292 Applications in Environmental Studies  
Fall. 2(1-2) Interdepartmental with Agriculture and Natural Resources; Engineering; Communication Arts and Sciences; Social Science. P: (NSC 192) R: Open only to students in the Specialization in Environmental Studies.

Community engagement project. Projects vary depending on student's major and area of environmental interest.

390 Special Problems  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.

Faculty directed individualized study of an interdisciplinary problem.

448 Ecology, Law and Economics  
Spring. 3(3-0) P: (EC 201) Review and integrate principles of ecology, fundamentals of law, and principles of economics into a conceptual model that describes interrelations among the natural system, the economy, and the state. Analyze and assess the legal-economic natural resource and environmental policies in the context of the integrated model. Relate the ecology-law-economics model to emerging paradigms of sustainable development, ecological economics, industrial ecology, and the Natural Step.

490 Special Problems  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.

Faculty directed individualized study of an interdisciplinary problem.

491 Selected Topics  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department.

Selected interdisciplinary topics not normally covered in other courses.

495 Capstone in Human Biology (W)  
Fall, Spring. 2(2-0) P: Completion of Tier I writing requirement. R: Open only to seniors in the Human Biology or Lyman Briggs Human Biology major.

Integration of human biology disciplines with a focus on health and disease.

496 Directed Study in Human Biology  
Fall, Spring, Summer. 1 to 3 credits. P: Completion of Tier I writing requirement.

Directed studies in human biology.

497 Internship in Human Biology  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: Completion of Tier I writing requirement.

Practical experience applying human biology training outside the classroom setting.

498 Research in Human Biology  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: Completion of Tier I writing requirement.

Research in faculty laboratories.

499 Research  
Fall, Spring, Summer. 1 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open only to juniors or seniors in the College of Natural Science with a teacher certification option. Research in faculty laboratories. Oral and written presentations.

802 Essentials of Electron Microscopy  
Fall. 2(2-0) Principles of operation and uses of transmission and scanning electron microscopy. Related electron beam instruments. Specimen preparation and analytical methods.

810 Transmission Electron Microscopy Laboratory  
Fall, Spring, Summer. 3(1-4) RB: (NSC 802) Use of transmission microscope and preparative equipment. Preparation techniques for specimens, photographic and darkroom use, and interpretation of micrographs.

820 Scanning Electron Microscopy; Energy Dispersive X-ray Microanalysis  
Fall, Spring. 3(2-2) RB: (NSC 802 or concurrently) Use of scanning electron microscope and energy dispersive x-ray microanalysis. Machine variables, artifacts, quantitative analysis, specimen preparation, darkroom procedures.

825 Special Problems in Microscopy  
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 40 credits in all enrollments for this course. RB: (NSC 802) and (NSC 810 or NSC 820 or NSC 837)

Use of microscopy techniques for selected research topics.

828 Food Safety Seminar Series  
Fall, Spring. 1(1-0) Interdepartmental with Veterinary Medicine; Agriculture and Natural Resources; Social Science. Administered by College of Veterinary Medicine. RB: Enrollment in graduate program in related discipline.

Selected current topics covering the broad areas of food safety as they relate to production, processing, transport, microbiology, toxicology, and social and human dimensions.

829 Problems in Food Safety  
Fall. 1(1-0) Interdepartmental with Veterinary Medicine; Agriculture and Natural Resources; Social Science. Administered by College of Veterinary Medicine. RB: Enrollment in graduate program in related discipline.

In-depth discussion of selected problems in food safety.

830 Nature and Practice of Science  
Fall, Spring. 1 credit. Foundations of scientific inquiry. Recommended scientific best-practices including principles and practices of research integrity and professionalism. Evaluation of scientific quality and productivity.

837 Confocal Microscopy  
Fall, Spring. 2(2-2) Interdepartmental with Crop and Soil Science.


840 Writing in the Sciences  
Fall, Spring, Summer. 2(2-0) A student may earn a maximum of 6 credits in all enrollments for this course. Interdepartmental with Arts and Letters. Discussion and critique of students’ writing in peer response workshop groups.

NEUROLOGY AND NOP OPTHALMOLOGY

Department of Neurology and Ophthalmology

College of Osteopathic Medicine

552 Medical Neuroscience  
Spring. 4(3-2) Interdepartmental with Physiology; Radiology; Human Anatomy. R: Graduate-professional students in the Colleges of Human Medicine and Osteopathic Medicine. SA: ANT 552

Correlation of normal structure and function of the human nervous system with clinical testing, classical lesions, and common diseases.

590 Special Topics in Clinical Neuroscience  
Fall, Spring, Summer. 1 to 6 credits. A student may earn a maximum of 12 credits in all enrollments for this course.

Work under the direction of a faculty member on an experimental, theoretical or applied problem in clinical neuroscience or ophthalmology.

617 Neurology Clerkship  
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. RB: (MED 608) R: Open only to graduate-professional students in College of Human Medicine. SA: MED 617

Office and inpatient experience. Evaluation and management of neurological disease.

620 Directed Studies  
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 24 credits in all enrollments for this course. RB: Completion of Semester 6 in the graduate-professional program. R: Open only to graduate-professional students in the College of Osteopathic Medicine. Study in general or specialty neurology and ophthalmology.

656 Neurology Clerkship  
Fall, Spring, Summer. 2 to 12 credits. A student may earn a maximum of 12 credits in all enrollments for this course. R: Open only to graduate-professional students in the College of Osteopathic Medicine upon completion of Units I and II. SA: PMR 656

Clinical exposure in neurology. Program structure developed to achieve proficiency in motor skills, aptitudes; comprehension of concepts and principles; patient evaluation, diagnosis, management, and therapy.
827 Physiology and Pharmacology of Excitable Cells
Fall. 4(4-0) Interdepartmental with Pharmacology and Toxicology; Psychology; Zoology. RB: Administered by Department of Pharmacology and Toxicology. Function of neurons and muscle at the cellular level: membrane biophysics and potentials, synaptic transmission, sensory nervous system function.

839 Systems Neuroscience
Spring. 4(4-0) Interdepartmental with Human Anatomy; Pharmacology and Toxicology; Psychology; Zoology. R: Open only to graduate students in the Colleges of Human Medicine, Osteopathic Medicine, Agriculture and Natural Resources, Natural Science, Social Science, and Veterinary Medicine. SA: ANT 839 Anatomy, pharmacology, and physiology of multicellular neural systems. Sensory, motor, autonomic, and chemo-regulatory systems in vertebrate brains.

885 Vertebrate Neural Systems
Spring. 3(3-2) Interdepartmental with Human Anatomy; Physiology. Comparative analysis of major component systems of vertebrate brains. Evolution, ontogeny, structure, and function in fish, amphibians, reptiles, birds, and mammals.

999 Doctoral Dissertation Research
Fall, Spring. 1 to 24 credits. A student may earn a maximum of 120 credits in all enrollments for this course. Doctoral dissertation research.