162. American Radical Thought
(115E.) 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 ideas concerning radical social change, and to improve his ability at reading and writing. Selected readings and theme topics.

163. American Radical Thought
(115E.) 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 ideas concerning radical social change, and to improve his ability at reading and writing. Selected readings and theme topics.

165. American Utopianism: Beginnings
Fall. 3(3-0)
Utopian and communalist urge in American thought and experience; improvement of the student's reading, writing, and speaking abilities.

166. American Utopianism: Middle Years
Winter. 3(3-0)
Utopian and communalist urge in American thought and experience in the middle years; improvement of the student's reading, writing, and speaking abilities.

167. American Utopianism: Contemporary
Spring. 3(3-0)
Utopian and communalist urge in contemporary American thought and experience; improvement of the student's reading, writing, and speaking abilities.

171. America on Film
(111F.) Fall. 3(3-2)
Satisfactory grade in 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
(112F.) Winter. 3(3-2)
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 cinematic and fictional representation of experience, and to improve his ability at reading and writing. Selected readings and theme topics.

181. Women in America
(111L.) 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
(112L.) 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 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
(113L.) 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 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
(111H.) 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
(112H.) Winter. 3(3-0)
Satisfactory grade in the first term of any ATL sequence numbered 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. 3(3-0) 4(4-0) May re-enroll 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.

322. 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.

350. Contemporary American Film and Society
Winter. 4(4-0) Sophomores.
Contemporary American films as reflections of and influences on American society. Term topics: Violence and Crime or Women.

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.

ANATOMY

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

316. General Anatomy
Fall. Spring. 5(5-0)
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. 3(3-0) 4(4-0) Pre-requisites: Anatomy, histology, neurology, or embryology.
Microscopic study of the structure of cells, tissues and organs.

480. Special Problems
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll 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
(505.) Fall. 1 to 3 credits. Pre-requisites: General Anatomy.
Exercises in which students study systemic anatomy in a physical diagnosis context. Pre-requisites: C. R. and S. G. or approval of department.

505B. Anatomy in Physical Diagnosis
Winter. 1 to 3 credits. Pre-requisites: General Anatomy.
Exercises in which students study regional anatomy in a physical diagnosis context. Pre-requisites: C. R. and S. G. or approval of department.

505C. Anatomy in Physical Diagnosis
Spring. 1 to 3 credits. Pre-requisites: General Anatomy.
Exercises in which students study regional anatomy in a physical diagnosis context. Pre-requisites: C. R. and S. G. or approval of department.

510. Veterinary Gross Anatomy
(510L.) Summer. 6(3-9) Admission to professional veterinary program.
A course in the study of selected structures of selected domestic animal, the dog, is studied. Lecture, dissection of embalmed specimen, study of prosections, slides, models and living animals.

511. Veterinary Histology
(511L.) Summer. 4(4-0) Pre-requisites: General Anatomy, and S. G. or approval of department.
A general histology course for veterinary students which includes a survey of the structure of microorganisms, cells, tissues and organs.
512. Veterinary Neuro Anatomy
Summer. 2(2-0) First-term Veterinary Medicine students.
Gross anatomy of the central nervous system in animals emphasizing functional and dysfunction­
al aspects of pathways and nuclei in dogs as a foundation for clinical neurology.

513. Veterinary Microscopic Anatomy
Fall. 5(3-8) Second-term Veter­
inary Medicine students.
Microscopic anatomy of the digestive, urinary, respiratory, male and female reproductive sys­
tems, integumentary system, central nervous system and special sense organs of domesticated animals.

514. Veterinary Comparative Anatomy
Fall. 4(2-8) Second-term Veter­
inary Medicine students.
Lecture, dissection of embalmed specimens and the study of postures, models and live animals related to the anatomy of the domestic animals.

540. Gross Biomedical Structure
Fall. Winter, Spring. Variable credit.
May re-enroll for a maximum of 15 credits.
Human Medicine students: approval of depart­ment for graduate students.
Human structure, systemic and regional, is studied in self-instructional and dissection se­quences. Application of this knowledge to rec­ognition of normal and abnormal structures in appropriate medical contexts is accomplished through self-instructional and clinical sessions.

543. Microscopic Anatomy
Winter. 2(1-2) 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.

545. Neuroanatomy
Spring. 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
Summer. 4(0-4) 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.

565. Introduction to Human Gross Anatomy
Summer. 4(4-0) Admission to a college of medicine or approval of department.
Core concepts in regional, systemic and topo­graphical human gross anatomy: Protection, discussion and lecture methods using audio­visual aids and frequent review.

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

801. Seminar
Fall, Winter, Spring. 1(1-0) App­proval of department.

813. Problems in Anatomy
Fall, Winter, Spring, Summer. Varia­ble credit. May re-enroll for a maximum of 15 credits.
Basic disciplines in various areas and appraisal of department.
Various anatomical fields such as gross anatomy, histology, hematology, tissue culture, cytology, neurology and embryology will be studied.

815. Anatomy of the Nervous System
Fall. 5(3-5) Approval of department.
Developmental, gross and microscopic anatomy of the nervous system. Organizational and func­tional aspects of the peripheral and central nerv­ous system are stressed. Gross demonstrations include brain and dog dissections.

816. Developmental Anatomy
Fall. 4(3-3) Graduate students or approval of department.
Study of the normal and abnormal organog­enesis of the human embryo and fetus.

899. Research
Fall, Winter, Spring, Summer. Variable credit. Majors.

ANIMAL HUSBANDRY

A H

College of Agriculture and Natural Resources

111. Livestock and Meat Industry
Fall, Spring. 4(3-4) Livestock utilization of renewable resources in producing products for man. Adaptation, eco­nomics of production and management systems of beef cattle, swine, sheep and horse enter­prises. Evaluation of market livestock.

214. Horses and Man
Fall. 3(1-1) The horse in today's world. Types, breeds and uses for recreation and therapy. Selection, de­velopment and maintenance of a healthy, well­trained horse.

241. Meat Production
Winter. 5(3-8) 111.

242. Meats, Poultry and Fishery Products I
Fall. 3(2-0) 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.

245. Meat Evaluation and Grading
Fall, Spring. 1 to 3 credits. May re-enroll for a maximum of 4 credits subject to a maximum of 10 credits in 245 and 335 combined.
Evaluation of carcasses and wholesale cuts of beef, pork, veal and lamb to federal and commercial grading standards. Inspection trips through large meat packing plants.

335. Livestock Selection
Fall, Winter, Spring. 1 to 3 credits.
May re-enroll for a maximum of 9 credits sub­ject to a maximum of 10 credits in 245 and 335 combined.
Evaluation of productive merit of individual animals. Comparison of type with a standard. Relationship of form to function. Field trips to prominent livestock breeding establishments and to major livestock events.

415. Special Problems
Fall, Winter, Spring. 1 to 3 credits.
May re-enroll for a maximum of 5 credits. Seniors and approval of department.
Special studies in fields not covered by other animal husbandry courses.

451. Swine Production
Fall. 4(3-3) ANS 325 or approval of department.
Historical aspects with emphasis on current trends. Breeds, breeding, selection, nutrition requirements, management practices, marketing, housing and environmental needs, disease and parasite problems. Visits to representative farms.

453. Beef Production
Spring. 4(3-3) ANS 325 or approval of department.
Management of beef enterprises. The tools of selection, reproduction, nutrition, flock health, housing and marketing to increase re­turns. Practice in trimming, showing, and management skills.

482. Techniques in Nutrition Research
Winter. 3(2-2) ANS 481.
Use and effects of different feeding systems with beef cattle, sheep, and swine. Formulating feeding plans.

IDC. The Impact of Animal Resource Management Upon the World's Developing Nations
For course description, see Interdisci­plinary Courses.

825. Techniques in Nutrition Research
Winter of odd-numbered years. 1 to 3 credits. CEM 335; approval of department.
Interdepartmental with Human Nutrition and Foods.
Use of specialized instruments and techniques. Laboratory safety and management of laboratory animals. Development of abilities in areas of particular interest to individual students.

890. Advanced Special Problems
Fall, Winter, Spring, Summer. 1 to 4 credits. May re-enroll for a maximum of 8 credits. Approval of department.
Investigation of animal husbandry areas of special­ly interest to individual graduate students.