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Interdisciplinary Program: Environmental Science
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The practice of environmental science involves the application of multiple disciplines, including biological, chemical and physical sciences, to the study of the environment and environmental issues. Researchers in this interdisciplinary field approach problems with a broad perspective that favors insightful thinking. The critical and complex nature of many of today's environmental issues requires interdisciplinary thinking for effective solutions.

Undergraduate environmental science majors are equipped to pursue a wide variety of issues; according to The National Center for Education Statistics, subjects such as “abating or controlling environmental pollution and degradation; the interaction between human society and the natural environment; and natural resource management.”¹ My interests lie in the field of ecology, which relates closely to environmental science. I envision myself researching the effects of human societal growth and non-environmentally friendly practices on certain habitats or organisms, possibly in temperate mountain zones or deciduous forests. To pursue this degree and research, my undergraduate experience should provide me a basic working knowledge of organic chemistry, plant and animal biology, and ecological research methods. Based on the following proposed environmental science track, I could fulfill these needs.

After much research, I saw a trend in requirements for ecology graduate programs – at most, a two-course sequence in both biology and chemistry, two courses in mathematics or statistics, genetics and ecology and evolution². No major at Hendrix encompasses these requirements. I could feasibly pursue a biology or environmental studies (emphasis in biology) major and enroll in additional courses to meet ecology graduate program entrance requirements. However, one joy of seeking a liberal arts degree at Hendrix is having the opportunity to follow up on interests outside of your major. The proposed environmental science major provides me a concise way to prepare myself for graduate school and future research and gives me room to

enroll in courses outside those required for my major, including music and additional biology courses.

The proposal for the environmental science major includes 1) a core of classes, 2) an independent research project, and 3) a senior capstone experience. The research and senior capstone experiences will not be counted for course credit. The core courses cover the biological, chemical and mathematical sciences and, from what Hendrix offers, the earth sciences. From the biological options, I could choose to pursue either the botany or zoology related courses. The beauty of this plan, however, is that I would have room to take a number of courses within both organismal disciplines. This sequence of courses and research experience will effectively prepare me for my graduate pursuits by concentrating my studies. With this specialized major, I would have room to enroll in courses within an array of disciplines, diversifying my liberal arts experience.

1) The Core:

PHYS 170 Introductory Earth Science

BIOL 150 Cell Biology

BIOL 190 Botany

or

BIOL 220 Zoology

BIOL 250 Genetics

BIOL 365 Ecology and Evolution

Any 3 upper-level biology courses from the following list:

- o BIOL 300 Comparative Animal Behavior
- o BIOL 330 Plant Systematics
- o BIOL 335 Marine Biology
- o BIOL 360 Algae and Fungi
- o BIOL 370 Plant Physiology
- o BIOL 460 Evolution
- o BIOL 480 Field Ecology

CHEM 110 General Chemistry I

CHEM 120 General Chemistry II

CHEM 240 Organic Chemistry I

CHEM 280 Environmental Analysis

MATH 215 Statistical Analysis
or
PSYC 290 Statistics

Supporting Courses:

- o EVST 110 Introduction to Environmental Studies
- o MATH 130 Calculus I
- o ANTH 335 Geographic Information Science

2) Research:

1) Two semesters of research at Hendrix

OR

2) One summer (minimum of 8 weeks at 40 hours/week) of research at Hendrix or another pre-approved summer program.

3) Senior Capstone:

1) A written report of the student's research project, graded by the advisor.

2) An oral presentation of the research project to the major committee.

At this point in my career at Hendrix, to complete this major and fulfill graduation requirements, I need to take PHYS 179 *Introductory Earth Science* and BIOL 365 *Ecology and Evolution* and pass BIOL 370 *Plant Physiology*, BIOL 460 *Evolution* and CHEM 280 *Environmental Analysis* (all of which I am currently enrolled in). I have already fulfilled my domains and completed all other course requirements for this major. For the research portion of the major, I am currently applying for participation in REU sites for this summer. If I am not chosen for any site, I plan on participating in research at Hendrix during my senior year. If neither of these two plans work out, I am currently part of Dr. Joyce Hardin's research team and could use my research experience from this year to complete the senior capstone.

¹ National Center for Education Statistics. *Classification of Instructional Materials*. United States Department of Education, Center for Education Sciences, 2000.

² Rutgers School of Environmental and Biological Sciences, Ecology and Evolution Graduate Programs <http://ecoevo.rutgers.edu/degree+info.html>

Colorado State University, Graduate Degree Program in Ecology
<http://ecology.colostate.edu/prospective.aspx>

University of California, Ecology Graduate Group, Preliminary Course Work Preparation
<http://ecology.ucdavis.edu/admission/coursereqs.html>

Dartmouth College, Ecology and Evolutionary Biology, Admission to the Degree Program
<http://dartmouth.edu/biology/graduate/ecology-evolutionary-biology/information-prospective-applicants>

The University of Texas at Austin, Ecology, Evolution and Behavior Graduate Program,
Requirements for Admission http://www.biosci.utexas.edu/graduate/eeb/pro_apply.aspx