EES Catalogue changes approved in the Sept. 2016 Grad Council/Council of Chairs meetings

Current catalog listing

ERTH 130, Spaceship Earth, 3cr, 3 cl hrs

Offered fall semester, even-numbered years

Study of Earth as an immense system composed of a gigantic rocky mass, a planet-dominating ocean, an active atmosphere, and an abundance of life. Consideration of subsystems interacting across time and space. Discussion of possible mechanisms that may control this megasystem including controversial topics, e.g. co-evolution, homeostatic feedback mechanisms, and the Gaia Hypothesis.

ERTH 130L, Spaceship Earth Laboratory, 1cr, 3 lab hrs

Corequisite: ERTH 130

Laboratory and field demonstrations of principles of global biogeochemical cycles and the interaction of life with its planetary home.

New catalog listing

ERTH 130, Spaceship Earth, 3cr, 3 cl hrs

Offered on demand

Study of Earth as an immense system composed of a gigantic rocky mass, a planet-dominating ocean, an active atmosphere, and an abundance of life. Consideration of subsystems interacting across time and space. Discussion of possible mechanisms that may control this megasystem including controversial topics, e.g. co-evolution, homeostatic feedback mechanisms, and the Gaia Hypothesis.

ERTH 130L, Spaceship Earth Laboratory, 1cr, 3 lab hrs

Corequisite: ERTH 130

Laboratory and field demonstrations of principles of global biogeochemical cycles and the interaction of life with its planetary home.

Current catalog listing

ERTH 201, Geobiology, 4 cr, 3 cl hrs, 3 lab hrs

Prerequisite: a 100-level ERTH course Corequisite: ERTH 101L

Offered spring semester, odd-numbered years

Consideration of life and its impact on the Earth System over the course of Earth history including its preserved geochemical and fossil remains, study of the observable geological effects of life processes and in turn the impact of geological, hydrological, and atmospheric effects on the origins and subsequent evolution of life. Field trips.

New catalog listing

ERTH 201, Geobiology, 4 cr, 3 cl hrs, 3 lab hrs

Prerequisite: a 100-level ERTH course Corequisite: ERTH 101L

Offered on demand

Consideration of life and its impact on the Earth System over the course of Earth history including its preserved geochemical and fossil remains, study of the observable geological effects of life processes and in turn the impact of geological, hydrological, and atmospheric effects on the origins and subsequent evolution of life. Field trips.

Current catalog listing

ERTH 202, Earth Surface Processes and Landforms, 4 cr, 3 cl hrs, 3 lab hrs

Prerequisites: Any ERTH 100 level class

Corequisite: ERTH 101L

Offered fall semester, odd-numbered years

A study of the interactions between the atmosphere and the internal heat of the Earth which result in the development of landscapes observable at the Earth's surface today. Topics will include atmospheric circulation, climate, fluvial processes, and the record of paleoclimate contained in the landscape. Field trips.

New catalog listing

ERTH 202, Earth Surface Processes and Landforms, 4 cr, 3 cl hrs, 3 lab hrs

Prerequisites: Any ERTH 100 level class Corequisite: ERTH 101L

Offered fall semester, odd-numbered years

A study of the interactions between the atmosphere and the internal heat of the Earth which result in the development of landscapes observable at the Earth's surface today. Topics will include atmospheric circulation, climate, fluvial processes, and the record of paleoclimate contained in the landscape. Field trips.

Current catalog listing

ERTH 204, Introduction to Whole Earth Structure and Composition, 4 cr, 3 cl hrs, 3 lab hrs

Prerequisite: a 100-level ERTH course

Corequisite: ERTH 101L

Offered fall semester, even-numbered years

Introduction to geophysical and geochemical methods used to study the deep Earth. Formation, composition and internal structure of the Earth, plate tectonics, gravitational and magnetic fields, heat flow and thermal history, earthquakes, and interaction of Earth systems with emphasis on the crust, mantle and core. Introduction to mantle convection, geochemical reservoirs, and mantle plumes. Field trips.

New catalog listing

ERTH 204, Introduction to Whole Earth Structure and Composition, 4 cr, 3 cl hrs, 3 lab hrs Prerequisite: a 100-level ERTH course

Corequisite: ERTH 101L

Offered fall semester, even-numbered years

Introduction to geophysical and geochemical methods used to study the deep Earth. Formation, composition and internal structure of the Earth, plate tectonics, gravitational and magnetic fields, heat flow and thermal history, earthquakes, and interaction of Earth systems with emphasis on the crust, mantle and core. Introduction to mantle convection, geochemical reservoirs, and mantle plumes. Field trips.

Current catalog listing

ERTH 205, Earth Science Practicum, 1 cr, 3 lab hrs

Prerequisite: a 100-level ERTH course
Corequisite: ERTH 101L
Offered fall semester.
Instruction and practice in computational methods used to solve Earth science problems. Simple ways to describe physical processes mathematically, then approximate them numerically. Introduction to spreadsheets and graphics programs. Review of math and statistics.

New catalog listing

ERTH 205, Earth Science Practicum, 1 cr, 3 lab hrs

Prerequisite: a 100-level ERTH course Corequisite: ERTH 101L

Offered fall semester.

Instruction and practice in computational methods used to solve Earth science problems. Simple ways to describe physical processes mathematically, then approximate them numerically. Introduction to spreadsheets and graphics programs. Review of math and statistics.

Current catalog listing

ERTH 384, Stratigraphy, 1 cr, 2 cl hrs, 3 lab hrs

Prerequisite: ERTH 203 Corequisite: ERTH 201 Offered spring semester, even-numbered years Survey of lithostratigraphic, biostratigraphic an

Survey of lithostratigraphic, biostratigraphic and chronostratigraphic principles. Topics include seismic and sequence stratigraphy and stratigraphic modeling. Weekend field trip required. Meets with ERTH 385 for the first third of the semester.

New catalog listing

ERTH 384, Stratigraphy, 1 cr, 2 cl hrs, 3 lab hrs

Prerequisite: ERTH 203

Corequisite: ERTH 201

Offered spring semester, even-numbered years

Survey of lithostratigraphic, biostratigraphic and chronostratigraphic principles. Topics include seismic and sequence stratigraphy and stratigraphic modeling. Weekend field trip required. Meets with ERTH 385 for the first third of the semester.

Current catalog listing

ERTH 385, Stratigraphy and Paleontology, 3 cr, 2 cl hrs, 3 lab hrs

Prerequisite: ERTH 203 Corequisite: ERTH 201 Offered spring semester, even-numbered years Continuation of paleontologic and stratigraphic

Continuation of paleontologic and stratigraphic principles; survey of geologically important invertebrate biota preserved as fossils; their modes of preservation, collection techniques, taxonomy, evolution, paleobiology and paleoecology; overview of the late Precambrian and Phanerozoic biotic and stratigraphic histories in the context of North American tectonics. Weekend field trips required.

New catalog listing

ERTH 385, Stratigraphy and Paleontology, 3 cr, 2 cl hrs,

3 lab hrs Prerequisite: ERTH 203 Corequisite: ERTH 201

Offered spring semester, even-numbered years

Continuation of paleontologic and stratigraphic principles; survey of geologically important invertebrate biota preserved as fossils; their modes of preservation, collection techniques, taxonomy, evolution, paleobiology and paleoecology; overview of the late Precambrian and Phanerozoic biotic and stratigraphic histories in the context of North American tectonics. Weekend field trips required.

Current catalog listing

GEOC 575, Theory and Practice of Electron Microprobe Analysis, 1 cr

Prerequisites: ERTH 380; consent of instructor

Principles, techniques and applications of electron microprobe analysis of geological samples. Required for students who will use the electron microprobe as part of their research. Includes lecture and hands-on sample preparation and analysis.

New catalog listing

GEOC 575, Theory and Practice of Electron Microprobe Analysis, 1 cr

Prerequisites: ERTH 380; consent of instructor

Principles, techniques and applications of electron microprobe analysis of geological samples. Required for students who will use the electron microprobe as part of their research. Includes lecture and hands-on sample preparation and analysis.

Geophysics undergraduate program:

Current catalog listing

Bachelor of Science in Earth Science with Geophysics Option

Minimum credit hours required—130 In addition to the General Education Core Curriculum Requirements (page 7), the following courses are required:

- A 100-level ERTH course and associated lab (4)
- Earth Science core [ERTH 200 (4), ERTH 201 (4), ERTH 202 (4), ERTH 203 (3), ERTH 204 (4), ERTH 205 (1), ERTH 325 (3), ERTH 340 (3), ERTH 390 (3)]
- ERTH 380 (4) or ERTH 385 (3), ERTH 448 (3), ERTH 468 (3)
- ERTH 483 (2) and ERTH 484 (2), or approved geophysics field experience (4)
- One of the following: PETR 370 (3), ERTH 434 (3), ERTH 445 (3), ERTH 453 (3), any GEOP(3)
- MATH 231 (4), MATH 254 (3), MATH 332 (3),
- MATH 335 (3), MATH 283 or 382 (3)
- PHYS 242 (4), PHYS 333 (3)
- Technical electives, minimum 3 credit hours from courses numbered 300 or above from the following fields: mathematics, biology, computer science, physics, chemistry, and engineering.
- Earth science elective in courses numbered 300 and above (3)
- Electives to reach 130 credit hours

New catalog listing

Bachelor of Science in Earth Science with Geophysics Option

Minimum credit hours required 130

In addition to the General Education Core Curriculum Requirements (page 7), the following courses are required:

- A 100-level ERTH course and associated lab (4)
- Earth Science core [ERTH 200 (4), ERTH 201 (4), ERTH 202 (4), ERTH 203 (3), ERTH 204 (4), ERTH 205 (1), ERTH 325 (3), ERTH 340 (3), ERTH 390 (3)]
- ERTH 380 (4) or ERTH 385 (3), ERTH 448 (3), ERTH 468 (3)
- ERTH 483 (2) and ERTH 484 (2), or approved geophysics field experience (4)
- One of the following: PETR 370 (3), ERTH 434 (3), ERTH 445 (3), ERTH 453 (3), any GEOP(3)
- MATH 231 (4), MATH 254 (3), MATH 332 (3),
- MATH 335 (3), MATH 283 or 382 (3)
- PHYS 241 (2), PHYS 242 (4), PHYS 333 (3)
- Technical electives, minimum 3 credit hours from courses numbered 300 or above from the following fields: mathematics, biology, computer science, physics, chemistry, and engineering.
- Earth science elective in course numbered 300 and above (3)
- Electives to reach 130 credit hours

Mineral Resources undergraduate program

Current catalog listing

Bachelor of Science in Earth Science with Mineral Resources Option

Minimum credit hours required—130 In addition to the General Education Core Curriculum Requirements (page 7), the following courses are required:

- ERTH 101 with associated lab (4)
- Earth Science core [ERTH 200 (4), ERTH 201 (4), ERTH 202 (4), ERTH 203 (3), ERTH 204 (4), ERTH 205 (1), ERTH 325 (3), ERTH 340 (3), ERTH 390 (3)]
- ERTH 380 (4), ERTH 431 (3), ERTH 453 (4), ERTH 462 (3), ERTH 480 (6), ERTH 4xx (3) [Environmental Geochemistry of Mining Activities]
- ME 320 (2), ME 340 (3)
- Technical electives, minimum 3 credit hours from courses numbered 300 or above from the following fields: mathematics, biology, computer science, physics, chemistry, and engineering.
- Earth science and mineral engineering electives, 12 credit hours from the following classes: ERTH 360 (2), ERTH 407/GEOC 507 (3), ERTH 431/GEOC 531 (3), ERTH 465/GEOC 565

(3), ME 522 (3), ME 523 (3), ME 551 (3)

• Electives to reach 130 credit hours

New catalog listing

Bachelor of Science in Earth Science with Mineral Resources Option

Minimum credit hours required—130

In addition to the General Education Core Curriculum Requirements (page 7), the following courses are required:

- ERTH 101 with associated lab (4)
- Earth Science core [ERTH 200 (4), ERTH 201 (4), ERTH 202 (4), ERTH 203 (3), ERTH 204 (4), ERTH 205 (1), ERTH 325 (3), ERTH 340 (3), ERTH 390 (3)]
- ERTH 380 (4), ERTH 431 (3), ERTH 453 (4), ERTH 462 (3), ERTH 480 (6), ERTH 4xx (3) [Environmental Geochemistry of Mining Activities]
- ME 320 (2), ME 340 (3)
- Technical electives, minimum 3 credit hours from courses numbered 300 or above from the following fields: mathematics, biology, computer science, physics, chemistry, and engineering.
- Earth science and mineral engineering electives, 12 credit hours from the following classes: ERTH 360 (2), ERTH 407/GEOC 507 (3), ERTH 431/GEOC 531 (3), ERTH 465/GEOC 565

(3), ME 522 (3), ME 523 (3), ME 551 (3)

- Electives to reach 130 credit hours
- Earth science elective in course numbered 300 and above (3)

Geology undergrad program

Current catalog listing

Bachelor of Science in Earth Science with Geology Option

Minimum credit hours required—130

In addition to the General Education Core Curriculum Requirements (page 7), the following courses are required:

- A 100-level ERTH course and associated lab (4) Earth Science core [ERTH 200 (4), ERTH 201 (4), ERTH 202 (4), ERTH 203 (3), ERTH 204 (4), ERTH 205 (1), ERTH 325 (3), ERTH 340 (3), ERTH 390 (3)]
- ERTH 380 (4), ERTH 385 (3), ERTH 453 (4), ERTH 468 (3), either ERTH 483 (2), ERTH 484 (2), and ERTH 485 (2) or ERTH 480 (6)
- Earth science electives, minimum 9 credit hours in courses numbered 300 and above
- MATH 283 or 382 (3)
- Total of 3 credit hours 200-level or above from chemistry, mathematics, or physics
- Technical electives, minimum 12 credit hours from courses numbered 300 or above from the following fields: mathematics, biology, computer science, physics, chemistry, and engineering.
- Electives to complete 130 credit hours

New catalog listing

Bachelor of Science in Earth Science with Geology Option

Minimum credit hours required 130

In addition to the General Education Core Curriculum Requirements (page 7), the following courses are required:

- A 100-level ERTH course and associated lab (4) Earth Science core [ERTH 200 (4), ERTH 201 (4), ERTH 202 (4), ERTH 203 (3), ERTH 204 (4), ERTH 205 (1), ERTH 325 (3), ERTH 340 (3), ERTH 390 (3)]
- ERTH 380 (4), ERTH 385 (3), ERTH 453 (4), ERTH 468 (3), either ERTH 483 (2), ERTH 484 (2), and ERTH 485 (2) or ERTH 480 (6)
- Earth science electives, minimum 12 credit hours in courses numbered 300 and above
- MATH 283 or 382 (3)
- Total of 3 credit hours 200-level or above from chemistry, mathematics, or physics
- Technical electives, minimum 9 credit hours from courses numbered 300 or above from the following fields: mathematics, biology, computer science, physics, chemistry, engineering, or courses numbered 500 or above from GEOL, GEOP, GEOC and HYD.