

**562. Hematopoietic System**  
*Spring. 2(2-0) Sixth-term Veterinary Medicine students.*

Normal structure and function of the hematopoietic system and pathophysiologic effects of hematopoietic diseases. Clinical manifestations, laboratory evaluation and medical management.

**563. Visual System**  
*Spring. 2(2-0) Sixth-term Veterinary Medicine students.*

Methods of examination, diagnosis, and treatment of ocular diseases.

**564. Survey of Infectious Agents**  
*Winter. 3(3-0) Fifth-term veterinary medicine students.*

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

**566. Nervous System**  
*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**  
*Spring. 3(3-0) Sixth-term Veterinary Medicine students.*

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

**570. Principles of Anesthesia**  
*Fall. 2(2-0) Seventh-term Veterinary Medicine students.*

Principles and techniques of administering anesthetic agents. Supportive care including fluid therapy. Emergency procedures. Euthanasia agents.

**571. Core of Medicine Laboratories II**  
*Fall. 1(0-3) Seventh-term Veterinary Medicine students.*

Classification, diagnosis and treatment of diseases of the cardiovascular, respiratory and digestive systems of animals. Preanesthetic and anesthetic procedures and skills.

**572. Cardiovascular System**  
*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**  
*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**  
*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.

**578. Principles of Surgery I**  
*Fall. 3(2-3) Seventh-term Veterinary Medicine students.*

Fundamentals of surgery. Common procedures used in soft tissue surgery with small animals.

**580. Theriogenology**  
*Fall. 6(5-3) Seventh-term Veterinary Medicine students.*

Reproductive function and diseases of animals' genital structure and function and endocrine controls. Examination, diagnosis and treatment of the mammary gland and reproductive tract.

**581. Core of Medicine Laboratories III**  
*Winter. 3(0-9) Eighth-term Veterinary Medicine students.*

Diagnosis and treatment of diseases of the reproductive, digestive and musculoskeletal systems.

**582. Musculoskeletal System I**  
*Winter. 3(3-0) Eighth-term Veterinary Medicine students.*

Diagnosis and treatment of musculoskeletal diseases of animals with emphasis on pathological changes, radiological techniques, and interpretation of radiographs.

**586. Digestive System II**  
*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.

**588. Principles of Surgery II**  
*Winter. 3(2-3) Eighth-term Veterinary Medicine students.*

Fundamental large animal surgery. Surgical techniques and management of animals before, during and after surgery.

**590. Client Communication and Jurisprudence**  
*Spring. 2(2-0) Ninth-term Veterinary Medicine students.*

Communication and interviewing skills for effective client relations. Communication aspects of medical records and their use in medical problem solving. Legal responsibilities of the veterinary medical profession.

**591. Core of Medicine Laboratories IV**  
*Spring. 2(0-6) Ninth-term Veterinary Medicine students.*

Diagnosis and treatment of common toxicologic conditions, musculoskeletal disorders and orthopedic conditions in animals.

**592. Musculoskeletal System II**  
*Spring. 4(4-0) Eighth-term Veterinary Medicine students.*

Diagnosis, prognosis and management of musculoskeletal diseases of large animals. Anatomical relationships of normal to abnormal function. Surgical procedures applicable to the equine and ruminant. Radiographic diagnosis and interpretation of various lameness conditions.

**596. Diseases of Bones and Joints**  
*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.

**602. Veterinary Practice Management**  
*Spring. 2(2-0) Ninth-term Veterinary Medicine students, approval of college.*

Establishment of a veterinary practice.

**610. Veterinary Externship**  
*Fall, Winter, Spring, Summer. 6 to 12 credits. May reenroll for a maximum of 12 credits. Veterinary Medicine students; completion of preclinical courses and approval of college. Students may not receive credit in both V M 610 and LCS 674.*

Clinical or research experience in an off-campus setting.

**690. Special Problems in Veterinary Medicine**  
*Fall, Winter, Spring, Summer. 1 to 6 credits. May reenroll for a maximum of 24 credits. Professional veterinary medicine students and/or approval of department.*

Individual study under the direction of a faculty member on an experimental, theoretical or applied problem.

**WOMEN'S STUDIES  
PROGRAM** **W S**

**College of Arts and Letters  
College of Social Science**

**201. Introduction to Women's Studies: Women's Consciousness**  
*(IDC 233.) Fall, Winter, Spring. 4(4-0) Interdepartmental with the colleges of Arts and Letters and Social Science.*

Development of women's consciousness in various historical, cross-cultural and scientific contexts. Contexts basic to feminist thought are clarified. Critique of sexism in traditional scholarship.

**300. Special Topics in Women's Studies**  
*Spring of even-numbered years. 3(3-0) or 4(4-0) May reenroll for a maximum of 8 credits if different topic is taken. Sophomores, W S 201 or approval of instructor. Interdepartmental with the colleges of Arts and Letters and Social Science.*

Special topic emphasizing women and/or gender.

**305. Women's Studies Internship**  
*Fall, Winter, Spring, Summer. 2 to 4 credits. May reenroll for a maximum of 4 credits. Six credits of women's studies courses, approval of Women's Studies Program. Interdepartmental with the colleges of Arts and Letters and Social Science.*

Integration of feminist knowledge through work experience in legislative, community or educational settings.

**401. Women's Studies Senior Level Seminar**  
*Spring. 4(4-0) Juniors; W S 201 or six credits of ATL 181, ATL 182, ATL 183. Interdepartmental with the colleges of Arts and Letters and Social Science.*

Synthesis of course work in women's studies. Emphasis is on individualized research projects.

**402. Feminist Theory**  
*Fall. 4(4-0) Nine credits in women's studies courses, approval of instructor. Interdepartmental with the colleges of Arts and Letters and Social Science.*

Integrative theoretical approaches to women's studies; ways of conceptualizing sex and gender; varieties of explanation of sexual inequality; feminist critiques of traditional knowledge.

**Descriptions — Women's Studies Program  
of  
Courses**

**409. Independent Study in Women's Studies**  
Fall, Winter, Spring, Summer. 1 to 4 credits. May reenroll for a maximum of 8 credits. Juniors, approval of Women's Studies Program. Interdepartmental with the colleges of Arts and Letters and Social Science.  
Individual reading and research on women and gender.

**425. Women and Religion: Feminist Critiques Since 1970**  
Winter. 3(3-0) Juniors or approval of department. Interdepartmental with and administered by the Department of Religious Studies.  
Writing: and thought of contemporary Jewish and Christian feminist theologians; views on scripture, God-language, patriarchy, ministry, spirituality, ethics. Scriptural reinterpretations; overview of women's role and place in world religions.

**ZOOLOGY**

**ZOL**

**College of Human Medicine  
College of Natural Science**

**203. Resource Ecology**  
(IDC 200.) Fall, Winter, Spring, Summer. 3(3-0) Interdepartmental with the departments of Fisheries and Wildlife, Forestry, Geography, and Resource Development. Administered by the Department of Fisheries and Wildlife.  
Basic concepts of ecology which are the unifying basis for resource management, conservation policy and the analysis of environmental quality. Extensive use of guest lecturers.

**211. General Biology**  
Fall, Winter, Summer. 4(4-2) CEM 140 or high school chemistry. Not open to students with credit in LBS 242. Interdepartmental with the Biological Science Program and the Department of Botany and Plant Pathology. Administered by Biological Science Program.  
Principles of biological regulation and integration: genetics, development, and selected physiological topics.

**212. General Biology**  
Winter, Spring, Summer. 4(4-2) Not open to students with credit in LBS 140. Interdepartmental with the Biological Science Program and the Department of Botany and Plant Pathology. Administered by Biological Science Program.  
Principles of biological diversity: taxonomy and systematics, comparative physiology, and ecology.

**301. Nature and Homo Sapiens (N)**  
Spring. 4(4-0) Two terms of Natural Science; not open to zoology majors.  
A case study approach which explores the interaction of technical, social, economic and legal influences on the management of contemporary environmental issues in Michigan.

**302. Vertebrate Life of the Past**  
Fall. 3(3-0) One course in physical or biological science or Juniors. Interdepartmental with and administered by Geology.  
Fossil vertebrates from fish to humans.

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

**306. Invertebrate Biology**  
Spring. 4(3-3) B S 212.  
Systematics, morphology, and natural history of invertebrate animals. Laboratory includes identification of live and preserved animals and recognition of morphological characteristics of selected groups.

**307. Vertebrate Biology**  
Fall, Summer. Given at W. K. Kellogg Biological Station Summer term. Fall: 4(3-3) Summer: 4 credits. B S 212.  
Systematics, morphology and natural history of vertebrate animals. Laboratory includes identification of live and preserved animals and recognition of morphological characteristics of selected groups.

**313. Animal Behavior**  
Spring, Summer. Given at W. K. Kellogg Biological Station Summer of odd-numbered years. Spring, Summer. 4(4-0) Summer of odd-numbered years: 4 credits. B S 211.  
Description of the known behavior of the various vertebrate and invertebrate phyla with emphasis upon adaptive significance. Thus, special attention will be given to mating, defensive, and nutritive behavior. The genetics and ontogeny of behavioral patterns will be presented where known. Behavior will be related to the ecology of various animal populations.

**317. Principles of Development**  
Fall, Spring, Summer. 3(3-0) B S 211.  
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.

**337. The Fossil Record of Organic Evolution**  
Spring. 3(3-0) One course in a natural science; Juniors. Interdepartmental with and administered by Geology.  
The direct evidence for organic evolution in the fossil record. Evolution of life from prebiological systems to humans. Impact of fossil discoveries on human thought.

**341. Human Heredity**  
Fall, Winter. 4(4-0) 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.

**389. Animal Ecology**  
Winter, Summer. Given at W. K. Kellogg Biological Station Summer term. Winter: 4(3-4) Summer: 4 credits. 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. 1 to 5 credits. May reenroll for a maximum of 15 credits. Juniors; approval of department.

**401. Comparative Physiology I**  
Fall. 4(3-4) PSL 240 or B S 212; CEM 131 or CEM 141. Interdepartmental with and administered by the Department of Physiology.  
A comparison of osmoregulation, digestion, respiration, and other physiological processes in a wide range of organisms.

**402. Neurophysiology**  
Winter. 4(4-0) PSL 401 or BCH 401. Interdepartmental with the Department of Physiology.  
A comparison of sensory, motor, and other integrative mechanisms in animals.

**409. Cellular Aspects of Development**  
Winter. 5(3-6) B S 210, B S 211.  
The role of cells in the growth, differentiation and morphogenesis of animals ranging from protozoa to mammals.

**412. Natural History of Selected Invertebrates**  
Summer. Given at W. K. Kellogg Biological Station. 4 credits. B S 212 or approval of department.  
Systematics and ecology of selected invertebrate phyla with emphasis on the local fauna. Extensive field and laboratory work with living animals.

**414. Biological Mechanisms of Animal Behavior**  
Winter. 3(3-0) or 5(3-6) ZOL 313 recommended.  
Consideration of neurological and hormonal mechanisms controlling behavior. Emphasis will be upon mammalian systems, and will deal with the assumptions which underlie current concepts in the biology of behavior.

**415. Ecological Aspects of Animal Behavior**  
Fall. 4(4-0) ZOL 313.  
Consideration of orientation, navigation and homing behavior, food preferences, habitat selection, exploration, behavioral periodicity, communication, social organization and the embryology of behavior in both vertebrates and invertebrates.