

# Cornell Engineering

## Department of Earth and Atmospheric Sciences

### EARTH AND ATMOSPHERIC UNDERGRADUATE DEGREE PROGRAM

Study of the Earth and atmospheric sciences (EAS) has never been more critical to society than it is today. By analyzing the complex relationships between the ocean, solid earth, atmosphere, and biosphere, students can help meet society's growing demand for energy, minerals, and clean water, as well as contribute to mitigating the negative impacts of global climate change and natural hazards, which threaten our increasingly concentrated populations and complex infrastructure with disaster on unprecedented scales.

The Department of Earth and Atmospheric Sciences is a global leader in research directed toward understanding the fundamental processes that have shaped our planet. The EAS major provides Cornell students with the earth literacy needed to be informed citizens and wise stewards of the Earth. EAS faculty members and graduate students carry out frontier research on both basic and applied aspects of subjects as diverse as satellite monitoring of volcanic activity; active tectonics; the deep structure of volcanoes, East African Rift, and the Andes Mountains; natural and man-made earthquakes; the nature of the Earth's ionosphere; controls on global climate; and improved weather prediction.

**BREAK  
THE RULES to  
MAKE GREAT  
THINGS HAPPEN**

The (EAS) major is available to students in the Colleges of Engineering, Arts and Sciences, and Agriculture and Life Sciences. Students in this program can pursue education and research that prepare them to compete for careers or graduate study at leading institutions in this country and abroad. You may choose to focus on one of a number of disciplinary specialties, such as geophysics or biogeochemistry, or to develop the broad expertise needed to understand the interactions between the

diverse elements of Earth and life in the past, present, and future.

The EAS program is intrinsically interdisciplinary, involving many branches of science and engineering. It incorporates the fundamentals of Earth Science with the emergence of a new and more complete approach that encompasses all components of the earth system—air, life, rock, and water—to gain a comprehensive understanding of the world as we know it. It draws on the expertise of several of Cornell Engineering's schools and departments, including civil and environmental engineering, biological and environmental engineering, mechanical and aerospace engineering, and electrical and computer engineering.

Hands-on work is an inherent part of how students achieve complete understanding of the issues raised through the coursework. There are many opportunities for students to engage in geological, oceanographic, and meteorological research in the field, and for national and international travel as well as paid research experiences. EAS students have worked with faculty members in the Andes, the Aleutian Islands, the Rocky Mountains, the Atacama Desert, the Caribbean, Tibet, and Hawaii. Some have conducted research while sailing aboard a research vessel with SEA Semester. Students are also able to probe the ionosphere of Earth and the surface of Mars using remote sensing techniques.

#### EAS REQUIRED COURSES

Choice of Three:

EAS 3010 Evolution of the Earth System

EAS 3030 Introduction to Biogeochemistry

EAS 3040 Interior of the Earth

EAS 3050 Climate Dynamics

# EARTH AND ATMOSPHERIC SCIENCES



## CAREER OPPORTUNITIES

environmental engineering and policy

geoenergy

groundwater conservation

meteorology

natural hazards

oceanography

climate change modeling

research in academe, government, or industry

science education

## CONCENTRATIONS

All EAS students must select an area of interest in which to concentrate. Standard concentrations include: atmospheric sciences; environmental geoscience; geological sciences; and ocean sciences.

Students may also create their own concentration by working closely with a faculty advisor.

The EAS major provides a strong preparation for graduate school in any one of the earth sciences, such as atmospheric sciences, geologic sciences, geophysics, geochemistry, oceanography, hydrology, biogeochemistry, and environmental geoscience. Students seeking employment with the degree will have many options in a wide variety of careers related to energy, the environment, and critical resources in both the private sector and government. The energy industry, to cite one example, is entering a demographic turnover that will result in large numbers of high paying positions in the near future. Students with the strong science background provided by the EAS major are also highly valued by graduate programs in environmental law, public affairs, economics, and public policy.

## EAS SAMPLE ELECTIVE COURSES

EAS 1101	Climate and Energy: a 21st-Century Earth Science Perspective
EAS 1220	Earthquake!
EAS 1540	Introductory Oceanography
EAS 1700	Evolution of the Earth and Life
EAS 2680	Climate and Global Warming
EAS 4010	Fundamentals of Energy and Mineral Resources
EAS 4040	Geodynamics
EAS 4050	Active Tectonics
EAS 4260	Structural Geology
EAS 4470	Physical Meteorology
EAS 4620	Marine Ecosystem Sustainability
EAS 4790	Paleobiology

## MASTER OF ENGINEERING DEGREE PROGRAM

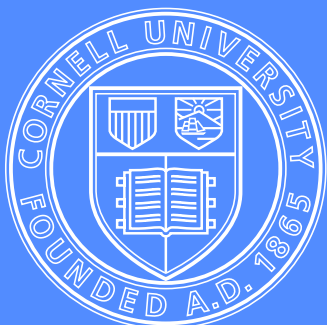
The one-year Master of Engineering (M.Eng.) Program in Geological Sciences provides future professional geoscientists or engineers with the geoscience and engineering background they will need to analyze and solve engineering problems that involve earth system variables and concepts. Individual programs are developed within several established options: geohydrology, remote sensing, hazards, applied and environmental geophysics, ocean science and technology, and atmospheric science.

## EAS By the Numbers

Starting salaries of B.S. Earth and Atmospheric Sciences graduates (3-year average)

Median \$40,669

Earth and Atmospheric Sciences undergraduate students	47
College of Agriculture and Life Sciences	27
College of Arts and Sciences	10
College of Engineering	10
Geological Sciences graduate students	37



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