NATURAL SCIENCE NSC

College of Natural Science

101 Preview of Science
Fall. 1 credit. Interdepartmental with Agriculture and Natural Resources and Engineering and Social Science. Administered by Natural Science. R: Approval of college.
Overview of natural sciences. Transitional problems. Communications and computer skills. Problem-solving skills. Diversity and ethics problems in science. Science and society.

102 Preprofessional Freshman Seminar
Fall, Spring. 1(1-0)
Overview of human health care professions with emphasis on academic and nonacademic undergraduate preparation, campus resources, communication and computer skills, and collaborative learning.

150 Preview of Biomedical Research
Spring. 1(1-0) Interdepartmental with Medical Technology. Administered by Medical Technology.
Exploration of biomedical research careers. Biomedical research in the United States: funding, safety, regulatory agencies, ethics, experimental design, trouble-shooting, and data interpretation.

192 Environmental Issues Seminar
Fall, Spring. 1 credit. A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Agriculture and Natural Resources and Communication Arts and Sciences and Engineering and Social Science. Administered by Natural Science. R: Open only to students in the College of Agriculture and Natural Resources or College of Engineering or College of Natural Science or College of Communication Arts and Sciences or College of Social Science. Approval of college.
Environmental issues and problems explored from a variety of perspectives, including legal, scientific, historical, political, socio-economic, and technical points of view.

201 Science Problem Solving Seminar I
Fall. 2(2-0) P:M: (MTH 1825 or concurrently) or (MTH 116 or concurrently) or (MTH 132 or concurrently) R: Approval of college.
Problem solving principles and strategies used in the disciplines of science and mathematics. Activities reflecting the types of problems encountered.

202 Science Problem Solving Seminar II
Spring. 2(2-0) P:M: NSC 201 R: Approval of college.
Continuation of NSC 201.

203 Drew Laboratory Directed Studies
Fall, Spring, Summer. 1 to 2 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P:M: NSC 202 R: Open to students in the Charles Drew Science Enrichment Laboratory.
Using topics related to a faculty member's ongoing research, students explore the relationship between science and technology and social issues.

292 Applications in Environmental Studies
Fall. 2(1-2) Interdepartmental with Agriculture and Natural Resources and Communication Arts and Sciences and Engineering and Social Science. Administered by Natural Science. P:M: 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) Interdepartmental with James Madison College. Administered by Natural Science. P:M: 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:M: 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:M: 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:M: 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:M: 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 Biological Science Transmission Electron Microscopy Laboratory
Fall, Spring. 3(1-4) R: Approval of department.
Use of transmission microscope and preparative equipment in the biological sciences. Sample preparation techniques. Sectioning for electron microscopy.

815 Physical Science Transmission Electron Microscopy Laboratory
Fall, Spring. 3(1-4) R: Approval of department.
Experimental methods for transmission electron microscopy in the physical sciences, including digital photography, imaging, diffraction, and microanalysis.

816 Advanced Physical Science Transmission Electron Microscopy Laboratory
Fall, Spring. 1(1-0) A student may earn a maximum of 5 credits in all enrollments for this course. P:M: NSC 815 R: Open to students in the Physical Science-Interdepartmental major or approval of department.
Advanced experimental methods of transmission electron microscopy for the physical sciences. Bright field-dark field imaging. High resolution transmission electron microscope imaging, nano beam diffraction and convergent beam diffraction. Scanning transmission electron microscope imaging, energy filtered transmission electron microscope imaging and electron energy loss spectroscopy.

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 Agriculture and Natural Resources and Social Science and Veterinary Medicine. Administered by 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 Agriculture and Natural Resources and Social Science and Veterinary Medicine. Administered by 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 Sciences. Administered by Natural Science.
Confocal imaging, theory and practice. Basic optics. Lasers. Light paths for transmission, florescence and reflection. Image quality, analysis and processing.

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. Administered by Natural Science.
Discussion and critique of students' writing in peer response workshop groups