572. *Cardiovascular System*
Spring. 2(2-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 543.
Pathogenesis, diagnosis, and management of cardiovascular diseases in animals. Anatomical, physiological, pathological, and pharmacological principles for medical and surgical treatment.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 572

574. *Respiratory System*
Spring. 3(3-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 547.
Pathogenesis, diagnosis, and management of respiratory diseases of animals. Anatomical, physiological, and surgical treatments. Diagnostic and surgical procedures. Radiologic interpretation.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 574

576. *Digestive System I*
Fall. 3(3-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 556.
Pathogenesis, diagnosis, and treatment of diseases of the alimentary tract and digestive organs of small animals.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 576

578. *Principles of Surgery I*
Fall. 2(1-3)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 545 or VM 557.
Fundamentals of surgery. Common procedures used in soft tissue surgery with small animals.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 578

580. *Theriogenology*
Fall. 4(3-3)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 553.
Reproductive function and diseases of animals' genital structure and function and endocrine controls. Examination, diagnosis, and treatment of the mammary gland and reproductive tract.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 580

581. *Core of Medicine Laboratories II*
Fall. 2(0-6)
R: Open only to third year graduate-professional students in College of Veterinary Medicine.
Diagnosis and treatment of diseases of the reproductive, digestive, and musculoskeletal systems.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 581, VM 571

582. *Musculoskeletal System I*
Spring. 2(2-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 546.
Diagnosis and treatment of musculoskeletal diseases of animals. Pathological changes, radiological techniques, and interpretation of radiographics.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 582

586. *Digestive System II*
Fall. 3(3-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 556.
Pathogenesis, diagnosis, and treatment of diseases of the alimentary tract and digestive organs of food animals and horses.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 586

588. *Principles of Surgery II*
Fall. 2(1-3)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 557.
Fundamental large animal surgery. Surgical techniques. Management of animals before, during, and after surgery.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 588

590. *Client Communication and Jurisprudence*
Spring. 1(1-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 541.
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.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 590

591. *Core of Medicine Laboratories IV*
Spring. 2(0-6)
R: Open only to third year graduate-professional students in College of Veterinary Medicine.
Diagnosis and treatment of common toxicologic conditions, musculoskeletal disorders, and orthopedic conditions in animals.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 591, VM 581, VM 571

592. *Musculoskeletal System II*
Spring. 3(3-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine. Not open to students with credit in VM 546.
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.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 592

596. *Diseases of Bones and Joints*
Spring. 2(2-0)
R: Open only to third year graduate-professional students in College of Veterinary Medicine.
Anatomy and pathophysiology. Diagnosis, prognosis, and treatment of abnormalities involving bones and joints.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 596

602. *Veterinary Practice Management*
Fall. 1(1-0)
R: Completion of the second year of the program in the College of Veterinary Medicine.
Establishment of a veterinary practice.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1994.
QA: VM 602

610. *Veterinary Externship*
Fall, Spring. 4 credits.
R: Completion of the third year of the program in the College of Veterinary Medicine.
Clinical or research experience in an off-campus setting.
Temporary approval effective from Fall Semester 1992 through Spring Semester 1995.
QA: VM 610

611. *Veterinary Externship*
Fall, Spring, Summer. 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Completion of 5 semesters of the graduate-professional program in the College of Veterinary Medicine.
Clinical or research experience in an off-campus setting.

690. *Special Problems in Veterinary Medicine*
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course.
R: Open only to graduate-professional students in the College of Veterinary Medicine.
Individual study directed by a faculty member on an experimental, theoretical, or applied problem. May involve off campus experience in a preceptorial mode.

WOMEN'S STUDIES WS

Women's Studies Program
College of Arts and Letters
College of Social Science

201. *Introduction to Women's Studies*
Fall, Spring. 4(4-0)
Diversity of women's situations in social, cultural, historical and international contexts. Focus on women as victims of oppression and as agents. Concepts basic to feminist thought: gender systems, patriarchy.
QA: WS 201

202. *Introduction to Contemporary Feminist Theories*
Fall. 3(3-0)
P: WS 201 or approval of program. R: Not open to freshmen.
Contemporary feminist theories of patriarchy, oppression, liberation, sexuality, and the meaning of "woman." Influences of liberalism, Marxism, Freud. Intersections of sex, race, class, and ethnicity. Theories by women of color.

203. *Bibliographic Methods for Women's Studies Research*
Fall of even-numbered years. 3(3-0)
P: Completion of Tier I writing requirement.
Women's studies as interdisciplinary knowledge. Bibliographic and reference sources. Library organization of information. Research problems.
QP: WS 201 QA: WS 300

301. *Sexual Violence Against Women and Children: Theory and Response*
Spring. 3(3-0)
P: WS 201. R: Not open to freshmen.
Sexual violence against women and children from theoretical and applied perspectives. Rape, battering, incest and sexual harassment. Intersection of race, class, gender and violence. Individual and collective strategies to prevent or deter assualt, race,
QP: WS 201 QA: WS 300

302. *Jewish Women's Experiences and Writings*
Spring. 3(3-0)
P: WS 201. R: Not open to freshmen.
Diverse experiences of Jewish women from a multidisciplinary perspective. Gender construction of Jewish and majority women and men. Generations of immigrant Jewish women. Anti-Semitism. Jewish feminism. Political and economic issues.
QP: WS 201 QA: WS 300

401. Feminist Theory
Spring. 4(4-0)
P: WS 201, WS 202. R: Not open to freshmen and sophomores.
Integrative and multidisciplinary approaches to theory in women's studies. Conceptualization of sex and gender and the subordination of women. Feminist critique of theories of knowledge. Comparison of evolving feminist theories.
QP: 9 WS CRS QA: WS 402

403. Women and Change in Developing Countries
Spring. 3(3-0)
P: WS 201; WS 202 or WS 203. R: Not open to freshmen and sophomores.
Effects of economic, political, and social change on women in developing countries. Interrelationships of gender, class, race, and nationality.
QP: WS 201 QA: WS 401, SOC 490, ANP 490

404. Women and the Law in the United States
Spring. 3(3-0)
P: WS 201; WS 202 or WS 203. R: Not open to freshmen and sophomores.
Law in the United States as a vehicle for structuring and maintaining women's social roles, and for social change.
QP: WS 201 QA: W S 300

405. Feminist Analyses of Education in the United States
Fall. 3(3-0) Interdepartmental with Teacher Education.
P: WS 201; WS 202 or WS 203. R: Not open to freshmen and sophomores.
Feminist perspectives on the role of gender in structuring educational experiences in elementary and secondary school.
QP: WS 201 QA: W S 401

490. Independent Study
Fall, Spring. 1 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
P: WS 201; WS 202 or WS 203. R: Open only to juniors and seniors; approval of program.
Individual reading and research on women and gender.
QA: WS 409

491. Special Topics
Spring. 3 to 4 credits. A student may earn a maximum of 8 credits in all enrollments for this course.
P: WS 201; WS 202 or 203. R: Not open to freshmen and sophomores.
In-depth study of special topic emphasizing women and gender.
QP: WS 201 QA: WS 300

492. Women's Studies Senior Seminar
Spring. 4(4-0)
P: WS 201, WS 203; WS 301 or WS 302. R: Not open to freshmen and sophomores.
Synthesis and elaboration of ideas and perspectives central to Women's studies. Current areas of interest and research in feminist scholarship.
QP: WS 201 QA: WS 401

493. Internship
Fall, Spring, Summer. 2 to 4 credits. A student may earn a maximum of 4 credits in all enrollments for this course.
P: WS 201; WS 202 or WS 203. R: Not open to freshmen and sophomores. Approval of program.
Integration of feminist knowledge through work experience related to women's concerns. Experience in legislative, community, or educational settings.
QA: WS 305

890. Individual Reading
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 12 credits in all enrollments for this course.
R: Approval of program.
Faculty supervised graduate level reading in special topics.
QA: WS 890

ZOOLOGY ZOL

Department of Zoology
College of Natural Science

141. Introductory Human Genetics
Spring. 3(3-0)
R: Not open to students in Biochemistry, Botany, Entomology, Medical Technology, Clinical Laboratory Sciences, Physiology, Zoology, Microbiology or Interdepartmental Biological Science or to students in the corresponding Lyman Briggs School coordinate m
Inheritance of human traits. Impact of genetic technology on society. Ethical and legal issues. Risks and benefits of genetic technology.

213. Animal Behavior
Spring. 3(3-0)
P: BS 110, BS 111 or LBS 144, LBS 145. R: Not open to freshmen.
Mechanisms and evolution of behavior (ethology).
QP: BS 210, BS 211, BS 212 or LBS 140, LBS 141, LBS 242 QA: ZOL 313

220. Developmental Biology
Fall. 4(3-3)
P: BS 110, BS 111 or LBS 144, LBS 145.
Principles of development, emphasizing vertebrates. Illustrations from morphological and experimental investigations.
QP: BS 211 or LBS 141 QA: ZOL 317, ZOL 318

221. Cells and Development
Spring. 4(3-3)
P: BS 110, BS 111 or LBS 144, LBS 145.
The role of cells in growth, differentiation and development of animals from protozoa to mammals.
QP: BS 210, BS 211, BS 212 or LBS 140, LBS 141 QA: ZOL 409, ZOL 482

228. Comparative Anatomy and Biology of Vertebrates
Spring. 4(3-3)
P: BS 110 or LBS 144.
Comparative morphology and natural history of vertebrates. Dissection of representatives of most vertebrate classes.
QP: BS 212 or LBS 140 QA: ZOL 428, ZOL 307

250. Ecology
Fall. 4(3-3) Summer: 4 credits. Given at W.K. Kellogg Biological Station. Interdepartmental with Botany and Plant Pathology.
P: BS 110 or LBS 144.
Plant and animal ecology. Interrelationships of plants and animals with the environment. Principles of population, community, and ecosystem ecology. Application of ecological principles to global sustainability.
QP: BS 212 or LBS 141 QA: ZOL 389, BOT 450

306. Invertebrate Biology
Spring. 4(3-3)
P: BS 110.
Systematics, morphology, and natural history of invertebrate animals. Identification of live and preserved specimens. Recognition of selected groups.
QP: BS 212 QA: ZOL 306

316. General Parasitology
Spring. 2(2-0)
P: BS 110, BS 111 or LBS 145.
Identification, life history, host-parasite relationships, and epidemiology of protozoan, helminth, acanthocephalan, copepod, and arthropod parasites of animals and humans.
QP: BS 210, BS 211, BS 212, EQV-LBS QA: MPH 437, MPH 416

316L. General Parasitology Laboratory
Spring. 1(0-2)
P: BS 110, BS 111 or LBS 145. C: ZOL 316
Laboratory diagnosis of protozoans, helminths, acanthocephalans, copepods, and arthropods that infect humans and animals. Animal necropsy.
QP: BS 210, BS 211, BS 212, EQV-LBS QA: MPH 437, MPH 418

341. Fundamental Genetics
Fall, Spring, Summer. 4(4-0) Interdepartmental with Botany and Plant Pathology.
P: BS 110 or LBS 144.
Principles of heredity in animals, plants and microorganisms. Formal and molecular methods in the study of gene structure, transmission, expression and evolution.
QP: BS 210, BS 211 QA: ZOL 441, ZOL 442

342. Advanced Genetics
Spring. 3(3-0)
P: ZOL 341.
Advanced topics in classical and molecular genetics including various forms of genetic mapping.
QP: ZOL 441, ZOL 317 QA: ZOL 442, ZOL 443

343. Genetics Laboratory
Spring. 2(0-4)
P: ZOL 341 or concurrently.
Experiments involving genetics of Drosophila and other eucaryotic organisms.
QP: ZOL 441

344. Human Genetics
Spring. 3(3-0)
P: ZOL 341. R: Not open to freshmen.
Inheritance of human traits. Medical, physiological and forensic applications. Biochemical and molecular genetics of human disease. Chromosomal disorders and their consequences. Prenatal and pre-symptomatic diagnosis. Legal and ethnical consideratio
QA: ZOL 341

345. Evolution
Fall. 3(3-0) Interdepartmental with Botany and Plant Pathology.
P: ZOL 341. R: Not open to freshmen.
Processes of evolutionary change in animals, plants. Microbes. Population genetics, microevolution, speciation, adaptive radiation, macroevolution. Origin of Homo sapiens.
QP: BS 212 QA: ZOL 445

350. Histology
Fall. 4(3-3)
P: BS 111 or LBS 145.
The structure of cells and their interactions to form tissues.
QP: BS 210 or LBS 141 QA: ZOL 450

353. Marine Biology
Fall of even-numbered years. 4(4-0)
P: BS 110; BOT 250 or ZOL 250 or ZOL 306.
Analysis of marine and estuarine systems. Integration of biology, chemistry, and physics. Life histories of marine organisms. Biology of special marine habitats. Physiological problems of marine life.
QP: BS 212 QA: ZOL 453

360. Biology of Birds and Mammals
Spring. 4(3-3) Summer: 4 credits. Given at W.K. Kellogg Biological Station.
P: BS 110 or LBS 144.
The behavior, ecology, evolution and systematics of birds and mammals with emphasis of biodiversity. Laboratories emphasize diversity of form and function, life history patterns and identification.
QP: BS 212 or LBS 140 QA: ZOL 461, ZOL 486

384. Biology of Amphibians and Reptiles
Fall of odd-numbered years. 3(2-3) Summer of even-numbered years: 3 credits. Given at W.K. Kellogg Biological Station.
P: ZOL 228.
Biology of amphibians and reptiles. Laboratory emphasis on diversity and on Michigan species. Field trips required.
QP: ZOL 307, ZOL 428 QA: ZOL 484

400H. Honors Work
Fall, Spring. 1 to 5 credits. A student may earn a maximum of 5 credits in all enrollments for this course.
R: Not open to freshmen and sophomores. Approval of department.
Honors work on a topic in zoology.
QA: ZOL 400H