401. *Regional Design Theory*

Winter. 2(2-0)

Concepts and policies affecting natural resource conservation, selection and location of significant human use areas, landscape development considerations and their environmental implications.

403. *Urban Design Theory*

Fall. 2(2-0)

Concepts and procedures for the organization, design and development of public and private urban forms and spaces, including survey of urban elements, cultural, ecological and aesthetic considerations, and interdisciplinary collaboration.

423. *Professional Graphics*

Winter. 4(1-6) L A 321.

Applications of advanced sketching, perspective and rendering techniques for typical professional presentations, including prints, reproductions, photography and multi-media audio-visual communications.

432. *Site Engineering*

Fall. 4(2-4) Senior majors and C E 251.

Principles and procedures for design of site development systems, horizontal and vertical road alignments, storm and sanitary sewers, site utilities and computer applications for preparation of site construction drawings.

441. *Regional Landscape Design*

Winter. 3(0-6) Senior majors and L A 401 concurrently.

Applications of regional design theory and landscape design methods to representative large scale land use and development projects, resource conservation, environmental restoration, and accommodation of various human activites. Field trips required.

443. *Urban Landscape Design*

Fall. 3(0-6) Senior majors and L A 403 concurrently.

Applications of urban design theory and landscape design methods to representative urban development projects, public plazas, pedestrian malls, civic and cultural complexes, etc., with written, oral and graphic representations. Field trips required.

451. *Ecological Planting Design*

Fall. 4(2-4) L A 250. L A 353 and HRT 211, HRT 212.

Selection, utilization and arrangement of natural materials for various site development purposes, with emphasis on consideration of natural environmental factors which affect plant growth and location for distinctive sites and uses. Field trips required.

463. *Architectural Design II*

Winter. 4(1-6) L A 360, L A 362.

Design of buildings and their groupings in relation to the landscape, including structural systems, form-space compositions, and applications to representative landscape development projects. Field trips required.

471. *History of Landscape Architecture*

Spring. 3(2-2)

Environmental design concepts and projects from 1850 to the present time, with emphasis on the development of the profession and practice of landscape architecture in the United States.

480. *Professional Practice*

Spring. 3(2-2) Senior majors.

Principles and procedures of professional landscape architectural practice, including ethics, client relations, registration, inter-professional collaboration and organization of operations for design implementation. Field trips required.

483. *Landscape Architecture Seminar*

Winter. 3(2-2) Senior majors.

Research presentation and discussion of significant current issues, trends, events and opportunities relating to contemporary theories and practices of landscape architecture.

489. *Landscape Architecture Internship*

Fall, Winter, Spring, Summer. 2(0-8) May reenroll for a maximum of 6 credits. Juniors, approval of school.

Supervised experience in approved public agencies and professional offices. Biweekly conferences. Eight work hours per week per term.

490. *Special Problems*

Fall, Winter, Spring, Summer. 2 to 5 credits. May reenroll for a maximum of 12 credits. Approval of school.

Investigation, for advanced undergraduate students in landscape architecture, developed from special interest areas.

499. *Landscape Architecture Design Thesis*

Spring, Summer. 5(1-8) Senior majors.

Demonstration of analytical, creative and technical competencies in the development of methods and/or concepts leading to design solutions for contemporary landscape architecture problems.

VETERINARY MEDICINE (COLLEGE OF) V M

500A. *Introduction to Veterinary Medicine I*

(SSM 501.) Summer. 2(2-0) Admission to professional veterinary program.

Species and breed identification, predisposition for specific diseases, basic care and feeding, restraint and handling of small domestic animals, unusual pets, and laboratory animals.

500B. *Introduction to Veterinary Medicine II*

Fall. 2(2-0) Second-term Veterinary Medicine students.

Large animal practice present and future. Fundamentals of equine conformation, gaits, shoeing, feeding and routine medical care. Economics and management factors in diseases of food animals.

500C. *Introduction to Veterinary Medicine III*

(LSM 503.) Winter. 4(3-3) Third-term Veterinary Medicine students.

Physical and systemic examination of the various domestic and laboratory species. Common restraint procedures, clinical skills, diagnostics and an approach to clients are included.

500D. *Introduction to Veterinary Medicine IV*

(SSM 502.) Spring. 4(3-3) Fourth-term Veterinary Medicine students.

Anesthetic principles, agents and techniques. Basic surgical principles, including aseptic technic, hemostasis, wound healing, suturing and suturing materials. Fundamentals of radiology.

500E. *Introduction to Veterinary Medicine V*

Spring. 3(3-0) Fourth-term Veterinary Medicine students.

Emphasis on behavior of animals relating to disease prevention and treatment. Lectures, discussions and demonstrations on veterinary ethology including animal communications, reproduction, restraint, handling, housing and feeding habits.

501. *Client Communication*

(500.) Spring. 1(0-2) Fourth-term Veteriinary Medicine students.

Communication and interviewing skills as the basis for establishing and maintaining effective client relationships.

503. *Metabolic Diseases and Endocrinology*

Summer. 2(2-0) Fifth-term Veterinary Medicine students.

Biochemical and physiological basis of metabolic and endocrine diseases of animals including diagnosis, treatment and management.

505. *Veterinary Epidemiology*

Summer. 2(2-0) Fifth-term Veterinary Medicine students.

Principles of epidemiology and their application in the study of diseases in animal populations.

507. *Urinary System*

Summer. 4(3-3) Fifth-term Veterinary Medicine students.

Integrative approach to the understanding of the urinary system in health and disease of animals.

509. *Hematopoietic System*

Summer. 2(1-3) Fifth-term Veterinary Medicine students.

Pathogenesis, diagnosis, and clinical management of diseases of the hematopoietic and lymphoid organs and tissues.

510. *Survey of Infectious Agents*

Fall. 4(4-0) Sixth-term Veterinary Medicine students.

Host-microorganism relationship in diseases of animals; laboratory diagnosis, treatment, control, and public health significance will be emphasized.

512. *Nervous System*

Fall. 3(3-0) Sixth-term Veterinary Medicine students.

Normal and abnormal neural structure and function in animals with emphasis on clinical neurology and neuropathology.

513. *Cardiovascular System*

Fall. 4(3-3) Sixth-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—includes diagnostic and surgical procedures and radiologic interpretation.

515. *Respiratory System*

Fall. 4(3-3) Sixth-term Veterinary Medicine students.

Pathogenesis, diagnosis, and management of respiratory diseases of animals; anatomical, physiological and surgical treatments—includes diagnostic and surgical procedures and radiologic interpretation.

516. *Reproductive System*

Fall. 5(4-3) Sixth-term Veterinary Medicine students.

Reproductive diseases of animals with emphasis on genital structure and function, endocrine interrelationships, methods for examination of mammary gland and reproductive tract, diagnosis, and treatment.

520. *Veterinary Public Health*

Winter. 3(3-0) Seventh-term Veterinary Medicine students.

Public health aspects of veterinary medicine; the nature of laws, ordinances, and regulations; and veterinary medicine's role in the protection of the environment, ecology, and ensurance of food hygiene.

522. *Digestive System and Nutrition*

Winter. 9(6-9) Seventh-term Veterinary Medicine students.

Pathogenesis, diagnosis, and treatment of diseases of the alimentary tract and digestive organs of animals. Recognition and rational therapy of nutritional diseases in animals.

524. *Integumentary System*

Winter. 4(3-3) Seventh-term Veterinary Medicine students.

Diseases of the integumentary system of animals with emphasis on laboratory examinations, interpretations of pathological features, diagnosis, and treatment.

526. *Musculoskeletal System I*

Winter. 4(2-6) Seventh-term Veterinary Medicine students.

Diagnosis and treatment of musculoskeletal diseases of animals with emphasis on pathological changes, radiological technics, and interpretation of radiographs. Surgical procedures applicable to small animals will be demonstrated.

530. *Veterinary Toxicology*

Spring. 4(4-0) Eighth-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.

532. *Visual and Auditory Systems*

Spring. 3(2-3) Eighth-term Veterinary Medicine students.

Methods of examination, diagnosis, and treatment of diseases involving the eyes or ears of animals with emphasis on the anatomical, physiological, and pathological features.

534. *Musculoskeletal System II*

Spring. 5(2-9) Eighth-term Veterinary Medicine students.

Diagnosis, prognosis, and management of musculoskeletal diseases of the equine with emphasis on anatomical relationships to normal and abnormal function. Surgical procedures applicable to equine and ruminant will be performed.

536. *Orthopedic Surgery*

Spring. 6(4-6) Eighth-term Veterinary Medicine students.

Principles of orthopedic surgery and anatomical relations of the musculoskeletal systems in the canine and feline.

538. *Veterinary Medical History, Ethics, Jurisprudence, and Epidemiology*

Spring. 2(2-0) Eighth-term Veterinary Medicine students.

Historical background, ethical principles, and legal responsibilities of the veterinary medical profession. Epidemiological problems will be resolved and discussed.

602. *Veterinary Practice Management and Jurisprudence*

Spring. 3(3-0) Satisfactory completion of term 7 of the professional veterinary program, approval of department.

Basic skills and legal responsibilities necessary to establish and effectively manage a practice of veterinary medicine.

ZOOLOGY ZOL

College of Human Medicine
College of Natural Science
College of Osteopathic Medicine

IDC. *Resource Ecology and Man*

For course description, see Interdisciplinary Courses.

301. *Nature and Man*

Spring. 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 or misfits into these. Lectures, laboratory and field trips illustrate this relationship.

302. *Vertebrate Life of the Past*

Fall 3(3-0) One course in physical or biological science or Juniors. Interdepartmental with and administered by the Department of Geology.

Fossil vertebrates from fish to man.

303. *Introductory Animal Systematics*

Fall. 5(5-0) B S 212.

General survey of animals including origin, evolution and dispersal, morphological characteristics, reproductive patterns, behavior, ecology and zoogeography of invertebrates and vertebrates.

304. *Biology, Behavior and Man*

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*

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*

Fall, Spring. 2(0-6) ZOL 317 or concurrently; B S 212.

Principles of development illustrated by analysis of the ontogeny of selected organisms.

320. *Vertebrate Systematics Laboratory*

Winter. 2(0-6) ZOL 303. Open to Zoology majors only; others: approval of department.

Systematics, morphology and natural history of vertebrate animals as illustrated by representative species within the seven classes.

325. *Invertebrate Systematics Laboratory*

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.

337. *The Fossil Record of Organic Evolution*

Spring. 3(3-0) One course in a natural science; Juniors. Interdepartmental with and administered by the Department of Geology.

The direct evidence for organic evolution in the fossil record. Evolution of life from prebiological systems to man. Impact of fossil discoveries on human thought.

341. *Human Heredity*

Fall, Winter, Spring, Summer. 4(4-0) Three terms of Natural Science; Sophomores; not open to zoology majors. Students may not receive credit in more than one of the following: ZOL 341, ZOL 441.

Inheritance of human, physiological, and psychological traits. Forces that influence human evolution. Applications of heredity in fields of education, sociology, anthropology, psychology, dentistry, and medicine.

344. *Introductory Animal Systematics Laboratory*

Fall. 1(0-3) ZOL 303 concurrently. Interdepartmental with and administered by Lyman Briggs College.

Laboratory examination of form and function of representative vertebrate and invertebrate animals.

389. *Animal Ecology*

Winter. 4(3-4) B S 212 or concurrently.

Animals in relation to their environment. Factors affecting the distribution and abundance of animals. Interrelationships between climate, soils, vegetation, geologic history and animal life. Population characteristics as related to reproduction and mortality factors.

391. *Zoological Problems*

Fall, Winter, Spring, Summer. 1 to 8 credits. May reenroll for a maximum of 12 credits. Juniors; B S 212; 6 credits in zoology; approval of department.

Advanced work in morphology, field zoology, genetics, mammalogy, ornithology, or ichthyology.

400H. *Honors Work*

Fall, Winter, Spring. Variable credit. Juniors.