

Department of Earth Sciences Courses List (2012-2023) – Doctoral Program

Note :

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

101-1 (2012 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astronomical Observations(3)# Advanced Astrophysics(3)# Interstellar Medium(3)# <i>Tools for Modern Astronomy(3)#</i>
ATMOSPHERIC SCIENCES		Research Methodologies in Atmospheric Sciences(3)#
GEOLOGY		Advanced Petroleum Geology(3)# Core-Log Integration(3)# Earth Sciences and Archaeology(3)# Topics on Geology(3)
GEOPHYSICS		Gravity and Geomagnetism Laboratory(1)# Gravity and Geomagnetism(2)# Inverse Theory(3)# The Dynamics of Fault Zone(3)#
OCEANOGRAPHY		NA
101-2 (2013 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1) Seminar(IV)(1)	<i>High Energy Astrophysics(3)#</i> <i>Introduction to Modern Cosmology(3)#</i>
ATMOSPHERIC SCIENCES		Advanced Synoptic Meteorology(3)# Topics in Monsoon Dynamics(3)#
GEOLOGY		Regional Geology(3)#
GEOPHYSICS		Seismic Stratigraphy(2)# Seismic Stratigraphy Laboratory(1)#
OCEANOGRAPHY		Satellite Remote Data Analysis(I)(3)# Applied Numerical Methods in Oceanography(3)#
102-1 (2013 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astronomical Observations(3)# Advanced Astrophysics(3)# Interstellar Medium(3)# <i>Tools for Modern Astronomy(3)#</i>
ATMOSPHERIC SCIENCES		Advanced Dynamic Meteorology(3)# Meso-scale Meteorology# Research Methodologies in Atmospheric Sciences(3)# Topics in Numerical Weather Prediction(3)#

GEOLOGY		Advanced Geothermics(3)# <i>Geo-technical Writing(3)#</i> <i>Micro-Structural Geology(3)#</i>
GEOPHYSICS		Engineering Geophysics(3)# Theoretical Geophysics(3)
OCEANOGRAPHY		Numerical Ocean Circulation Modeling(3)# Ocean Data Assimilation Modeling(3) Global Change in the Past- Paleoceanography in the Tropical Pacific Ocean(3)
102-2 (2014 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1)	NA
ATMOSPHERIC SCIENCES	Seminar(IV)(1)	Topic on Atmospheric Sciences(3)
GEOLOGY		Petrographic Methods(3)# Strain Analysis(3)# <i>Stress Regimes in Lithosphere(3)#</i> <i>Topics on Geology(3)</i>
GEOPHYSICS		Inverse Theory(3)# Theoretical Geophysics(3)
OCEANOGRAPHY		Climatic and Oceanic Variability(3)# Satellite Remote Data Analysis(I)(3)# Ocean Modeling and Data Analysis(3)
103-1 (2014 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astronomical Observations(3)# Advanced Astrophysics(3)# <i>Interstellar Medium(3)#</i>
ATMOSPHERIC SCIENCES		Climate Change(3)# Research Methodologies in Atmospheric Sciences(3)#
GEOLOGY		Advanced Marine Geology(3)# Core-Log Integration(3)# Earth Sciences and Archaeology(3)#
GEOPHYSICS		Sesimomagnetism(II)(3)#
OCEANOGRAPHY		Applied Numerical Methods in Oceanography(3)#
103-2 (2015 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1)	<i>High Energy Astrophysics(3)#</i>
ATMOSPHERIC SCIENCES	Seminar(IV)(1)	Advanced Synoptic Meteorology(3)# Topics in Meteorological Phenomena in Eastern Asia(3)#
GEOLOGY		Petrographic Methods(3)# Regional Geology(3)# Stress Regimes in Lithosphere(3)# <i>Topics on Geology(3)</i>
GEOPHYSICS		Advanced Geophysics(3)# Theoretical Geophysics(3)#
OCEANOGRAPHY		Satellite Remote Data Analysis(I)(3)#

		Topics in Marine Chemistry-Geotracer of Trace Elements and Isotopes(3)
EDUCATION		Cognition and Instruction(3)#
104-1 (2015 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astrophysics(3)# Advanced Astronomical Observations(3)# <i>Interstellar Medium(3)#</i>
ATMOSPHERIC SCIENCES		Meso-scale Meteorology(3)# Research Methodologies in Atmospheric Sciences(3)# Statistical Analysis in Climate Research(3)# Topics in Monsoon Dynamics(3)# Topics in Numerical Weather Prediction(3)#
GEOLOGY		NA
GEOFYSICS		Engineering Geophysics(3)#
OCEANOGRAPHY		Ocean Dynamics(3)# Marine Environmental Education(3)# Earth System : Ocean(3) Global Change in the Past- Paleoceanography in the Tropical Pacific Ocean(3)
104-2 (2016 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1)	<i>Tools for Modern Astronomy(3)#</i>
ATMOSPHERIC SCIENCES	Seminar(IV)(1)	Advanced Synoptic Meteorology(3)# Geophysical Fluid Dynamics(3)#
GEOLOGY		<i>Stress Regimes in Lithosphere(3)#</i>
GEOFYSICS		Time Series Analysis(3)#
OCEANOGRAPHY		Applied Numerical Methods in Oceanography(3)# Climatic and Oceanic Variability(3)#
105-1 (2016 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astronomical Observations(3)# Advanced Astrophysics(3)# <i>Interstellar Medium(3)#</i>
ATMOSPHERIC SCIENCES		Geophysical Fluid Dynamics(3)# Meso-scale Meteorology(3)#
GEOLOGY		<i>Core-Log Integration(3)#</i> Earth Sciences and Archaeology(3)# <i>Micro-Structural Geology(3)#</i>
GEOFYSICS		Topics on Seismology(3)#
OCEANOGRAPHY		Marine Environmental Education(3)# Numerical Ocean Circulation Modeling(3)#
105-2 (2017 Fall)	Required	Selected
ASTRONOMY	Seminar(II)(1)	
ATMOSPHERIC SCIENCES	Seminar(IV)(1)	Advanced Synoptic Meteorology(3)# Research Methodologies in Atmospheric Sciences(3)# Statistical Analysis in Climate Research(3)#

GEOLOGY		<i>Geo-technical Writing(3)#</i> <i>Stress Regimes in Lithosphere(3)#</i> Topics on Geology(3)
GEOPHYSICS		<i>Advanced Geophysics(3)#</i>
OCEANOGRAPHY		Satellite Remote Data Analysis(I)(3)#
106-1 (2017 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	<i>Advanced Astronomical Observations(3)#</i> <i>Advanced Astrophysics(3)#</i>
ATMOSPHERIC SCIENCES		Geophysical Fluid Dynamics(3)# Meso-scale Meteorology(3)# Research Methodologies in Atmospheric Sciences(3)# Topics in Numerical Weather Prediction(3)#
GEOLOGY		
GEOPHYSICS		<i>Theoretical Geophysics(3)#</i>
OCEANOGRAPHY		Marine Environmental Education(3)# Global Change in the Past- Paleoceanography in the Tropical Pacific Ocean(3) Topics in Marine Chemistry - Oceanic CO2 and Global Change(3)
EDUCATION		<i>Cognition and Instruction(3)#</i>
106-2 (2018 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1)	<i>Intergalactic Medium(3)#</i>
ATMOSPHERIC SCIENCES	Seminar(IV)(1)	<i>Advanced Synoptic Meteorology(3)#</i> Climate Change(3)# Numerical Modeling of the Atmospheric Dynamical Processes(3)
GEOLOGY		<i>Advanced East Asia Regional Geology(3)</i>
GEOPHYSICS		NA
OCEANOGRAPHY		Satellite Remote Data Analysis(I)(3)#
107-1 (2018 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	<i>Advanced Astronomical Observations(3)#</i> Advanced Astrophysics(3)#
ATMOSPHERIC SCIENCES		<i>Geophysical Fluid Dynamics(3)#</i> Simulation and Diagnosis of Mesoscale Weathers(2)# <i>Statistical Analysis in Climate Research(3)#</i>
GEOLOGY		<i>Core-Log Integration(3)#</i> Earth Sciences and Archaeology(3)#
GEOPHYSICS		NA
OCEANOGRAPHY		Marine Environmental Education(3)#
107-2 (2019 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1)	<i>Interstellar Medium(3)#</i>
ATMOSPHERIC SCIENCES	Seminar(IV)(1)	<i>Research Methodologies in Atmospheric Sciences(3)#</i>

GEOLOGY		<i>Stress Regimes in Lithosphere(3)#</i>
GEOPHYSICS		N/A
OCEANOGRAPHY		Satellite Remote Data Analysis (I)(3)#
108-1 (2019 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	<i>Advanced Astrophysics(3)#</i> <i>Advanced Astronomical Observations(3)#</i>
ATMOSPHERIC SCIENCES		Topics in Meteorological Phenomena in Eastern Asia(3)# Geophysical Fluid Dynamics(3)# Research Methodologies in Atmospheric Sciences(3)#
GEOLOGY		<i>Core-Log Integration(3)# Topics on Geology(3)</i>
GEOPHYSICS		<i>Theoretical Geophysics(3)#</i>
OCEANOGRAPHY		Marine Environmental Education(3)#
108-2 (2020 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1) Seminar(IV)(1)	Intergalactic Medium (3)#
ATMOSPHERIC SCIENCES		Advanced Synoptic Meteorology(3)# Climate Change(3)# Topic on Atmospheric Sciences(3)
GEOLOGY		NA
GEOPHYSICS		NA
OCEANOGRAPHY		Satellite Remote Data Analysis (I)(3)#
INTEGRATED		NA
109-1 (2020 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astronomical Observations(3)# Advanced Astrophysics(3)# High Energy Astrophysics(3)# <i>Statistics for Astronomy(3)#</i>
ATMOSPHERIC SCIENCES		Geophysical Fluid Dynamics(3)# Statistical Analysis in Climate Research(3)# Research Methodologies in Atmospheric Sciences(3)#
GEOLOGY		<i>Advanced Igneous Petrology(3)#</i> <i>Micro-Structural Geology(3)#</i>
GEOPHYSICS		The Dynamics of Fault Zone(3)#
OCEANOGRAPHY		Marine Environmental Education(3)#
INTEGRATED		NA
109-2 (2021 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1) Seminar(IV)(1)	NA
ATMOSPHERIC SCIENCES		Numerical Modeling of the Atmospheric Dynamical Processes(3)
GEOLOGY		<i>Strain Analysis(3)#</i> Topics on Geology(3)

GEOPHYSICS		Topics on Seismology(3)#
OCEANOGRAPHY		NA
INTEGRATED		NA
110-1 (2021 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astronomical Observations(3)# Advanced Astrophysics (3)#
ATMOSPHERIC SCIENCES		Advanced Synoptic Meteorology(3)# Geophysical Fluid Dynamics(3)# Meso-scale Meteorology(3)# Research Methodologies in Atmospheric Sciences(3)#
GEOLOGY		Advanced Structural Geology(3)# Core-Log Integration(3)# Quaternary Geology and Environmental Changes(3)# Sequence Stratigraphy(3)#
GEOPHYSICS		Theoretical Geophysics(3)#
OCEANOGRAPHY		Marine Environmental Education(3)#
INTEGRATED		NA
110-2 (2022 Spring)	Required	Selected
ASTRONOMY	Seminar(II)(1) Seminar(IV)(1)	NA
ATMOSPHERIC SCIENCES		Statistical Analysis in Climate Research(3)# Climate Change(3)#
GEOLOGY		Geo-technical Writing(3)# Stress Regimes in Lithosphere(3)#
GEOPHYSICS		NA
OCEANOGRAPHY		NA
INTEGRATED		NA
111-1 (2022 Fall)	Required	Selected
ASTRONOMY	Seminar(I)(1) Seminar(III)(1)	Advanced Astrophysics(3)# Advanced Astronomical Observations(3)#
ATMOSPHERIC SCIENCES		Meso-scale Meteorology(3)# Research Methodologies in Atmospheric Sciences(3)# Geophysical Fluid Dynamics(3)# Special Topic on Mei-Yu in Taiwan(2)#
GEOLOGY		Topics on Geology(3) Petrographic Methods(3)# Earth Sciences and Archaeology(3)# Core-Log Integration(3)#
GEOPHYSICS		NA
OCEANOGRAPHY		Marine Environmental Education(3)#
INTEGRATED		NA
111-2 (2023 Spring)	Required	Selected

ASTRONOMY	<i>Seminar(II)(1)</i> <i>Seminar(IV)(1)</i>	NA
ATMOSPHERIC SCIENCES		<i>Advanced Synoptic Meteorology(3)#</i>
GEOLOGY		<i>Stress Regimes in Lithosphere(3)#</i>
GEOPHYSICS		<i>Theoretical Geophysics(3)#</i>
OCEANOGRAPHY		NA
112-1 (2023 Fall)	Required	Selected
ASTRONOMY	<i>Seminar(I)(1)</i> <i>Seminar(III)(1)</i>	Advanced Astrophysics(3)# Advanced Astronomical Observations(3)# Bioastronomy(3)#
ATMOSPHERIC SCIENCES		Meso-scale Meteorology(3)# Research Methodologies in Atmospheric Sciences(3)# Topics in Meteorological Phenomena in Eastern Asia(3)#
GEOLOGY		<i>Advanced East Asia Regional Geology(3)</i> Advanced Igneous Petrology(3)#
GEOPHYSICS		NA
OCEANOGRAPHY		Marine Environmental Education(3)#