NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
ENV 121 – FOUNDATIONS OF ENVIRONMENTAL SCIENCE (4 CR.)

Course Description

Focuses on basic physical, chemical, and biological principles with an emphasis on the interactions between humans and the environment. Assignments require college-level reading fluency, coherent written and oral communication, and basic mathematical skills. Intended for students not majoring in science. **This is a Passport and UCGS transfer course**. Can be taken by itself or before or after ENV 122.
Lecture 3 hours. Laboratory 3 hours. Total 6 hours per week.

General Course Purpose

The purpose of ENV 121 is to provide non-science majors with an introduction to the scientific principles of environmental science with an emphasis on the interactions between humans and the environment.

Course Prerequisites/Corequisites

Prerequisite: Satisfactory placement score for ENG 111.

Course Objectives

- Scientific Literacy
  - Apply the scientific method to make informed decisions and engage with issues related to environmental science
  - Develop, convey, and exchange ideas in writing on different topics in environmental science.
- Critical Thinking
  - Evaluate different perspectives, opinions, and statements about environmental issues in terms of their logic, content, scientific merit, and biases.
- Civic Engagement
  - Examine the role of environmental ethics in decision-making and environmental stewardship.
  - Reflect critically about student roles and identities as citizens, consumers and environmental actors in a complex, interconnected natural world.

Major Topics to be Included

- Principles of Environmental Science
  - Define the purpose and scope of environmental science
  - Differentiate between sound science and nonscience
  - Apply the scientific method by completing an experiment
  - Relate the history of environmental ideas to our current relationship to the environment
  - Apply a systems approach to science
  - Apply basic chemistry and thermodynamics to environmental processes
  - Describe connections between climate change and environmental issues
- From Species to Ecosystem
  - Differentiate among population, species, community, ecosystem, and biosphere
  - Classify ecosystems as specific biomes (or aquatic zones)
  - Interpret food webs and energy flow through trophic levels
  - Discuss the limits on population growth
  - Differentiate between exponential and logistic growth
  - Explain how communities and ecosystems respond to disturbance, including invasive species, keystone species removal, and ecological succession.
- Evolution
  - Describe how life is classified and species are defined

    - Explain how evolution has led to the biodiversity we observe today.
    - Describe the process of evolution and how it affects how species interact with each other and their environment
    - Differentiate among the mechanisms of evolution (for example: gene flow, genetic drift, natural selection)
- Abiotic Environment
    - Analyze how humans impact natural biogeochemical cycles
    - Relate climatic conditions to the biotic environment
    - Understand natural climatic processes
    - Explain the impact of mineral resource extraction
    - Understand basic principles of geology (rock cycle, tectonic plates, fossil fuel formation, soil structure)
- Conservation
    - Describe human impacts on the environment with an emphasis on the biodiversity crisis (HIPPOC)
    - Correlate human activities with the degradation of ecosystem services and emphasize our role in environmental stewardship
    - Examine possible solutions to species and ecosystem conservation and biodiversity restoration
    - Identify how restoration ecology and preserving landscapes can be used in conservation
- Human Populations
    - Trace the history of human population growth
    - Compare and contrast the factors determining population growth
    - Analyze the factors determining the human population growth
    - Describe demographic transition and its impact on environment
    - Identify how human population size, density, and resource use affect the environment