

Department of Earth Sciences Courses List(2012-2022) – Undergraduate Program

Note :

1. The number with the break () indicates the credits.
2. Color Code: **Eligible Course**, **Astronomy**, **Atmospheric Science**, **Geology**, **Geophysics**, **Ocean**, **Sci. Edu./Edu. Program** , **Integrated Course**.
3. Course with “*” are Master Joint Courses; courses in bold and italic are taught in English in the corresponding semester.

101-1 (2012 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(3)
Sophomore (Year 2)	Applied Mathematics(I)(3)	Numerical Analysis(3) Environmental Geology(3) Mineralogy(including Lab.)(3)* Observational Seismology(3)
Junior (Year 3)		Galaxies(3) Atmospheric Dynamics(I)(3) Computer Application in Earth Sciences(3) Geodynamics(3)* <i>Planetary Geology(3)*</i> Earth Science Data Processing(3)* Physical Oceanography(3)* Introduction to Marine Chemistry(3)* Curriculum Design in Earth Sciences(3)*
Senior (Year 4)		Climatology(3)* Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
101-2 (2013 Spring)	Required	Selected
Freshman (Year 1)	Astronomy(including Lab.)(3) Introduction to Oceanography(including Lab.)(3)	
Sophomore (Year 2)	Introduction to Geophysics (including Lab.)(3)	Astronomical Observations(Including Lab)(3) Fluid Dynamics(3) Atmospheric Observations(including Lab.)(3) Applied Mathematics(II)(3)
Junior (Year 3)		The Development of Cosmology(3) Active Galaxies(3)* Atmospheric Dynamics(II)(3) Meteorological Statistics(3)* Historical Geology(including Lab.)(3)

		Advanced Field Geological Techniques(3)* Field Geology(including Lab.)(3)* Geochemistry(3)* Petrology(including Lab.)(3)* Stable Isotope Geology(3)* Earthquakes of the Week(3)* Geophysical Methods(3)* Paleomagnetism(3)* Introduction to Earth Science(including Lab.)(2)
Senior (Year 4)		Radio Astronomy(3)* Teaching Practicum: Earth Sciences(II)(2)
102-1 (2013 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(3)
Sophomore (Year 2)	Applied Mathematics(I)(3)	The Solar System(3) Atmospheric Thermodynamics(3) Environmental Geology(3) Introductory Marine Biology(2)
Junior (Year 3)		Atmospheric Dynamics(I)(3) Computer Application in Earth Sciences(3) Climatology(3)* Synoptic Meteorology(3)* Hydrogeology(3) Continent and Supercontinent Evolution(3)* Mineralogy(including Lab.)(3)* Structural Geology(including Lab.)(3)* Earth Science Data Processing(3)* Ocean Circulation(3)*
Senior (Year 4)		Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
102-2 (2014 Spring)	Required	Selected
Freshman (Year 1)	Astronomy(including Lab.)(3) Introduction to Oceanography (including Lab.)(3)	
Sophomore (Year 2)	Introduction to Geophysics(including Lab.)(3)	Astronomical Observations(Including Lab)(3) Fluid Dynamics(3) Atmospheric Observations(including Lab.)(3)
Junior (Year 3)		Atmospheric Dynamics(II)(3) Weather Forecast and Analysis(3) Meteorological Statistics(3)* Tropical Meteorology(3)* Paleontology(including Lab.)(3) Field Geology(including Lab.)(3)* Geochemistry(3)* Geological Survey(3)*

		Petrology(including Lab.)(3)* Sedimentology and Stratigraphy(3)* Earthquakes of the Week(3)* Paleomagnetism(3)* Seismotectonics(3)* Innovation Trends in Oceanography(3)* Historical Perspectives on Science Development(3)* Introduction to Earth Science(including Lab.)(2)
Senior (Year 4)		Teaching Practicum: Earth Sciences(II)(2)
103-1 (2014 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3) Introduction to Geophysics(including Lab.)(3)	Galaxies(3) Introduction to Planetary Science(3) Numerical Analysis(3) Environmental Geology(3)
Junior (Year 3)		Atmospheric Dynamics(I)(3) Computer Application in Earth Sciences(3) Climatology(3)* Numerical Weather Prediction(3)* Synoptic Meteorology(3)* Geodynamics(3)* Planetary Geology(3)* Stable Isotope Geology(3)* Structural Geology(including Lab.)(3)* Introduction to Marine Chemistry(3)* Introduction to Marine Physics(3)*
Senior (Year 4)		Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
103-2 (2015 Spring)	Required	Selected
Freshman (Year 1)	Astronomy(including Lab.)(3) Introduction to Oceanography (including Lab.)(3)	
Sophomore (Year 2)		Atmospheric Observations(including Lab.)(3) Atmospheric Thermodynamics(3) Fluid Dynamics(3) Observational Seismology(3) Applied Mathematics(II)(3)
Junior (Year 3)		Active Galaxies(3)* Space Weather(3) Atmospheric Dynamics(II)(3)* Meteorological Statistics(3)* Tropical Meteorology(3)*

		Advanced Field Geological Techniques(3)* Historical Geology(including Lab.)(3) Paleomagnetism(3)* Petrology(including Lab.)(3)* Historical Perspectives on Science Development(3)* Introduction to Earth Science(including Lab.)(2)
Senior (Year 4)		Radio Astronomy(3)* Teaching Practicum: Earth Sciences(II)(2)
104-1 (2015 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3) Introduction to Geophysics(including Lab.)(3)	Introduction to Planetary Science(3) Environmental Geology(3) Environmental Science(2) Introductory Marine Biology(2)
Junior (Year 3)		The Development of Cosmology(3) Atmospheric Dynamics(I)(3) Atmospheric Physics(3) Computer Application in Earth Sciences(3) Climatology(3)* Synoptic Meteorology(3)* <i>Geochemistry(3)*</i> <i>Stable Isotope Geology(3)*</i> Structural Geology(including Lab.)(3)* Introduction to Marine Chemistry(3)* Introduction to Marine Physics(3)*
Senior (Year 4)		Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
104-2 (2016 Spring)	Required	Selected
Freshman (Year 1)	Astronomy(including Lab.)(3) Introduction to Oceanography (including Lab.)(3)	
Sophomore (Year 2)		Astronomical Observations(Including Lab)(3) Atmospheric Observations(including Lab.)(3) Fluid Dynamics(3) Applied Mathematics(II)(3)
Junior (Year 3)		Physical Concepts in Astronomy(3) Weather Forecast and Analysis(3) Atmospheric Dynamics(II)(3)* Meteorological Statistics(3)* Hydrogeology(3) Paleontology(including Lab.)(3) <i>Continent and Supercontinent Evolution(3)*</i>

		Field Geology(including Lab.)(3)* 、 Geological Survey(3)* Earthquakes of the Week(3)* Paleomagnetism(3)* Seismotectonics(3)* Ocean Circulation(3)* Historical Perspectives on Science Development(3)* Introduction to Earth Science(including Lab.)(2)
Senior (Year 4)		Radio Astronomy(3)* Teaching Practicum: Earth Sciences(II)(2)
105-1 (2016 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3)	The Solar System(3) Atmospheric Thermodynamics(3) Environmental Geology(3) Observational Seismology(3)
Junior (Year 3)		Active Galaxies(3)* Atmospheric Dynamics(I)(3) Computer Application in Earth Sciences(3) Climatology(3)* Numerical Weather Prediction(3)* Synoptic Meteorology(3)* Economic Geology(3)* Petrology(including Lab.)(3)* Stable Isotope Geology(3)* Introduction to Marine Chemistry(3)* Introduction to Marine Physics(3)* Historical Perspectives on Science Development(3)*
Senior (Year 4)		Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
105-2 (2017 Spring)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3)	The Solar System(3) Atmospheric Thermodynamics(3) Environmental Geology(3) Observational Seismology(3)
Junior (Year 3)		Active Galaxies(3)* Atmospheric Dynamics(I)(3)

		Computer Application in Earth Sciences(3) Climatology(3)* Numerical Weather Prediction(3)* Synoptic Meteorology(3)* <i>Economic Geology(3)*</i> Petrology(including Lab.)(3)* <i>Stable Isotope Geology(3)*</i> Introduction to Marine Physics(3)* Introduction to Marine Chemistry(3)* Historical Perspectives on Science Development(3)*
Senior (Year 4)		Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
106-1 (2017 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3)	Introduction to Planetary Science(3) The Development of Cosmology(3) Environmental Geology(3) Observational Seismology(3) Introductory Marine Biology(2)
Junior (Year 3)		Atmospheric Dynamics(I)(3) Atmospheric Physics(3) Computer Application in Earth Sciences(3) Synoptic Meteorology(3)* <i>Geochemistry(3)*</i> Petrology(including Lab.)(3)* <i>Stable Isotope Geology(3)*</i> Structural Geology(including Lab.)(3)* Introduction to Marine Physics(3)* Innovation Trends in Oceanography(3)*
Senior (Year 4)		Teaching Materials and Methods: Earth Sciences(2) Teaching Practicum: Earth Sciences(I)(2)
106-2 (2018 Spring)	Required	Selected
Freshman (Year 1)	Astronomy(including Lab.)(3) Introduction to Oceanography(including Lab.)(3)	
Sophomore (Year 2)	Introduction to Geophysics(including Lab.)(3)	Atmospheric Observations(including Lab.)(3) <i>Astronomical Observations(Including Lab.)(3)</i> Applied Mathematics(II)(3)
Junior (Year 3)		Physical Concepts in Astronomy(3) Atmospheric Dynamics(II)(3)* Climatology(3)*

		Meteorological Statistics(3)* Field Geology(including Lab.)(3)* Geological Survey(3)* Geology of Taiwan(3)* Mineralogy(including Lab.)(3)* Paleontology(including Lab.)(3)* Seismotectonics(3)* Paleomagnetism(3)* Introduction to Earth Science(including Lab.)(2) Earth Science Practicum(I)(3) Earth System and Comparative Planetology(3)*
Senior (Year 4)		Radio Astronomy(3)* Teaching Practicum: Earth Sciences(II)(2)
107-1 (2018 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3) Introduction to Geophysics(including Lab.)(3)	Galaxies(3) The Solar System(3) Atmospheric Observations(including Lab.)(3) Atmospheric Thermodynamics(3) Environmental Geology(3)
Junior (Year 3)		Atmospheric Dynamics(I)(3) Climatology(3)* Numerical Weather Prediction(3)* Synoptic Meteorology(3)* Petrology(including Lab.)(3)* Planetary Geology(3)* Stable Isotope Geology(3)* Structural Geology(including Lab.)(3)* Earthquakes of the Week(3)* Ocean Circulation(3)* Introduction to Marine Physics(3)* Teaching Materials and Methods: Earth Sciences(2) Earth Science Practicum(II)(3) Scientific Field Expeditions of Earth Systems(3)*
Senior (Year 4)		Teaching Practicum: Earth Sciences(I)(2)
107-2 (2019 Spring)	Required	Selected
Freshman (Year 1)	Astronomy(including Lab.)(3) Introduction to Oceanography(including Lab.)(3)	
Sophomore (Year 2)		Fluid Dynamics(3) Observational Seismology(3) Petrology (including Lab.)(3)*

Junior (Year 3)		Space Weather(3) Active Galaxies(3)* Computer Application in Earth Sciences(3) Tropical Meteorology(3)* Atmospheric Dynamics (II)(3)* Hydrogeology(3) Geodynamics(3)* Field Geology(including Lab.)(3)* Advanced Field Geological Techniques(3)* Sedimentology and Stratigraphy(3)* Continent and Supercontinent Evolution(3)* Principle of Geotechnical Engineering(3)* Geology of Taiwan(3)* Topics in Geophysics(3)* Physics and Chemistry of the Earth's Interior(3)* Seismotectonics(3)* Water Wave Theory(3)* Introduction to Earth Science(including Lab.)(2) Earth Science Practicum(I)(3) Earth System and Comparative Planetology(3)*
Senior (Year 4)		Radio Astronomy(3)* Teaching Practicum: Earth Sciences(II)(2)
108-1 (2019 Fall)	Required	Selected
Freshman (Year 1)	General Meteorology(including Lab.)(3) Physical Geology(including Lab.)(3)	Earthquake Observation and Disaster(2)
Sophomore (Year 2)	Applied Mathematics(I)(3) Introduction to Geophysics(including Lab.)(3)	Galaxies(3) Astronomical Observations (Including Lab.)(3) Introduction to Planetary Science(3) Numerical Analysis(3) Environmental Geology(3) Introductory Marine Biology(2) Computers and Earth Science Education(2)
Junior (Year 3)		Atmospheric Dynamics(I)(3) Climatology(3)* Synoptic Meteorology(3)* Historical Geology (including Lab.)(3) Geochemistry(3)* Mineralogy (including Lab.)(3)* Structural Geology(including Lab.)(3)* Introduction to Petroleum Geology (3)* Earth Science Data Processing(3)* Earthquakes of the Week(3)* Ocean Circulation(3)* Introduction to Marine Physics(3)* Innovation Trends in Oceanography(3)* Teaching Materials and Methods: Earth Sciences(2)

		Earth Science Practicum(I)(3) Earth Science Practicum(II)(3)*
Senior (Year 4)		Teaching Practicum: Earth Sciences(I)(2)
108-2 (2020 Spring)	Required	Selected
Freshman (Year 1)	Astronomy (including Lab.)(3) Introduction to Oceanography (including Lab.)(3)	Introduction to Earth Science (including Lab.)(2)
Sophomore (Year 2)		The Development of Cosmology(3) Atmospheric Observations (including Lab.)(3) Observational Seismology(3) Applied Mathematics (II)(3)
Junior (Year 3)		Physical Concepts in Astronomy(3) Weather Forecast and Analysis(3) Computer Application in Earth Sciences(3) Meteorological Statistics(3)* Atmospheric Dynamics (II)(3)* Stable Isotope Geology(3)* Petrology (including Lab.)(3)* Field Geology (including Lab.)(3)* Economic Geology(3)* Geology of Taiwan(3)* Principle of Geotechnical Engineering(3)* Seismotectonics(3)* Paleomagnetism(3)* Geophysical Planetary Exploration(3)* Water Wave Theory(3)* Earth System and Comparative Planetology(3)*
Senior (Year 4)		Teaching Practicum: Earth Sciences(II)(2)
109-1 (2020 Fall)	Required	Selected
Freshman (Year 1)	Physical Geology (including Lab.)(3)	Introduction to Earth Science (including Lab.)(2)
Sophomore (Year 2)	Introduction to Geophysics (including Lab.)(3) Applied Mathematics(I)(3)	Atmospheric Thermodynamics(3) Atmospheric Observations (including Lab.) (3) Environmental Geology(3) Mineralogy (including Lab.) (3)* Galaxies(3) The Solar System(3) Introductory Marine Biology(2)
Junior (Year 3)		Climatology(3)* Synoptic Meteorology(3)* Atmospheric Dynamics (I) (3) Geochemistry (3)* Introduction to Petroleum Geology(3)* Sedimentology and Stratigraphy(3)* Structural Geology (including Lab.) (3)* Earthquakes of the Week(3)*

		Earth Science Data Processing(3)* Ocean Circulation(3)* Innovation Trends in Oceanography(3)* Introduction to Marine Physics(3)* Earth Science Practicum (I) (3) Earth Science Practicum (II) (3)* Introduction to Marine Geology(3)* Scientific Field Expeditions of Earth Systems) (3)*
Senior (Year 4)		Radio Astronomy(3)* Teaching Practicum: Earth Sciences(I)(2) Teaching Materials and Methods: Earth Sciences(2)
109-2 (2021 Spring)	Required	Selected
Freshman (Year 1)	Astronomy (including Lab.)(3) General Meteorology(including Lab.)(3) Introduction to Oceanography (including Lab.)(3)	Introduction to Earth Science (including Lab.)(2) Observational Seismology(3)
Sophomore (Year 2)		Fluid Dynamics (3) Introduction to Astroinformatics(3)
Junior (Year 3)		Active Galaxies(3)* Atmospheric Dynamics (II)(3)* Computer Application in Earth Sciences(3) Continent and Supercontinent Evolution(3)* Earth System and Comparative Planetology(3)* Earth Science Aspects of Renewable Energy(3)* Field Geology (including Lab.)(3)* Geodynamics(3)* Geology of Taiwan(3)* Geophysical Planetary Exploration(3)* Paleontology (including Lab.) Petroleum Geochemistry(3)* Petrology (including Lab.)(3)* Physics and Chemistry of the Earth's Interior(3)* Principle of Geotechnical Engineering(3)* Regional Geology(3)* Satellite Data Analysis Techniques Applied to Oceanography(3)* Space Weather(3) Tropical Meteorology(3)*
Senior (Year 4)		Teaching Practicum: Earth Sciences(II)(2)
110-1 (2021 Fall)	Required	Selected
Freshman (Year 1)	Introduction to Geophysics (including Lab.)B(3) Physical Geology (including Lab.)(3)	Introduction to Earth Science (including Lab.) (2)
Sophomore	Introduction to Geophysics	Astronomical Observations (Including Lab)(3)

(Year 2)	(including Lab.)A(3) Applied Mathematics(I)(3)	Atmospheric Observations (including Lab.)(3) Fluid Climatology(3)* Dynamics (3) Introduction to Astroinformatics(3) Introductory Marine Biology(2) Introduction to Planetary Science(3) Mineralogy (including Lab.)(3)* The Development of Cosmology(3)
Junior (Year 3)		Atmospheric Dynamics (I)(3) Atmospheric Physics(3) Earthquakes of the Week(3)* Earth Science Data Processing(3)* Earth Science Practicum (I)(3) Earth Science Practicum (II)(3) Geochemistry(3)* Introduction to Petroleum Geology(3)* Introduction to Marine Physics(3)* Innovation Trends in Oceanography(3)* Marine Resources and Sustainable Development(3)* Ocean Circulation(3)* Planet and Earth Systems Scientific Research Writing Program (I)(3) Structural Geology (including Lab.)(3)* Teaching Materials and Methods: Earth (2) Time Series Analysis(3)*
Senior (Year 4)		Radio Astronomy(3)* Sciences Teaching Practicum: Earth Sciences(I)(2)
110-2 (2022 Spring)	Required	Selected
Freshman (Year 1)	Astronomy (including Lab.)(3) General Meteorology(including Lab.)(3) Introduction to Oceanography (including Lab.)(3)	Observational Seismology(3)
Sophomore (Year 2)		Applied Mathematics (II)(3) Planet and Earth Systems Scientific Research Writing Program (II)(3)
Junior (Year 3)		Physical Concepts in Astronomy(3) Computer Application in Earth Sciences(3) Weather Forecast and Analysis(3) Meteorological Statistics(3)* Planetary Geology(3)* Atmospheric Dynamics (II)* Stable Isotope Geology(3)* Petrology (including Lab.)(3)* Field Geology (including Lab.)(3)* Planetary Geology(3)* Sedimentology and Stratigraphy(3)* Geological Survey(3)*

		Geology of Taiwan(3)* Principle of Geotechnical Engineering(3)* Petroleum Geochemistry(3)* Earth Science Aspects of Renewable Energy(2)* Geophysical Planetary Exploration(3)* Satellite Data Analysis Techniques Applied to Oceanography(3)* Introduction to Marine Geology(3)* Earth System and Comparative Planetology(3)* Inquiry and Practical Work in Science(2)*
Senior (Year 4)		Teaching Practicum: Earth Sciences(II)(2)
111-1 (2022 Fall)	Required	Selected
Freshman (Year 1)	Introduction to Geophysics (including Lab.)(3) Physical Geology (including Lab.)(3)	Introduction to Earth Science (including Lab.)(2)
Sophomore (Year 2)	Applied Mathematics(I)(3)	Astronomical Observations (Including Lab)(3) Astronomy in Taiwanese(3) Atmospheric Thermodynamics(3) Atmospheric Observations (including Lab.)(3) Environmental Geology(3) Planet and Earth Systems Scientific Research Writing Program (I)(3)
Junior (Year 3)		Atmospheric Dynamics (I)(3) Numerical Weather Prediction(3)* Synoptic Meteorology(3)* Geodynamics(3)* Mineralogy (including Lab.)(3)* Structural Geology (including Lab.)(3)* Introduction to Petroleum Geology(3)* Time Series Analysis(3)* Earth Science Data Processing(3)* Earthquakes of the Week(3)* Innovation Trends in Oceanography(3)* Introduction to Marine Physics(3)* Marine Resources and Sustainable Development(3)* Earth Science Practicum (I)(3) Earth Science Practicum (II)(3)* Earth System Sciences and Disaster Risk Assessment(3)* Teaching Materials and Methods: Earth (2)
Senior (Year 4)		Radio Astronomy(3)* Sciences Teaching Practicum: Earth Sciences(I)(2)