**885 Vertebrate Neural Systems**
Spring of odd years. 3(2-2) Interdepartmental with Physiology.
Comparative analysis of major component systems of vertebrate brains. Evolution, ontogeny, structure, and function in fish, amphibians, reptiles, birds and mammals.

**899 Master's Thesis Research**
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to graduate students in Anatomy.
Master's thesis research.

**999 Doctoral Dissertation Research**
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 36 credits in all enrollments for this course. R: Open only to graduate students in Anatomy.
Doctoral dissertation research.

# HUMAN ANATOMY ANTR

## College of Human Medicine

**350 Human Gross Anatomy and Structural Biology**
Fall, Spring. 3(4-0) P:M: (BS 111 or LBS 149H or LBS 145) R: Not open to freshmen or approval of department. SA: ANT 316, ANTR 316
Survey of human systemic gross anatomy with clinical illustrations. Introduction to the language of medicine. Structural basis of physiological principles. Designed for pre-professional students entering health-care disciplines.

**381 Human Gross Anatomy Laboratory**
Spring, Summer. 2(0-6) P:M: (ANTR 350) R: Approval of department. Not open to students with credit in KIN 217 or ZOL 328.
Structured survey of human regional gross anatomy using prosections, cross-sections, medical imaging, multimedia, and hypermedia.

**480 Special Problems in Anatomy**
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 15 credits in all enrollments for this course. R: Approval of department. SA: ANT 480
Topics from an anatomical field such as gross anatomy, histology, tissue culture, cytology, neurology, or embryology.

**485 Directed Study in Human Prosection**
Fall, Spring, Summer. 2 to 4 credits. A student may earn a maximum of 15 credits in all enrollments for this course. P:M: (ANTR 350 or ZOL 328 or KIN 217) R: Open only to juniors or seniors.
Prosection of selected regions and isolated structures of preserved human cadavers.

**534 Cell Biology and Physiology I**
Fall. 3 credits. Interdepartmental with Physiology; Biochemistry and Molecular Biology. Administered by Department of Physiology. R: Open only to graduate-professional students in the College of Human Medicine or College of Osteopathic Medicine.
Modern concepts of cell biology as a basis for understanding the physiology of human tissues and organ systems in health and disease.

**535 Cell Biology and Physiology II**
Spring. 4 credits. Interdepartmental with Physiology; Biochemistry and Molecular Biology. Administered by Department of Physiology. R: Open only to graduate-professional students in the College of Human Medicine or the College of Osteopathic Medicine.
Modern concepts of cell biology as a basis for understanding the physiology of human tissues and organ systems in health and disease. Continuation of PSL 534.

**551 Medical Gross Anatomy**
Fall. 6(4-6) R: Open only to graduate-professional students in the College of Human Medicine or College of Osteopathic Medicine or approval of department. SA: ANT 551
Human regional gross anatomy with clinical correlations using prosections, cross-sections, medical imaging, multimedia and hypermedia.

**552 Medical Neuroscience**
Spring. 4(3-2) Interdepartmental with Neurology and Ophthalmology; Physiology; Radiology. Administered by Department of Neurology and Ophthalmology. R: Graduate-professional students in the Colleges of Human Medicine and Osteopathic Medicine. SA: ANT 552
Correlation of normal structure and function of the human nervous system with clinical testing, classical lesions, and common diseases.

**562 Medical Histology**
Spring. 3(2-2) R: Graduate-professional students in colleges of Human Medicine and Osteopathic Medicine. SA: ANT 562
Histology of the human body.

**585 Directed Study in Human Prosection**
Fall, Spring, Summer. 1 to 5 credits. A student may earn a maximum of 15 credits in all enrollments for this course. P:M: (ANTR 551) R: Open only to graduate-professional students in the College of Human Medicine or College of Osteopathic Medicine and approval of department.
Prosection of selected regions and isolated structures of preserved human cadavers. Oral presentation.

# VETERINARY ANATOMY ANTV

## College of Veterinary Medicine

**515 Comparative Veterinary Gross Anatomy**
Fall. 6(2-10) R: Open only to graduate-professional students in the College of Veterinary Medicine. SA: ANT 515
Canine anatomy. Comparisons with ruminant, porcine, and equine anatomy.

**516 Veterinary Histology and Cell Biology**
Fall. 4(3-2) R: Open only to graduate-professional students in the College of Veterinary Medicine. SA: ANT 516
Principles of developmental, cellular, and molecular biology as related to veterinary medicine.

**517 Veterinary Neuroanatomy**
Spring. 1(1-0) R: Completion of Semester 1 of the graduate-professional program in the College of Veterinary Medicine. SA: ANT 517
Introduction to the anatomy of the nervous system using the canine species as a model.

**610 Veterinary Gross Anatomy Dissection**
Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. RB: (ANTV 515) R: Open only to graduate-professional students in College of Veterinary Medicine. SA: ANT 610
Dissection and prosection of selected regions of domestic animals.

**611 Research Problems in Veterinary Anatomy**
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to graduate-professional students in the College of Veterinary Medicine. Approval of department. SA: ANT 611
Veterinary gross anatomy, cell biology, histology, or neurobiology.

# ANIMAL SCIENCE ANS

## Department of Animal Science
## College of Agriculture and Natural Resources

**110 Introductory Animal Agriculture**
Fall, Spring. 4(3-2) SA: ANS 112
History of animal agriculture and its relationship to human needs, production systems, marketing, and environmental considerations. Current goals of and limitations affecting U.S. farm animal production.

**140 Fundamentals of Horsemanship**
Spring. 2(0-4) A student may earn a maximum of 4 credits in all enrollments for this course.
Safe horse handling skills. Riding skills. Riding aids and working with the horse at the beginner, intermediate or advanced level.

**141 Draft Horse Basics**
Fall, Spring. 2(0-4)
Safe handling, hitching and driving of draft horses. Care and maintenance of harness and horse drawn equipment.

**142 Horse Training for Competition**
Summer. 2(0-4) RB: (ANS 140) R: Approval of department.
Training techniques to prepare horses for competition. Exhibiting horses. Field trips required.

**200A Introductory Judging of Livestock or Carcasses**
Spring. 1 to 2 credits. A student may earn a maximum of 3 credits in all enrollments for this course. RB: (ANS 211) R: A student may earn a maximum of 8 credits from ANS 200A, ANS 200B, ANS 200C, ANS 200D, ANS 300A, ANS 300B, ANS 300C and ANS 300D.
Evaluation of functional conformation of beef cattle, sheep and swine and their carcasses. Preparation for intercollegiate competition. Field trips required.