation Research**  
Fall, Winter, Spring, Summer. Variable credit. Majors.

152. **Livestock Production Laboratory**  
(ANS 252.) Fall. 1(0-3) ANS 110 or concurrently.  
Anatomy, care, feeding, management, handling and slaughter of commercial livestock species. Evaluation of livestock relating skeletal structure to animal performance.

156. **Introductory Meat Science**  
Winter. 4(2-6) ANS 110.  
Systems of meat and poultry evaluation, meat cuts, identification, merchandising, processing, storage and handling. Eggs and egg products.

162. **Poultry Production Laboratory**  
(ANS 262.) Winter. 1(0-3) ANS 110.  
Breeds of poultry. Processing poultry and products. Anatomy and physiology. Facilities, feeds and rations. Evaluation and incubation of eggs. Managerial skills.

211. **Principles of Animal Science**  
Spring. 3(3-0) ANS 110, B S 211.  
Principles of nutrition, reproduction, lactation, genetics and meat science. Comparative anatomy and physiology of food animals.

217. **Evaluation of Animal and Carcass**  
Fall. 3(1-4) ANS 110, ANS 152.  
Evaluation of breeding stock, market animals, and carcasses. Emphasis on production records and soundness of breeding animals, quality grading, yield grading and pricing market animals and carcasses.

256. **Meats, Poultry and Fishery Products I**  
Fall. 3(2-2) Interdepartmental with and administered by Food Science.  
Principles of evaluation and nutritive value. Identification of grades and cuts of beef, pork, lamb and poultry products.

257A. **Meat Evaluation and Grading**  
Winter. 1(0-3) ANS 217. Students may not earn more than 10 credits from the following courses: ANS 257A, ANS 257B, ANS 337, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C.  
Evaluation of beef, pork and lamb carcasses and wholesale cuts according to industry and consumer demands. Federal grading standards. Field trips to meat packing operations required.

257B. **Meat Evaluation and Grading**  
Fall. 1 to 3 credits. ANS 257A. Students may not earn more than 10 credits from the following courses: ANS 257A, ANS 257B, ANS 337, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C.  
Evaluation of beef, pork and lamb carcasses and wholesale cuts according to industry and consumer demands. Federal grading standards. Field trips to meat packing operations required.

310. **Animal Science Seminar**  
Fall. 1(2-0) Juniors, ANS 110 or concurrently.  
Current production and policy issues in animal science.

313A. **Principles of Animal Nutrition**  
(ANS 313.) Fall. 4(4-0) BCH 200 or BCH 401, MPH 200, PSL 241.  
Requirements for and metabolism of nutrients. Feeding practices and diets for beef and dairy cattle, horses, poultry, sheep and swine.

**ANIMAL SCIENCE ANS**

**College of Agriculture and Natural Resources**

110. **Introductory Animal Science**  
Fall. 3(3-0)  
History of breeds and their use, production techniques, marketing. Current goals and limitations affecting U.S. animal production.

132. **Dairy Production Laboratory**  
(ANS 232.) Spring. 1(0-3) ANS 110.  
Physical characteristics of cows and facilities. Anatomy. Experience in estrous detection, milking equipment, feeds and rations and records. Normal cow behavior.

142. **Horse Production Laboratory**  
Spring. 1(0-3) ANS 110.  
Handling and care of horses. Structural anatomy, reproduction, nutrition and management practices.