Department of Earth Sciences, National Taiwan Normal University

Ph.D. Curriculum Map

Ph.D. Program: Minimum Credits Required for Graduation: 22 Credits

Common Required Courses: Seminar (4)

Core Courses: Elective 6 Credits Required

- **Topic on Atmospheric Sciences (3)**
  Advanced Synoptic Meteorology (3)*
- **Advanced Astrophysics (3)**
  Advanced Astronomical Observations (3)
- **Topics on Geology (3)**
  Advanced East Asia Regional Geology (3)
- **Theoretical Geophysics (3)***
  Topics on Seismology (3)*
- **Earth System : Ocean (3)**
  Ocean Dynamics (3)

Advanced Elective Courses

Atmospheric Sciences

- Meso-scale Meteorology (3)
- Statistical Analysis in Climate Research (3)
- Topics in Meteorological Phenomena in Eastern Asia (3)
- Geophysical Fluid Dynamics (3)
- **Climate Change (3)**
- **Topics in Monsoon Dynamics (3)***
- Numerical Modeling of the Atmospheric Dynamical Processes (3)
- Research Methodologies in Atmospheric Sciences (3)
- Topics in Numerical Weather Prediction (3)

Astronomy

- Interstellar Medium (3)
- Intergalactic Medium (3)
- High Energy Astrophysics (3)
- Bioastronomy (3)
- Molecular Astrophysics (3)
- Planet Formation (3)
  Solar System Formation (3)

Geology

- **Sequence Stratigraphy (3)***
- Petrographic Methods (3)
  Advanced Igneous Petrology (3)
- **Strain Analysis (3)***
- **Advanced Structural Geology (3)***
- Micro-Structural Geology (3)
- Geo-technical Writing (3)
  Core-Log Integration (3)*
  Quaternary Geology and Environmental Changes (3)
- Earth Sciences and Archaeology (3)
- **Stress Regimes in Lithosphere (3)***
- Advanced Geothermics (3)

Geophysics

- The Dynamics of Fault Zone (3)
- Advanced Geophysics (3)
- Advanced Geothermics (3)
- Fundamentals of Active Remote Sensing (3)

Oceanography

- Numerical Ocean Circulation Modeling (3)
- Marine Environmental Education (3)
- Topics in Marine Chemistry - Oceanic CO2 and Global Change (3)
- Global Change in the Past-Paleoceanography in the Tropical Pacific Ocean (3)

To cultivate academic researchers in Earth Sciences and professional experts for practical industries.

Note: Numbers in parentheses () denote course credits; * indicates EMI (English as a Medium of Instruction) courses.

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