

**Descriptions — Anatomy  
of  
Courses**

**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**  
(522.) Fall. 5(3-6) Second-term Vet-  
erinary 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**  
(523.) Fall. 4(2-6) Second-term Vet-  
erinary 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**

Fall, Winter, Spring. Variable credit.  
May re-enroll for a maximum of 15 credits.  
Human Medicine students; approval of depart-  
ment for graduate students.

Human structure, systemic and regional, is  
studied in self-instructional and dissection se-  
quences. Application of this knowledge to rec-  
ognition of normal and abnormal structure in  
appropriate medical contexts is accomplished  
through self-instructional and clinical sessions.

**543. Microscopic Anatomy**

Winter. 3(1-3) 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 med-  
ical school or approval of Neuroscience Com-  
mittee.

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(3-4) Admission to a col-  
lege 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. 6(4-6) Admission to a  
college of medicine or approval of department.

Core concepts in regional, systemic and topo-  
graphical human gross anatomy: Prosection,  
discussion and lecture methods using audio-  
visual 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 Veteri-  
nary Medicine, and approval of department.  
Biomedical research, gross anatomy, histology,  
neurology, immunology or embryology.

**801. Seminar**

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

**813. Problems in Anatomy**

Fall, Winter, Spring, Summer. Varia-  
ble 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**

Fall. 5(3-5) Approval of department.

Developmental, gross and microscopic anatomy  
of the nervous system. Organizational and func-  
tional aspects of the peripheral and central ner-  
vous 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 organo-  
genesis of the human embryo and fetus.

**899. Research**

Fall, Winter, Spring, Summer. Varia-  
ble credit. Majors.

**999. Research**

Fall, Winter, Spring, Summer. Varia-  
ble credit. Majors.

**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 com-  
bined. 241.

Evaluation of carcasses and wholesale cuts of  
beef, pork, veal and lamb in accordance with  
federal and commercial grading standards. In-  
spection 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 sub-  
ject to a maximum of 10 credits in 245 and 335  
combined. 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**

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.

**452. Sheep Production**

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

Management of sheep enterprises. Using the  
tools of selection, reproduction, nutrition, flock  
health, housing and marketing to increase re-  
turns. Practice in trimming, showing, and  
management skills.

**453. Beef Production**

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

Feeding, breeding management, marketing.  
Emphasis on growth and development; costs and  
returns; feed requirements; reproduction, cross-  
breeding; performance testing; housing; diseases.  
Practice in management skills. One field trip.

**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.

**IDC. The Impact of Animal Resource  
Management Upon the World's  
Developing Nations**

For course description, see Interdisci-  
plinary Courses.

**825. Techniques in Nutrition Research**

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

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 spe-  
cial interest to individual graduate students.

**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, eco-  
nomics of production and management systems  
of beef cattle, swine, sheep and horse enter-  
prises. Evaluation of market livestock.

**214. Horses and Man**

Fall. 3(3-1)

The horse in today's world. Types, breeds and  
uses for recreation and therapy. Selection, de-  
velopment and maintenance of a healthy, well-  
trained horse.

**241. Meat Production**

Winter. 5(3-6) 111.

Principles of meat evaluation and selection. Car-  
cass certification programs. Influence of produc-  
tion 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 Food Science.

Principles of evaluation and nutritive value.  
Identification of grades and cuts of beef, pork,  
lamb and poultry products.

899. **Research**  
Fall, Winter, Spring, Summer. Variable credit. Approval of department.

912. **Seminar**  
Fall, Winter, Spring. 1 credit.

926. **Comparative Nutrition-Lipids and Carbohydrates**

Winter of odd-numbered years. 4(4-0) BCH 452 and a previous course on principles of nutrition. Interdepartmental with and administered by Human Nutrition and Foods. Regulatory aspects of carbohydrate and lipid metabolism as influenced by nutrition in mammals. Emphasis on normal and abnormal physiological states such as obesity, ketosis and diabetes.

927. **Comparative Nutrition-Protein Metabolism and Developmental Biology**

Winter of even-numbered years. 4(4-0) BCH 452, PSL 802 or concurrently. Interdepartmental with and administered by Human Nutrition and Foods.

Protein quality assessment, protein status, protein calorie malnutrition, amino acid metabolism, protein turnover, digestion and absorption, hormonal control of protein metabolism, developmental aspects of protein metabolism and growth.

928. **Comparative Nutrition-Minerals**

Spring of even-numbered years. 3 credits. BCH 452, PSL 802. Interdepartmental with Human Nutrition and Foods.

Forms and location in body, metabolic roles, deficiency and toxicity signs, interrelationships, requirements and biological availability of sources.

929. **Comparative Nutrition-Vitamins**

Spring of odd-numbered years. 3(3-0) BCH 452 and a previous course on principles of nutrition. Interdepartmental with Human Nutrition and Foods.

Chemical and physical properties, standards of activity, occurrence, metabolic roles, antivitamins, deficiency and toxicity signs, requirements and factors affecting requirements.

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. **Principles of Animal Nutrition**  
Spring. 5(5-0) 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.

433. **Ruminant Nutrition**

(DRY 433.) 4(3-2) 325. Principles of ruminant nutrition and application to actual feeding practices in commercial dairy and beef operations. Rumen fermentation as related to feed utilization, growth, milk production and milk composition.

461. **Principles of Animal Breeding**

Winter. 3(3-0) CSS 250. Quantitative inheritance. Gene frequency. Statistical tools used in animal breeding. Effect of selection and mating systems on animal population.

525. **Animal Nutrition**

Winter. 5(4-2) BCH 401. Principles of nutrition. Nutrients and their metabolism. Nutritive requirements for maintenance, growth, reproduction, lactation and work. Nutrient sources and their use in preparing diets for domestic animals.

826. **Animal Nutrition**

Spring. 4(4-0) One course each: biochemistry, physiology; and approval of department. Nutrition basic to animal feeding. Application of chemistry and physiology to nutrition. Nutrient requirements for normal body functions. Techniques involved in nutrition research; readings in current literature.

854. **Design of Animal Experiments**

Spring. 4(4-0) STT 423. Choice, implementation and statistical analysis of experimental plans for research with animals. Designs for reduction of experimental error. Analysis of experiments with complex structure or unequal subclass numbers.

855. **Analysis of Nonorthogonal Research Data**

Spring. 4(4-0) STT 423. Applied analysis techniques of field or survey data with unbalanced subclass numbers in field of biological sciences; predictions utilizing several variables; estimation of effects of factors and their interactions.

965. **Biometrical Genetics**

Fall of odd-numbered years. 4(4-0) 855 and one course in quantitative genetics. Genetics models for quantitative traits: estimation of components of variance; correlation of relatives; Selection Index theory; multi-factor and multivariate responses in designed experiments.

## ANTHROPOLOGY ANP

### College of Human Medicine College of Osteopathic Medicine College of Social Science

100. **The Origin of Man and Culture**  
Fall, Winter, Spring, Summer. 4(3-1)

Introduction to physical anthropology: the position of man in the animal kingdom, the genetic mechanisms of evolution, human beginnings and the fossil record, racial evolution and racial types among modern man, the anticipation of culture among other animals and the development of human culture, and culture as an adaptive mechanism.

171. **Introduction to Sociocultural Anthropology**

Fall, Winter, Spring, Summer. 4(3-1) Comparison of ways of life among primitive, peasant and civilized peoples. Implications of these styles of life for understanding of human behavior in general and exotic cultures in particular.

1DC. **Resource Ecology and Man**

For course description, see Interdisciplinary Courses.

1DC. **Introduction to Latin America I**

For course description, see Interdisciplinary Courses.

221. **Introduction to Social and Cultural Analysis**

Fall, Spring. 4(3-1) 171. Basic theoretical framework of socio-cultural analysis; structural functionalism, evolutionism, and cultural ecology.

250. **Culture, Environment and Adaptation**

Fall. 4(3-1) 100. Culture as an adaptive process—as developed in the million years of human history and still influencing environmental quality, population control, and allocation of resources in primitive and modern societies.

1DC. **Continuing Revolution in China: Problems and Approaches**

For course description, see Interdisciplinary Courses.

262. **Status of Women in Culture and Society: A Comparative View**

Winter. 3(3-0) 171 or approval of department. Comparative analysis of the status of women emphasizing non-Western cultures and societies. Economic and domestic division of labor between the sexes as a factor underlying division of status, power and authority.

263. **Origin of Civilization: Archaeology**

Spring. 4(4-0) 100. The rise, development and spread of culture in the period before written history. Archaeological evidence is used to trace the evolution of culture as it has been reconstructed from the excavation of pre-historic sites in the Old and New World.