353. Plating Plans
Winter. 4(2-4) Junior majors.
Practices and procedures for selection and ar-
angement of plant materials for specific uses,
including climate modification, spatial defini-
tion, circulation control, and soil and water con-
servation, as expressed by planting plans and
specifications.

370. History of Environmental Development
Fall. 3(2-2)
Significant natural conditions and cultural
events which have influenced man's attempts to
organize and design his physical environment,
as expressed in historic landscape development
styles and movements.

390. Landscape Architecture Field Studies
Fall, Winter, Spring. 2 to 4 credits.
May reenroll for a maximum of 8 credits. App-
roval of school.
Field trips to contemporary and historical site
and regional zones within or outside the United
States. Prior and post study required.

401. Landscape Management
Winter. 3(3-0)
Concepts and policies affecting natural resource
conservation, selection and location of signifi-
cant human use areas, landscape development
considerations and their environmental implica-
tions.

403. Urban Design Theory
Winter. 3(3-0)
Concepts and procedures for the organization,
development and public and private urban forms
and spaces, including survey of urban elements,
cultural, ecological and aesthetic considera-
tions, and interdisciplinary collabora-
tion.

423. Professional Graphics
Spring. 4(1-6) LA 321.
Applications of advanced sketching, perspective
and rendering techniques for typical profes-
sional presentations, including prints, reproduc-
tions, photography and multi-media audio
visual communications.

437. Design Implementation
Winter. 4(1-6) Senior majors, LA 480
concurrently.
Preparation of a complete package of contract
documents for a representative site develop-
ment project, including typical construction
drawings, specifications and cost estimates.

442. Comprehensive Landscape Design
Spring. 6(1-10) LA 310, 1; A senior major.
Applications of regional and urban design
theory and landscape design methods to repre-
sentative large scale regional and urban land-
scape development projects.

471. History of Landscape Architecture
Spring. 3(2-2)
Environmental design concepts and projects from
1850 to the present, with emphasis on the
development of the profession and practice
of landscape architecture in the United States.

450. Professional Practice
Winter. 3(2-2) Senior majors, LA 437
concurrently.
Practices and procedures of professional land-
scape architectural practice, including ethics,
client relations, registration, inter-professional
organization and collaboration and operations for
field implementation. Field trips required.

483. Landscape Architecture Seminar
Spring. 3(2-2) Senior majors.
Research presentation and discussion of signifi-
cant current issues, trends, and opportuni-
ties relating to contemporary theories and practises of landscape architecture.

489. Landscape Architecture Internship
Fall, Winter, Spring. 2 to 5 credits. May reenroll for a
maximum of 8 credits. Juniors, approval of school.
Supervised experience in approved public agencies and professional offices. Bi-weekly
conferences.

490. Special Problems
Fall, Winter, Spring. 2 to 5 credits. May reenroll for a
maximum of 12 credits. Approval of school.
Investigation, for advanced undergraduate stu-
dents in landscape architecture, developed from
special interest areas.

499. Landscape Architecture Design Thesis
Fall, Winter, Spring. 4(1-6) LA senior major.
Demonstration of analytical, creative and tech-
nical competencies in the development of
methods and/or concepts leading to design solu-
tions for contemporary landscape architecture problems.

511. Introduction to Veterinary Medicine I
(V M 300A) Fall. 2(2-0) First-term Veterinary Medicine students.
Species and breed identification, predisposition for specifl diseases, basic care and feeding, re-
straint and handling of small domestic animals,
unusual pets, and laboratory animals.

517. Perspectives in Veterinary Medicine
Fall, Winter, Spring. 3(0-10) LA senior major.
Ethical principles, historical background and
organization of the veterinary profession.

531. Animal Behavior
(500E) Spring. 3(3-0) Third-term Vet-
ery Medicine students.
Emphasis on behavior of animals relating to
disease prevention and treatment. Lectures,
discussions and demonstrations on veterinary
ethology including animal communications, re-
production, restraint, housing and various
feeding habits.

540. Metabolic Diseases and Endocrinology
(503) Winter. 2(2-0) Fifth-term Vet-
ery Medicine students.
Biochemical and physiological basis of
metabolic and endocrine diseases of animals in-
cluding diagnosis, treatment and management.

542. Principles of Radiology
Fall. 2(2-0) Fourth-term Veterinary Medicine students.
Fundamentals of veterinary radiography. Nor-
mal radiographic anatomy. Principles of radiog-
ographic interpretation. Radiation safety.

554. Veterinary Epidemiology
Fall. 4(4-0) Fourth-term Veterinary Medicine students.
Meaning and relevancy of biostatistics in vet-
ery medicine. Descriptive and inferential
statistics. Study design and critical literature re-
view. Disease determinants, ecology, distribu-
tion and populations at risk. Analytic-clinical
investigative epidemiology.

550. Preventive Veterinary Medicine and Public Health
(520) Winter. 4(4-0) Fifth-term Vet-
ery Medicine students.
Public health aspects of veterinary medicine.
Preventive and regulatory medicine including
meat and milk hygiene, water supply and treat-
ment, solid and liquid waste treatment and dis-
posal and zoonosis.

560. Urinary System
(507) Spring. 3(3-0) Sixth-term Vet-
ery Medicine students.
Normal and abnormal structure and function,
diagnostic methods, and the medical and surgi-
cal manipulation of the urinary system.

561. Core of Medicine Laboratories I
Spring. 2(0-6) Sixth-term Veterinary Medicine students.
Classification diagnosis and treatment of dis-
cases of the urinary, hematopoietic, nervous, in-
tegumentary and visual systems of animals.

562. Hematopoietic System
(509) Spring. 2(2-0) Sixth-term Vet-
ery Medicine students.
Normal structure and function of the
hematopoietic system and pathophysiological ef-
facts of hematopoietic diseases. Clinical man-
ifestations, laboratory evaluation and medical
management.

563. Visual System
(532) Spring. 2(2-0) Sixth-term Vet-
ery Medicine students.
Methods of examination, diagnosis, and treat-
ment of ocular diseases.

564. Survey of Infectious Agents
(510) Spring. 4(4-0) Sixth-term Vet-
ery Medicine students.
Host-microorganism relationship in diseases of
animals; laboratory diagnosis, treatment, con-
trol, and public health significance.
### Veterinary Medicine Courses

#### 566. Nervous System (ZOL) Spring. 3(3-0) Sixth-term Veterinary Medicine students. Normal and abnormal neural structure and function in animals with emphasis on clinical neurology and neuropathology.

#### 568. Integumentary System (ZOL) Spring. 3(3-0) Sixth-term Veterinary Medicine students. Diseases of the integumentary system of animals with emphasis on laboratory examinations, interpretation of pathological features, diagnosis, and treatment.


#### Core of Medicine Laboratories II (ZOL) Fall. 3(0-6) Seventh-term Veterinary Medicine students. Classification, diagnosis and treatment of diseases of the cardiovascular, respiratory and digestive systems of animals. Preparation and administration of anesthetic agents. Supportive care including fluid therapy. Emergency procedures. Euthanasia agents.

#### 572. Cardiovascular System (ZOL) Fall. 3(3-0) Seventh-term Veterinary Medicine students. Pathogenesis, diagnosis, and management of cardiovascular diseases of animals. Anatomical, physiological, pathological and pharmacological principles providing basis for medical and surgical treatment. Diagnostic and surgical procedures and radiologic interpretation.

#### 574. Respiratory System (ZOL) Winter. 4(4-0) Eighth-term Veterinary Medicine students. Pathogenesis, diagnosis, and management of respiratory diseases of animals; anatomical, physiological and surgical treatments. Diagnostic and surgical procedures and radiologic interpretation.

#### 576. Digestive System I (ZOL) Fall. 4(4-0) Seventh-term Veterinary Medicine students. Pathogenesis, diagnosis, and treatment of diseases of the alimentary tract and digestive organs of small animals.


#### Musculoskeletal System I (ZOL) Winter. 3(3-0) Eighth-term Veterinary Medicine students. Diagnosis and treatment of musculoskeletal diseases of animals with emphasis on pathological, radiological techniques, and interpretation of radiographs.

#### Digestive System II (ZOL) Winter. 4(4-0) Eighth-term Veterinary Medicine students. Pathogenesis, diagnosis and treatment of diseases of the alimentary tract and digestive organs of food animals and horses.

#### Principles of Surgery II (ZOL) Winter. 3(2-3) Eighth-term Veterinary Medicine students. Fundamental large animal surgery. Surgical techniques and management of animals before, during and after surgery.


#### Core of Medicine Laboratories IV (ZOL) Spring. 2(0-6) Ninth-term Veterinary Medicine students. Diagnosis and treatment of common toxicologic conditions, musculoskeletal disorders and orthopedic conditions in animals.

#### Musculoskeletal System II (ZOL) Spring. 4(4-0) Eighth-term Veterinary Medicine students. Pathogenesis, diagnosis, and management of musculoskeletal diseases of large animals. Anatomical, physiological and pathological features of joints. Surgical procedures applicable to the equine and ruminant. Radiographic diagnosis and interpretation of various lameness conditions.

#### Veterinary Toxicology (ZOL) Spring. 4(4-0) Ninth-term Veterinary Medicine students. Pharmacological basis and pathological features of diseases of animals caused by common toxic chemicals with emphasis on clinical manifestations, diagnosis, prevention, and treatment.

#### Diseases of Bones and Joints (ZOL) Spring. 3(3-0) Ninth-term Veterinary Medicine students. Anatomy and pathophysiology of diseases of bones and joints. Diagnosis, prognosis and treatment of abnormalities involving bones and joints.


#### Veterinary Externship (ZOL) Fall, Winter, Spring, Summer. 5 to 16 credits. May reenroll for a maximum of 16 credits. Veterinary Medicine students. Training in clinical medicine and surgery. Students must pass final examination in both VM 610 and VM 614. Clinical or research experience in an off-campus setting.

### Zoology Courses

#### College of Human Medicine

#### College of Natural Science

#### College of Osteopathic Medicine

#### IDC. Introduction to Resource Ecology

For course description, see Interdisciplinary Courses.

#### 301. Nature and Man (ZOL)

Fall. 4(2-6) Three terms of natural science; not open to zoology majors. Relates man to his natural environment. Chief emphasis on identifying characteristic animal life in broad areas of nature and how man fits into those areas. Lectures, laboratories and field trips illustrate this relationship.

#### 302. Vertebrate Life of the Past (ZOL)

Fall. 3(0-0) One course in physical or biological science or Juniors, Interdepartmental with and administered by the Department of Geology. May not reenroll for a maximum of 16 credits. Fossil vertebrates from fish to man.

#### 303. Introductory Animal Systematics (ZOL)

Fall. 3(4-5) B S 212. General survey of animals including origin, evolution, classification, morphological characteristics, reproduction, behavior, ecology, and zoogeography of invertebrates and vertebrates.

#### 304. Biology, Behavior and Man (ZOL)

Winter. 3(3-0) Juniors; not open to zoology majors. Examines philosophical and biological issues which make the study of animal behavior relevant to man. Emphasizes history of animal behavior, current theories, and experiments relating biological and environmental determinants of adaptive and non-adaptive behavior patterns.

#### 317. Principles of Development (ZOL)

Fall, Spring. 3(3-0) B S 212. Development of animals, especially vertebrates. Principles are illustrated by modern experimental studies of developmental problems.

#### 318. Principles of Development Laboratory (ZOL)

Fall, Spring. 2(0-6) ZOL 317 or concurrently, B S 212. Principles of development illustrated by analysis of the embryology of selected organisms.

#### 320. Vertebrate Systematics Laboratory (ZOL)

Winter. 2(0-6) ZOL 303. Open to Zoology majors only; others: approval of department. Systematics, morphological and natural history of vertebrate animals as illustrated by representative species within the seven classes.

#### 325. Invertebrate Systematics Laboratory (ZOL)

Winter. 2(0-6) ZOL 303. Open to Zoology majors only; others: approval of department. Comparative morphology and taxonomy of the major invertebrate phyla and an examination of their characteristic behavior and physiology.