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
Fall. 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.

400. 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 305 concurrently. Exercises in which students study systemic anatomy in a physical diagnosis context. Preparatory self-instruction precedes exercises.

510. Veterinary Gross Anatomy
Fall. 6(3-6) First-term Veterinary Medicine students. Gross anatomy of a representative animal, the dog, is studied. Lecture, dissection of embalmed specimens, study of prosection, slides, models and living animals.

511. Veterinary Histology
Fall. 5(5-0) First-term Veterinary Medicine students. A general histology course for veterinary students which includes a survey of the tissues 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, muscular system, central nervous system and special sense organs of domesticated animals.

514. Veterinary Comparative Anatomy (523.) Fall. 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. Approval of department, 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. 5(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 organization 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, 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. 8(4-0) 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 a college of medicine or approval of department. Biomedical research, gross anatomy, histology, neurology, immunology or embryology.

A-18
802. Clinical Surgical Anatomy
Spring. 6(6-4) 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 enroll 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 enroll 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 enroll 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
(P.S.I. 829.) 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.

855. Vertebrate Neural Systems I
Winter of odd-numbered years. 5(3-4) ANT 815, ANT 865 recommended. 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. 5(3-4) 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. Major.

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

ANIMAL SCIENCE

College of Agriculture and Natural Resources

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

132. Dairy Production Laboratory

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

152. Livestock Production Laboratory
(ANS 292.) Fall. 1(0-3) ANS 110 or concurrently. Anatomy, care, feeding, management, handling and slaughter of commercial livestock species. Evaluation of slaughter relating skeletal structure to animal performance.

156. Introductory Meat Science
Spring. 1(0-3) ANS 110. Systems of meat and poultry evaluation, meat cuts, identification, merchandising, processing, storage and handling. Eggs and egg products.

162. Poultry Production Laboratory

211. Principles of Animal Science
Spring. 3(3-0) ANS 110, B $ 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 357A, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C.

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 357A, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C.

257C. 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 357A, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C.

279. Feeds and Feed Formulation

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

313A. Principles of Animal Nutrition
(ANS 313.) Winter. 4(4-0) BCHI 202 or BCHI 401, MPH 200, FSL 241. Requirements for and metabolism of nutrients. Feeding practices and diets for beef and dairy cattle, horses, poultry, sheep and swine.

313B. Feeds and Diet Formulation
Winter. 2(1-2) ANS 213A. Feed processing, premixes and feed additives. Feed manufacture. Net energy system. Diet and least cost formulation for cattle, sheep, horses, poultry and swine. Field trips required.

314. Principles of Animal Breeding
Winter. 3(0-3) B S 211 or a course in Mendelian genetics. Quantitative inheritance. Gene frequency. Statistical tools used in animal breeding. Effect of selection and mating systems on animal population.

315. Principles of Farm Animal Physiology
Spring. 4(3-2) ANS 211, FSL 241. Anatomy and physiology emphasizing endocrine integration for homeostasis and homeostatic regulation. Interaction among growth, lactation and reproduction during different productive states of farm animals.

316. Merchandising Purebred Livestock
Spring of odd-numbered years. 2(1-2) ANS 212, ANS 142, or ANS 155; or approval of department. Purebred livestock industry structure. Methods of merchandising breeding livestock including private treaty and auction sales. Advertising, sale selection, and budgeting of a purebred livestock sale.

337. Judging Dairy Cattle
Spring. 3(0-6) Students may not earn more than 10 credits from the following courses: ANS 257A, ANS 257B, ANS 357A, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C. Desired type in dairy cattle. Judging and showing procedures. Competitive judging. Teams selected to represent Michigan State University in national competition.

347A. Judging Horses
Spring. 2(0-6) ANS 217. Students may not earn more than 10 credits from the following courses: ANS 257A, ANS 257B, ANS 357A, ANS 347A, ANS 347B, ANS 357A, ANS 357B, ANS 357C. Evaluation of conformation. Productive and functional merits of individual horses. Field trips to prominent equine establishments and events required.