

# EARTH AND PLANETARY SCIENCES SECOND MAJOR FOR ISP STUDENTS

Students must also complete the Undergraduate Registration Requirement (<https://catalogs.northwestern.edu/undergraduate/requirements-policies/undergraduate-registration-requirement/>) and the degree requirements of their home school.

**NOTE: This Catalog describes Weinberg College BA requirements that pertain to students who matriculated at Northwestern after spring quarter 2023. Refer to the Archives (<https://catalogs.northwestern.edu/archives/>) if you are following BA requirements described in the 2018-2019 through 2022-2023 editions.**

## Second Major for ISP (9 units beyond ISP requirements)

The Integrated Science Program (ISP) is a highly selective program within Weinberg College. Students majoring in ISP who wish to also complete a major in Earth and Planetary Sciences must fulfill the two Core Courses and seven Advanced Studies courses as described below, in addition to the requirements for ISP.

Physics of the Earth for ISP (EARTH 350-0), part of the requirements for the ISP major, may not be waived or skipped by students doing the second major in Earth and Planetary Sciences.

### 2 Core Courses

Course	Title
EARTH 210-0	Earth Systems Science and Climate Change
EARTH 214-0	Physical Earth Science

### 7 Advanced Studies Courses

Any 300-level EARTH course may be applied towards the Advanced Studies requirement (a 400-level course with approval), with a maximum of one unit of EARTH 399-0 (or INTG-SCI 398-0 if associated Earth and Planetary Science research). Within Advanced Studies students must also complete a 4-course Sub-Discipline requirement (p. 1) and 2-course Skills Areas requirement (p. 1).

#### Sub-Discipline Requirement (4 courses)

Students must take at least one course from four of the following seven Sub-Disciplines. A course may not be applied to more than one sub-discipline at the same time. Some topic offerings of EARTH 390-0 may be applied to a Sub-Discipline area with department approval, and new courses not yet in this Catalog edition may also be eligible. Refer to Earth and Planetary Science webpage (<https://www.earth.northwestern.edu/>) for updates. Recent EARTH 390-0 classes that qualify includes Paleobiology (*Geobiology Sub-Discipline*).

#### Earth Materials

Course	Title
EARTH 300-0	Earth and Planetary Materials
EARTH 301-0	Petrology: Evolution of Crustal and Mantle Rocks

#### Geochemistry

Course	Title
EARTH 310-0	Aqueous Geochemistry
EARTH 312-0	Stable Isotope Geochemistry
EARTH 313-0	Radiogenic Isotope Geochemistry
EARTH 314-0	Organic Geochemistry

#### Seismology

Course	Title
EARTH 323-0	Seismology and Earth Structure
EARTH 324-0	Earthquakes and Tectonics
EARTH 327-0	Geophysical Time Series Analysis

#### Sedimentation and Stratigraphy

Course	Title
EARTH 330-0	Sedimentary Geology
EARTH 331-0	Field Problems in Sedimentary Geology

#### Climate/Paleoclimate

Course	Title
EARTH 340-0	Physics of Weather & Climate
EARTH 341-0	Quaternary Climate Change: Ice Ages to the Age of Oil
EARTH 342-0	Contemporary Energy and Climate Change
EARTH 343-0	Earth System Modeling
EARTH 344-0	The Scientific Foundations of Decarbonization

#### Geophysics

Course	Title
EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences
EARTH 354-0	Physics of Rock Deformation in Planetary Interiors

#### Geobiology

Course	Title
EARTH 370-0	Geobiology
EARTH 371-0	Biogeochemistry
EARTH 373-0	Microbial Ecology

#### Skills Areas Requirement (2 courses)

Students must take at least one course from two of the three Skills Areas listed below. No course may be counted for more than one Skills Area at the same time. Some topic offerings of EARTH 390-0 may be applied to a Skill Area with department approval, and new courses not yet in this Catalog edition may also be eligible. Refer to Earth and Planetary Science webpage (<https://www.earth.northwestern.edu/>) for updates. Recent EARTH 390-0 classes that qualify include: GIS Level 1 & GIS Level 2 (*Spatial Reasoning*), and Analytical Techniques in Geochemistry (*Analytical/Instrumentation/Field*).

#### Quantitative

Course	Title
EARTH 310-0	Aqueous Geochemistry
EARTH 327-0	Geophysical Time Series Analysis
EARTH 340-0	Physics of Weather & Climate
EARTH 343-0	Earth System Modeling
EARTH 353-0	Mathematical Inverse Methods in Earth and Environmental Sciences
EARTH 354-0	Physics of Rock Deformation in Planetary Interiors

**Spatial Reasoning**

Course	Title
EARTH 300-0	Earth and Planetary Materials
EARTH 330-0	Sedimentary Geology

**Analytical/Instrumentation/Field**

Course	Title
EARTH 331-0	Field Problems in Sedimentary Geology
EARTH 360-0	Instrumentation and Field Methods