

NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
ENV 124 – CROSS-DISCIPLINARY EXPLORATIONS IN SCIENCE AND SOCIETY (4 CR.)

Course Description

Provides multi-disciplinary environmental science applications, primarily for non-science majors. Integrates environmental science with topics from biology, chemistry and geology. Addresses other scientific concepts according to the expertise of the instructor. Focuses on scientific investigations centered on a particular integrated, contemporary theme. Lecture 3 hours per week. Recitation and laboratory 3 hours per week. Total 6 hours per week.

General Course Purpose

The general purpose of this course is to give the student an appreciation for the uses of scientific inquiry in the contemporary world and to develop an ability by the student to apply the scientific method in various natural settings. It is intended for non-science majors who desire or need a lab science course, particularly those interested in environmental science and intends to transfer with General Education requirements or those in applied science majors. This theme-based course will discuss technical scientific topics primarily from the field of environmental science, with numerous critical concepts from the other science disciplines of Biology, Chemistry, and Geology, with additional topics from Astronomy, Physics, Toxicology or Microbiology, depending on the specialty of the instructors available. Students will learn to use the scientific method to solve real world, open-ended problems, and apply this style of thinking to decision-making processes. Special emphasis will be placed upon relating the theme of the course and its interrelated scientific concepts to relevant current environmental events and societal issues. Students will be prepared to pursue advanced study in the sciences. Guest lectures and one-day mandatory field trips will typically be a part of this course.

Course Prerequisites/Corequisites

Students should be able to use arithmetic and basic algebra in problem solving and be able to read and express themselves both orally and in writing. A high school level competency in earth science, biology, chemistry or physics is highly recommended. NOVA will require placement in ENG 111 and MTH 151.

Course Objectives

Upon completion of this course, the student should be able to:

- Describe and apply the basic laws of nature in diverse fields including biology, chemistry, geology, and environmental science.
- Describe and apply the interrelationships among physical, chemical and biological processes
- Incorporate scientific concepts and current issues in science into discussions of current environmental events, policies and societal issues.
- Pursue advanced coursework in environmental science, biology, chemistry, and geology
- Demonstrate scientific thinking and engage in hypothesis-driven experimental methods.
- Apply the scientific method to decision-making in a variety of fields
- Understand various ways that science intersects with our daily lives to make better, more informed decisions.
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Major Topics to be Included

- Scientific measurement
- Scientific method
- Pollution
- Ecology and Adaptation
- The Earth's environment
- Ecology and the Future
- Rocks: the records of geological time
- Plate Tectonics
- Hydrology Cycle, groundwater and aquifers
- Karst Topography
- Cellular Structure and Function
- Cell Membrane Structure and Function
- Introduction to Microbes and infectious disease
- Atoms and molecules
- Basic inorganic chemistry
- Introduction to the periodic table
- Applied Chemistry: Introduction to Toxicology
- Use of the microscope
- Ecological fieldwork including experimental design, data collection, and data analysis
- Scientific lab report writing
- Soviet, British and other country Intelligence issues