NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
ENV 122 – APPLICATIONS IN ENVIRONMENTAL SCIENCE (4 CR.)

Course Description

Applies the basic concepts of environmental science to human interactions with the environment. Examines environmental science in the context of the societal implications with a focus on sustainability. Assignments require college-level reading fluency, coherent written communication, and basic mathematical skills. Intended for students not majoring in science. **This is a UCGS transfer course.** Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

The purpose of ENV 122 is to provide non-science majors with the opportunity to apply concepts of environmental science to sustainability.

Course Prerequisites/Corequisites

Prerequisite: Satisfactory placement score for ENG 111.

Course Objectives

- Scientific Literacy
  - Apply the scientific method to laboratory exercises.
  - Develop and test a hypothesis
  - Read and interpret data, including simple graphs
  - Explain how science concepts relate to society
  - Communicate scientific ideas by written and/or oral communication
- Critical Thinking
  - Discriminate among degrees of credibility, accuracy, and reliability of inferences drawn from given data
  - Determine whether certain conclusions or consequences are supported by the information provided
  - Weigh pros and cons of environmental solutions, such as renewable energy, organic agriculture, climate change policies, etc.
- Civic Engagement
  - Apply environmental concepts to real world scenarios
  - Discuss how we can mitigate and adapt to climate change.
  - Use disciplinary and civic knowledge to engage, assess, design, implement and evaluate environmentally sustainable actions
  - Identify the role of stakeholders in environmental sustainability
  - Use disciplinary and civic knowledge to assess environmentally sustainable actions

Major Topics to be Included

- Types of Energy and Energy Conservation
  - Describe several types of conventional energy and its advantages and disadvantages (coal, oil, nuclear, and natural gas)
  - Describe several types of renewable energy sources and advantages and disadvantages (hydropower, solar, wind, and geothermal)
  - Summarize the potential and risk of various energy sources
  - Evaluate strategies for energy efficiencies.
  - Give examples of how we can transition to more sustainable energy.
- Environmental Issues: Air
  - Identify the causes of air pollution (natural and man-made)
  - Define air pollution and its effect on air quality
  - Describe air pollution related disease and disorders

    - Evaluate air pollution progress and efforts
    - Examine anthropogenic causes of climate change
    - Describe current and future impacts of climate change on the environment and human populations
- Environmental Issues: Food and Soils
    - Describe the patterns of world food sources and their relations to climate
    - Discuss nutritional requirements and their relationship to health
    - Describe methods of farming, including genetic engineering
    - Evaluate food related progress and efforts
    - Describe the components, use, and conservation of soils
    - Discuss pesticides and their impact on the environment
    - Evaluate methods of organic and sustainable agriculture
- Environmental Issues: Water
    - Discuss the importance of water as humanity's most vital natural resource and reasons for its shortages
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    - Identify sources of water pollution and its control
    - Identify the relationship between water quality and health for both humans and wildlife
    - Evaluate water pollution related progress and efforts
    - Identify the ways to preserve water as a vital resource
- Environmental Issues: Toxicology and Waste
    - Recognize that environmental diseases can be directly attributed to unhealthy, adverse environmental factors (exposure to toxic chemicals, radiation, air pollution, water contamination, inadequate sanitation, etc.)
    - Evaluate how we may lessen the sources of disease-causing pollution
    - Investigate the diseases caused by adverse environment factors
    - Evaluate the importance of maintaining a collective healthy environment
    - Describe the municipal waste stream
    - Explain how both municipal waste and hazardous waste are disposed
- Environmental Policy and Economics
    - Compare ecological economics (steady state economics) to neoclassical economics
    - Summarize how market economics can affect resource use and the environment
    - Describe the economic value of functioning ecosystems
    - Describe community based and green approaches to policy
    - Describe major U.S. environmental laws and evaluate ways these policies are shaped via 3 branches of the government
    - Explain the purpose of international treaties and conventions
    - Recognize ways to lessen the exposure to toxic social factors in the environment, such as environmental migration and racism