Department of Earth Sciences, National Taiwan Normal University

Bachelor's Program Curriculum Map

Earth Science Specialized Courses: 96–100 Credits

Common Required: General Physics (B) (I, II) incl. Lab (I, II) (8), General Chemistry (B) incl. Lab (I) (4), Calculus (B) (I, II) (6), Applied Mathematics (I) (3), Frontiers in Earth Sciences (I, II) (4)

Core Courses

Atmospheric Field	Astronomy Field	Geology Field	Geophysics Field	Oceanography Field
General Meteorology(including Lab.) (3)	Astronomy(including Lab.) (3)	Physical Geology(including Lab.) (3)	Introduction to Geophysics(including Lab.) (3)	Introduction to Oceanography(including Lab.) (3)

Foundational Courses

Atmospheric Field
- Atmospheric Observations (including Lab.) (3)
- Atmospheric Thermodynamics (3)
- Fluid Dynamics (3)
- Applied Mathematics (II) (3)
- Numerical Analysis (3)
- *Computer Application in Earth Sciences (3)*

Astronomy Field
- Astronomical Observations (Including Lab) (3)
- The Solar System (3)
- The Development of Cosmology (3)
- Introduction to Astroinformatics (3)
- Astronomy in Taiwanese (3)
- **Python for Astronomy (3)***
- *Introduction to Planetary Science (3)*

Geology Field
- Mineralogy (including Lab.) (3)
- Petrology (including Lab.) (3)
- Paleontology (including Lab.) (3)
- Structural Geology (including Lab.) (3)
- Historical Geology (including Lab.) (3)
- Sedimentology and Stratigraphy (3)
- Field Geology (including Lab.) (3)

Geophysics Field
- Applied Mathematics (II) (3)
- Earthquake Observation and Disaster (2)
- Seismotectonics (3)
- Observational Seismology (3)
- *Earth Science Data Processing (3)*

Oceanography Field
- Introduction to Marine Chemistry (3)
- **Introduction to Marine Geology (3)***
- **Introductory Marine Biology (3)***

Advanced Courses

Atmospheric Field
- Atmospheric Dynamics (I, II) (6)
- Synoptic Meteorology (3)
- Atmospheric Physics (3)
- Climatology (3)
- Tropical Meteorology (3)
- Numerical Weather Prediction (3)
- Weather Forecast and Analysis (3)
- Meteorological Statistics (3)
- ***Numerical Methods in Earth Sciences (3)****
- Climate Change Science and Practical Data Analysis (3)

Astronomy Field
- Physical Concepts in Astronomy (3)
- Galaxies (3)
- Star Formation (3)
- Radio Astronomy (3)
- Active Galaxies (3)
- Astrostatistics (3)
- Open Cluster (3)
- **Tools for Modern Astronomy (3)***
- *Space Weather (3)*

Geology Field
- *Regional Geology(3)*
- *Geology of Taiwan (3)*
- **Geochemistry (3)***
- Geodynamics (3)
- **Geological Survey (3)***
- Volcanology and Volcanic Hazards (Including Lab.) (3)
- **Stable Isotope Geology (3)***
- Environmental Geology (3)
- **Economic Geology (3)***
- Hydrogeology (3)
- Principle of Geotechnical Engineering (3)
- Introduction to Petroleum Geology (3)
- Petroleum Geochemistry (3)
- **Continent and Supercontinent Evolution (3)***
- Offshore Islands Geology of Taiwan (3)

Geophysics Field
- **Earthquakes of the Week (3)***
- Physics and Chemistry of the Earth's Interior (3)
- Topics in Geophysics (3)
- Time Series Analysis (3)
- Paleomagnetism (3)
- *Geophysical Planetary Exploration (3)*
- Planetary Seismology (3)

Oceanography Field
- Ocean Circulation (3)
- Water Wave Theory (3)
- Resources and Sustainable Development (3)
- Innovation Trends in Oceanography (3)
- Introduction to Marine Physics (3)
- Satellite Oceanography (3)
- Satellite Data Analysis Techniques Applied to Oceanography (3)

Interdisciplinary Elective Courses

<Single-Domain Instructor Taught>

Computer Application in Earth Sciences (3) · **Numerical Methods in Earth Sciences (3)*** · Earth Science Data Processing (3) Introduction to Planetary Science (3) · Space Weather (3) Planetary Seismology (3) · Geophysical Planetary Exploration (3) · Planetary Geology (3)* Earth Science Aspects of Renewable Energy (2)

<Interdisciplinary Team Taught>

Earth System Sciences and Disaster Risk Assessment (3) · Earth Science Practicum (I, II) (6) · Earth System and Comparative Planetology (3) Planet and Earth Systems Scientific Research Writing Program (I, II) (6) · Scientific Field Expeditions of Earth Systems (3). Environmental Science (2)

Note: Numbers in parentheses () denote course credits; * indicates EMI (English as a Medium of Instruction) courses; *italics denote interdisciplinary courses hosted by the area.*

Disclaimer: In the event of any discrepancy or ambiguity between this English version and the original Chinese version, the Chinese version shall prevail. (若與中文版有歧異，概以中文版為準)