The Need Is Real

SCIENCE:

Hazardous Chemicals: Exposure to hazardous chemicals has been implicated in numerous adverse effects on humans from birth defects to cancer. Global pesticide use results in 3.5 - 5 million acute poisonings a year.

Oxygen Depletion: The oxygen-depleted 'dead zone' that now appears off the US Gulf Coast each summer - at the peak of fertilizer run-off from the Corn Belt - is the size of New Jersey.

Wildlife Extinction: In 1996, 25% of the world's approximately 4,630 mammal species and 11% of the 9,675 bird species were at significant risk of total extinction.

Ozone Depletion: Without the Montreal Protocol, levels of ozone-depleting substances would have been five times higher by 2050 than they are today.

Air Pollution: Global emissions of CO_2 reached a new high of nearly 23,900 million tons in 1996 - nearly 4 times the 1950 total.

Coral Reefs Threatened: More than half the world's coral reefs are threatened by human activities, with up to 80% at risk in the most populated areas.

SOURCE: UN 2000 Global Environment Outlook

ENGINEERING:

Hazardous Waste: There are 1,237 contaminated sites on the National Priorities List, with the possible listing of an additional 10,154. In 2003, there were 205 U.S. cities with `brownfields' sites awaiting cleanup and redevelopment. It is estimated that the redevelopment of those sites would generate 576,373 new jobs and $1.9 billion annually for the economy.

Drinking Water: America faces a shortfall of $11 billion annually to replace aging facilities and comply with safe drinking water regulations.

Wastewater: Aging wastewater management systems discharge billions of gallons of untreated sewage into U.S. surface waters each year. The EPA estimates that the nation must invest $390 billion over the next 20 years to replace existing systems and build new ones to meet increasing demands.

Solid Waste: The nation's operating municipal landfills are declining in total numbers, but capacity has remained steady due to the construction of numerous regional landfills. In 2002, the US produced 369 million tons of solid waste of all types. Only about a quarter of that total was recycled or recovered.

SOURCE: 2005 ASCE Progress Report Card for America's Infrastructure

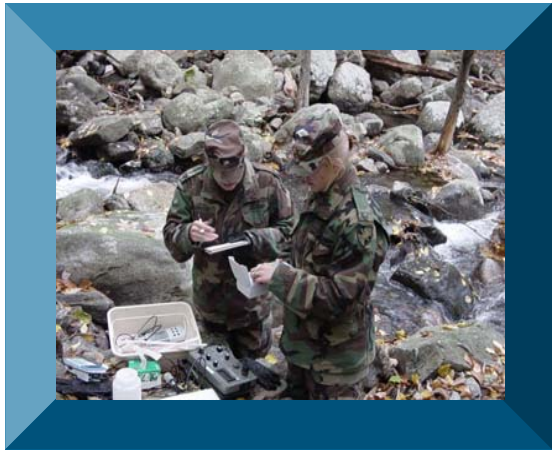
Department of Geography & Environmental Engineering:

Offering courses and majors that lead to:

- The understanding of other people that is necessary for preserving peace.
- The understanding of our environment that is critical for security and sustainability.
- The understanding of terrain that is key to victory in battle.

You've picked a profession that is making a difference *IN* the world…

How about picking a major that is making a difference *WITH* the world?



Environmental Engineering and Environmental Science

Environmental Engineering and Environmental Studies Majors

***Black** colored courses are required by both majors.*
***Green** colored course required only by Environmental Studies.*
***Blue** colored courses required by Environmental Engineering.*
*Environmental Studies majors only take two of the **blue** courses.*

Environmental Chemistry
Environmental Science
Physical Geology
Thermal Fluids Systems I
Air Pollution
Environmental Biological Systems
Physical & Chemical Treatment
Biochemical Treatment
Water Resources Planning & Design
Advanced Environmental Process Design
Solid & Hazardous Wastes
Hydrogeology
Statics & Dynamics
Hydrology
Vector Calculus & Partial Differential Eqns
Information Technologies II
Field Electives *

** Engineering majors take 2 Field Electives.*
** Environmental studies majors take 1 Field Elective.*

The environmental engineering major is an ABET accredited engineering program. ABET accreditation enables graduates to take the first step toward becoming a professional engineer and is a prerequisite for many engineering graduate programs. A 43 course honors program is offered in the environmental engineering major and provides greater depth and independent discovery opportunities.

100% of our engineering majors have passed the Fundamental Engineering Exam in the **last 3 years!**

The environmental engineering studies major offers a strong foundation in environmental subjects and problem solving, but does not directly lead to professional licensure. This major prepares graduates for continued studies in environ-mental management or environmental law.

An Army and a Nation await your service. We mentor skills that will help you to succeed for both.

Environmental Engineering

The application of science and engineering principles to minimize the adverse effects of human activities on the environment and to provide healthful resources like clean air and water for use by humans and other living things.

Who Should Study Env Eng?

Cadets who are concerned with the environment around them, see themselves as problem solvers, and are interested in the practice of engineering and the pursuit of professional engineering (PE) licensure.

Environmental Science

An integrative, holistic science based study of the physical, chemical, and biological processes that shape the environment and how human activity affects and is affected by these processes.

Who Should Study Env Sci?

Cadets who want to develop scientific critical thinking skills to understand and mitigate the environmental challenges facing us in the 21st century.

Environmental Science Major

3 Course Environmental Engineering Sequence
Biology
Geography of Global Cultures
Climatology or Air Pollution
Physical Geology
Ecology
Environmental Security
2 Environmental Science Directed Electives **
1 Environmental Science Field Elective **
1 Environmental Tools Elective (e.g. GIS)

** Electives can be tailored to assist cadets interested in taking the MCAT and meeting the minimum requirements for medical school eligibility.

The environmental science major studies the interactions among the hydrosphere, atmosphere, lithosphere, and biosphere, and how these interactions are affected by human activities. Environmental science serves as a strong foundation for graduate studies in other sciences, medicine, law, or business management. The environmental science program offers an honors program.

For More Information:

Environmental Program Director

COL Jason Lynch, WH5324, x5126

Environmental Engineering or Studies

Dr. Mike Butkus, WH5317, x2820

Environmental Science

Dr. Marie Johnson, WH5416, x4855

3 Course Engineering Sequence

LTC Mark Smith, WH5320, x3136

Department Internal Web Site

www-internal.dean.usma.edu/departments/geo/default.htm

Department External Web Site

www.dean.usma.edu/geo/gene.htm