UNDERGRADUATE COURSES OF STUDY

ENVIRONMENTAL SCIENCE

ES 111.ENVIRONMENTAL SUSTAINABILITY

This course teaches students the skills to both define sustainability and to assess if a given process or product can be deemed "sustainable." Synthesis of fundamental ecological principles and anthropogenic activities will be covered. Conversation about pollution prevention, ecological risk, and remediation will help students practice sustainability as world citizens. (General Education – Scientific and Mathematical Reasoning non-laboratory science) ***Three credit hours.***

ES 265.FIELD METHODS

This course introduces environmental sampling and analysis methods for biotic and abiotic components of ecosystems. Students will plan field data collection methods, implement those methods, analyze collected data, use those data and results to generate assessments, and report their findings to a variety of audiences. Two hours lecture, four hours laboratory weekly. Prerequisites: BIOL 111 and CHEM 112 or instructor permission. ***Three credit hours.***

ES 301.INTRODUCTION TO ENVIRONMENTAL SCIENCE 1

First semester study of the environment emphasizing the physical, chemical, and biological foundations of human society and the interactions between people and their environment. Topics include the Earth and its hydrological and biogeochemical cycles, population dynamics, environmental ethics, politics, economics and law, environmental sustainability, renewable and nonrenewable resources and their use, and climate change. Three hours lecture, one hour seminar per week. ***Four credit hours***.

ES 302.INTRODUCTION TO ENVIRONMENTAL SCIENCE 2

Second semester of study of the environment emphasizing the chemical, geological, biological, and physical effects of human society on the biosphere and our responses to them. Topics include environmental issues such as water pollution, solid waste disposal, risk assessment, species extinction and conservation, land use and urban development. Three hours lecture, one hour seminar per week. ***Four credit hours.***

ES 314.CULTURAL PERSPECTIVES OF GLOBAL CLIMATE CHANGE

Global climate change is arguably the most important science-based issue of our time. Its impact on cultures, institutions, economies, ecology, and other Earth systems are indelible and serious. The many cultures on Earth are affected by and respond to climate change in different ways. Understanding various cultural perspectives regarding this challenge is essential for an accurate and complete understanding of the impacts of climate change, as well as to understand what is possible in the way of adaptation and mitigation solutions to the challenge. In this course, the science of climate change will be reviewed in order to understand its causes and effects, and study how cultures other than our own regard and respond to climate change. Students will develop a critical understanding of these relationships as they study several developing areas of the world. (General Education – World Cultures) ***Three credit hours.***

ES 355.GEOGRAPHIC INFORMATION SYSTEMS.

This course provides advanced hands-on experience in the use and creation of geographic information systems (GIS) with the goal of preparing students for the job market or graduate programs in environmental science and related fields. With an emphasis on acquiring, organizing, managing, and visualizing spatial data, students will be prepared to use GIS for research purposes and to create and deploy methods of field data collection. Spatial data will be analyzed and visualized in QGIS and R. Three hours lecture weekly. Prerequisite: ES 265 or instructor permission. ***Three credit hours.***

ES 390.GLOBAL TOPICS IN ENVIRONMENTAL SCIENCE

This course provides an in-depth study of different topics in Environmental Science. Topics are of global importance and will be covered from multiple perspectives (e.g., global climate change, energy use, population, etc.). Specific topics will be announced in advance. Prerequisite: Completion of one or more laboratory science courses with "C" or better. Three hours lecture weekly. ***Three credit hours.***

ES 455.ENVIRONMENTAL DATA SCIENCE.

This course provides advanced experience in collecting, organizing, analyzing, and visualizing data relevant to environmental science. Types of data will include meteorological, spatial, geochemical, biodiversity, and socioeconomic. Analyses appropriate to those types of data will be conducted by way of command-line coding and GUI operations in the R, Python, and QGIS environments. This work will culminate in the drafting, revision, and presentation of the products of these analyses. Three hours lecture, three hours lab weekly. Prerequisite: CHEM 221 or instructor permission. ***Four credit hours***.

ES 490.INTERNSHIP IN ENVIRONMENTAL SCIENCE

This course gives students practical experience with an approved governmental or private organization involved in environmental investigation, research, regulation, monitoring, assessment, or compliance. The experience will be supervised by the instructor, who will schedule conferences with the student. The student will maintain a journal of experiences and will submit it and a final paper and/or presentation describing the experience and the knowledge gained from it. The student is responsible for meeting all living and travel expenses. A minimum of 3 hours per week of on-the-job experience for at least 11 weeks is required for each hour of credit. The prerequisites: BIOL 111, CHEM 111, and instructor permission. Graded pass/fail. ***Three or four credit hours*.**