Earth Science

Earth is a habitable planet and has developed through time to provide everything that allows modern human life to flourish, offering essential resources such as potable water and fertile soil for agriculture; minerals like iron, aluminum, copper, and silicon that form the foundation of our infrastructure and technology; and diverse energy sources that fuel both industrial and daily activities. However, the same dynamic processes that enrich our lives can also manifest as natural disasters, reshaping the land and posing risks to communities. Investigative research into these processes yields empirical data, enhancing our comprehension of the Earth's current state, its history, and possible future scenarios. This investigative, discovery-focused research is pivotal in guiding both the scientific community and policymakers. The insights derived from such research underpin efforts to devise sustainable methods for resource extraction and energy production, formulate strategies to mitigate geological hazards, and design structures resilient to earthquakes and hurricanes, addressing some of the most pressing environmental and societal challenges of our time.

Where will your curiosity take you?

Learn how a major in Course 12 can help you build quantitative and analytical skills that will be important to your career after earning your degree at MIT.

» eaps.mit.edu

Course 12

EAPS Education Office 54-912 | 617-253-3381

Course 12 Major Requirements

[144-150 UNITS IN MAJOR]

INTRODUCTORY SUBJECTS	12.001	Introduction to Geology
	12.002	Introduction to Geophysics and Planetary Science
CHOOSE 36 UNITS	12.003	Introduction to Atmosphere, Ocean, and Climate Dynamics
	12.004	Introduction to Chemistry of Habitable Environments

PLUS

6 UNITS	12.TIP	Thesis Preparation
AT LEAST 6 UNITS	12.THU	Undergraduate Thesis *(at least 6 units, CI-M)*

LAB + FIELD	12.115 + 12.116	Field Geology + Analysis of Geologic Data
CHOOSE 12-15 UNITS	12.307	Weather and Climate Laboratory
	12.335	Experimental Atmospheric Chemistry
All are CI-M subjects.	12.410J	Observational Techniques of Optical Astronomy

---

COMPUTATION	12.010	Computational Methods of Scientific Programming
	12.012	MatLab, Statistics, Regression, Signal Processing
CHOOSE 12 UNITS	12.C25J	Real World Computation with Julia
	6.100A	Introduction to Computer Science Programming in Python
	PLUS 6.100B	Intro. to Computational Thinking and Data Science
	-OR- 16.C20J	Intro. to Computational Science and Engineering

---

CONCENTRATION: EARTH SCIENCE	12.007	Geobiology: History of Life on Earth
	12.100	Plate Tectonics and Climate
CHOOSE 36-39 UNITS	12.104	Chemistry of Natural Waters
	12.108	Earth Materials: Minerals and Rocks
	12.110A+B	Sedimentary Environments; Sedimentology in the Field
	12.113	Structural Geology
	12.117A+B	Field Geobiology I; Field Geobiology II
	12.163	Geomorphology
	12.170	Essentials of Geology
	12.177	Astrobiology: Origins and Early Evolution of Life
	12.178	The Phylogenomic Planetary Record
	12.201	Essentials of Global Geophysics
	12.202	Flow, Deformation & Fracture in Earth & Other Terrestrial Bodies
	12.203	Mechanics of Earth
	12.210	Introduction to Seismology
	12.211	Field Geophysics
	12.214	Essentials of Field Geophysics
	12.225	Mechanisms of Faulting and Earthquakes
	12.421	Physical Principles of Remote Sensing

SUPPORTING SUBJECTS

CHOOSE 36 UNITS

RECOMMENDED FOR THIS CONCENTRATION

5.601 + 5.602	Thermodynamics I; Thermodynamics II and Kinetics
7.05	General Biochemistry
18.03 -OR- 18.06	Differential Equations -OR- Linear Algebra

For a complete list of supporting subjects, please visit **» catalog.mit.edu**