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.

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Course 12

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

Course 12 Major Requirements

[144-150 UNITS IN MAJOR]

INTRODUCTORY SUBJECTS

CHOOSE 36 UNITS

12.001	Introduction to Geology
12.002	Introduction to Geophysics and Planetary Science
12.003	Introduction to Atmosphere, Ocean, and Climate Dynamics
12.004	Introduction to the Global Climate Cycle

PLUS

6 UNITS
AT LEAST 6 UNITS

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

LAB + FIELD

CHOOSE 12-15 UNITS

All are CI-M subjects.

12.115 + 12.116	Field Geology + Analysis of Geologic Data
12.307	Weather and Climate Laboratory
12.335	Experimental Atmospheric Chemistry
12.410J	Observational Techniques of Optical Astronomy

COMPUTATION

CHOOSE 12 UNITS

12.010	Computational Methods of Scientific Programming
12.012	MatLab, Statistics, Regression, Signal Processing
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

CHOOSE 36-39 UNITS

12.100	Plate Tectonics and Climate
12.104	Geochemistry of Natural Waters
12.107	Geobiology: History of Life on Earth
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
12.177	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	Remotes Sensing: Physical Principles and Techniques

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***