523. *Anatomy of Areas of Surgical and Clinical Importance in Domestic Animals*

Winter, Summer. 8(3-14) Sixth-term Veterinary Medicine students.

Lectures, dissection of fresh material and the study of prosections, models, radiographs and reprints related to areas of surgical and clinical importance in 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 structure in appropriate medical contexts is accomplished through self-instructional and clinical sessions.

543. *Microscopic Anatomy*

Fall. 5(3-6) Human Medicine students; approval of department for graduate students.

The normal structure of cells, tissues and organs as they appear under the light and electron microscope.

801. *Seminar*

Fall, Winter, Spring. 1(1-0) Approval 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 approval 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*

(415.) 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.

899. *Research*

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

901. *Seminar*

Fall, Winter, Spring. 1(1-0) Approval of department.

902. *Comparative Histology*

Fall of even-numbered years. 5 credits. Approval of department.

Comparative histology of digestive, respiratory, urinary, and integumentary systems of domestic and laboratory animals.

903. *Comparative Histology*

Winter of odd-numbered years. 5 credits. 902 or approval of department.

Continuation of 902 to include the muscular, skeletal, circulatory, male and female reproductive systems, placentation, and endocrine organs.

999. *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)

Adaptation, distribution and numbers of livestock throughout the world; significance and economic importance. Trends in livestock production. Evaluating, grading, classifying and marketing of livestock and meat. Relationship of live animal conformation to carcass merit.

241. *Meat Production*

(141.) Winter. 4(2-6) 111.

Principles of meat evaluation and selection. Carcass certification programs. Influence of production factors on carcass desirability. Practice in slaughtering, cutting and meat processing.

242. *Meats, Poultry and Fishery Products I*

Fall. 3(2-2) Interdepartmental with and administered by the Food Science Department.

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 6 credits. 241.

Evaluation of carcasses and wholesale cuts of beef, pork, veal and lamb in accordance with 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 8 credits. 111.

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*

Spring. 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.

452. *Sheep Production*

Winter of even-numbered years. 4(3-3) ANS 325 or approval of department.

History, modern breeds, breeding, selection, nutrition and feeding, management, marketing, housing, diseases and parasites, wool. Visits to farm flocks. Practice in management skills.

453. *Beef Production*

Spring. 4(3-3) ANS 325 or approval of department.

History, breeds, breeding, selection, nutrition and feeding, commercial systems of production, diseases and parasites. Visits to purebred herds and to feed lots. Practice in management skills.

454. *Horse Production*

Fall of even-numbered years. 3(2-2) ANS 325 or approval of department.

Selection, breeding, feeding, management, marketing, diseases and parasites. Relationship of body structure to performance.

462. *Meat Animal Breeding*

Spring. 3(2-2) ANS 461.

Uses and effects of different breeding systems with beef cattle, sheep, and swine. Formulating breeding plans.

825. *Techniques in Nutrition Research*

Winter of odd-numbered years. 1 to 3 credits. CEM 333; approval of department. Interdepartmental with the Foods and Nutrition Department.

Use of specialized instruments and techniques. Laboratory safety. 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 special interest to individual graduate students.

899. *Research*

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

912. *Seminar*

Fall, Winter, Spring. 1 credit.

927. *Comparative Nutrition I*

Winter. 2 or 4 credits. BCH 402; PSL 502 or concurrently. Interdepartmental with and administered by the Foods and Nutrition Department.

Mammalian nutrition based on biochemical and physiological phenomena. Proteins are studied in the first half of the term; carbohydrates, fats and macro-minerals in the last half.

928. *Comparative Nutrition II*

Spring. 2 or 4 credits. BCH 402, PSL 502. Interdepartmental with the Foods and Nutrition Department.

Mammalian nutrition based on biochemical and physiological phenomena. Micro-minerals are studied in the first half of the term; vitamins in the last half.

963. *Genetics of Breed Improvement*

Winter. 3(3-0) ANS 461, STT 421.

Breed improvement. Changing gene frequency. Genetic and environmental subdivision of phenotypic variance.

964. *Breeding Systems and Plans*

Spring. 3(3-0) 963.

Biometric relations between related animals. Role of selection in changing populations. The effects of different mating systems.

999. *Research*

Fall, Winter, Spring, Summer. Variable credit. Approval of department.

ANIMAL SCIENCE ANS

College of Agriculture and Natural Resources

101. *Animal Science*

Fall. 5(4-2)

Survey of the animal industries including history, economic geography, anatomy and physiology, nutrition and feed usage, and systems of commercial livestock and poultry production.

213. *Animal Science Seminar*

Fall. 1(2-0)

Animal science industries. Industry representatives will be utilized to discuss particular areas.

325. *Applied Animal Nutrition*

Spring. 5(4-2) CEM 132; BCH 200 recommended.

Livestock feeds and their nutrients. Functions of and requirements for nutrients. Evaluation of feeds. Feeding practices. Formulation of rations for beef and dairy cattle, horses, poultry, sheep and swine.

461. *Principles of Animal Breeding*

Winter. 3(3-0) CSC 250.

Use and importance of selection, inbreeding and outbreeding in controlling inheritance.