

GEOSCIENCES (GEO SCI)

Geosciences Courses

GEO SCI 100 Introduction to the Earth

3 cr. Undergraduate.

Study of earth processes and materials as they relate to people and the environment.

Prerequisites: none.

Course Rules: Lec, lab. Voluntary field trip for which fee is assessed. No credit for students with credit in GEO SCI 185.

General Education Requirements: Natural Science & Wellness Lab

Last Taught: Fall 2025, Summer 2025, Spring 2025, Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 102 Evolution of the Earth

3 cr. Undergraduate.

Principles for interpreting the physical and paleontological history of the earth using case studies from the rock record.

Prerequisites: none.

Course Rules: 2 hrs lec, 3 hrs lab. Field trip for which fee is assessed.

General Education Requirements: Natural Science & Wellness Lab

Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 105 Earth, Air, Fire and Water

3 cr. Undergraduate.

A study of planet Earth from formation through history to modern-day oceans, atmosphere, continents, and interior; how all interact to form the human environment.

Prerequisites: none.

General Education Requirements: Natural Science and Wellness

Last Taught: UWinterIM 2026, Fall 2025, Summer 2025, Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 106 The Earth Environment

3 cr. Undergraduate.

The Earth and its environment; emphasis on the interrelationships of humans with the Earth's processes and responses.

Prerequisites: none.

Course Rules: Lec. Voluntary field trip for which fee is assessed.

General Education Requirements: Natural Science and Wellness

Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 108 A History of Life

3 cr. Undergraduate.

Major features of the history of life; how paleontologists reconstruct this history. 2 hrs lec, 2 hrs lab.

Prerequisites: none.

Last Taught: Spring 2021, Fall 2020, Spring 2020, Fall 2019.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 109 Dinosaurs

3 cr. Undergraduate.

The natural history of dinosaurs and how geologists and paleontologists reconstruct that history.

Prerequisites: none.

General Education Requirements: Natural Science and Wellness

Last Taught: Fall 2025, Summer 2025, Spring 2025, Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 120 Geology of the Planets

3 cr. Undergraduate.

Geological features of the planets, similarities and differences in materials and processes, significance of space exploration to geology.

Prerequisites: none.

Course Rules: Lec/Lab.

General Education Requirements: Natural Science & Wellness Lab

Last Taught: Spring 2025, Spring 2024, Spring 2023, Spring 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 150 Introduction to Ocean Sciences

3 cr. Undergraduate.

Survey of the interdisciplinary sciences supporting oceanography. Designed for students who do not plan to major in geological sciences but are interested in the recent advances of marine sciences.

Prerequisites: none.

Course Rules: Lec, voluntary dis. Not open for credit to students who have taken GEO SCI 460.

General Education Requirements: Natural Science and Wellness

Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 151 Ocean Sciences Laboratory

1 cr. Undergraduate.

Laboratory exercises and demonstrations of the physical, chemical and biological processes operating in the oceans and how scientists study these processes. 2 hrs lab.

Prerequisites: Geo Sci 150(C).

Course Rules: Not open for cr to students who have had Geo Sci 460 or 461.

Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 194 First-Year Seminar.

3 cr. Undergraduate.

The specific topics are announced in the Schedule of Classes each time the class is offered.

Prerequisites: none.

Course Rules: Open only to freshmen. Students may earn cr in just one L&S First-Year Sem (course numbers 192, 193, 194).

Last Taught: Fall 2019, Fall 2017, Fall 2016, Fall 2015.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 199 Independent Study

1-3 cr. Undergraduate.

For further information, consult dept chair.

Prerequisites: 2.0 GPA; consent of instructor, department chair, and Assistant Dean for Student Academic Services.

Course Rules: May be retaken to 6 cr max.

Last Taught: Summer 2024, Spring 2013, Fall 2011, Summer 2011.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 297 Study Abroad:

1-12 cr. Undergraduate.

Designed to enroll students in UWM sponsored program before course work level, content, and credits are determined and/or in specially prepared course work.

Prerequisites: acceptance for Study Abroad Prog.

Course Rules: May be retaken w/chg in topic.

Last Taught: Spring 2020, Fall 2019, Spring 2018, Fall 2015.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 301 Principles of Mineralogy

4 cr. Undergraduate.

Major rock-forming minerals, their associations, geologic occurrence, and importance with an emphasis on identification using physical properties and other techniques. 3 hrs lec, 3 hrs lab.

Prerequisites: GEO SCI 100(P) and course in college chemistry.

Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 302 Elementary Petrology

4 cr. Undergraduate.

Continuation of GEO SCI 301. Igneous and metamorphic rocks, including classification, genesis, field identification, and petrographic microscope study.

Prerequisites: GEO SCI 301(P).

Course Rules: 3 hrs lec, 3 hrs lab. Required field trip for which fee is assessed.

Last Taught: Spring 2025, Spring 2024, Spring 2023, Spring 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 316 Introduction to Geophysics

4 cr. Undergraduate.

Geophysical methods and their applications to the understanding of the interior of the Earth and global tectonics.

Prerequisites: GEO SCI 100(P) or GEO SCI 101(P); and PHYSICS 120(P) or PHYSICS 209(P).

Course Rules: 3 hrs lec, 3 hrs lab.

Last Taught: Fall 2025, Fall 2024, Fall 2023, Fall 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 381 Honors Seminar.

3 cr. Undergraduate.

Selected topics.

Prerequisites: 200-level HONORS course and consent of Honors College Director.

Course Rules: May be retaken with change in topic to 9 cr max. Field trips may be required.

General Education Requirements: Natural Science and Wellness

Last Taught: Spring 2023, Spring 2020, Fall 2019, Fall 2018.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 400 Water Quality

4 cr. Undergraduate/Graduate.

Water availability and water quality in surface and subsurface water bodies; management of water as a resource.

Prerequisites: junior standing and CHEM 102(P) or consent of instructor.

Course Rules: 3 hrs lec, 3 hrs lab.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 400G Water Quality

4 cr. Undergraduate/Graduate.

Water availability and water quality in surface and subsurface water bodies; management of water as a resource.

Prerequisites: junior standing and CHEM 102(P) or consent of instructor.

Course Rules: 3 hrs lec, 3 hrs lab.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 409 Process Geomorphology

4 cr. Undergraduate/Graduate.

Study of geological processes and their effect on the formation and evolution of land forms.

Prerequisites: junior standing, and GEO SCI 100(P), GEOG 120(P), or GEOG 121(P).

Course Rules: 3 hrs lec, 3 hrs lab, field trips for which fee is assessed.

Last Taught: Fall 2025, Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 409G Process Geomorphology

4 cr. Undergraduate/Graduate.

Study of geological processes and their effect on the formation and evolution of land forms.

Prerequisites: junior standing, and GEO SCI 100(P), GEOG 120(P), or GEOG 121(P).

Course Rules: 3 hrs lec, 3 hrs lab, field trips for which fee is assessed.

Last Taught: Fall 2025, Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 414 Structural Geology

4 cr. Undergraduate.

Description and analysis of primary and secondary geological structures; regional and global frameworks of geological structures.

Prerequisites: junior standing, Math Placement Level 40, and GEO SCI 302(C).

Course Rules: 3 hrs lec, 3 hrs lab. Field trip for which fee is assessed.

Last Taught: Spring 2025, Spring 2024, Spring 2023, Spring 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 420 Methods in Paleomagnetism and Environmental Magnetism

3 cr. Undergraduate.

Theoretical and practical foundation in paleomagnetism and environmental magnetism, including hands-on work with samples and real data.

Prerequisites: junior standing; MATH 231(R), PHYSICS 210(R), or PHYSICS 122(R).

Course Rules: Counts as a repeat of GEO SCI 696 with the same topic.

Not open to students with credit in GEO SCI 720.

Last Taught: Fall 2023, Spring 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 421 Conservation Paleontology

3 cr. Undergraduate.

Application of theories and analytical tools of paleontology to biodiversity conservation.

Prerequisites: junior standing or consent of instructor.

Course Rules: Counts as a repeat of GEO SCI 696 with the following topic:

Conservation Paleontology.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 422 Plant-Insect Interactions in Deep Time

3 cr. Undergraduate.

Fossil record of interactions between plants and insects, focusing on herbivory and pollination; basic overview of the fossil record and evolutionary history of plants and insects.

Prerequisites: junior standing or consent of instructor.

Course Rules: Counts as a repeat of GEO SCI 696 with the following topic:

Plant and Insect Relationships in Deep Time.

Last Taught: Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 435 History of Geologic Thought

3 cr. Undergraduate/Graduate.

History of development of the major concepts in geology.

Prerequisites: junior standing and GEO SCI 102(P); or consent of instructor.**Last Taught:** Spring 2024.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 435G History of Geologic Thought**

3 cr. Undergraduate/Graduate.

History of development of the major concepts in geology.

Prerequisites: junior standing and GEO SCI 102(P); or consent of instructor.**Last Taught:** Spring 2024.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 443 Glacial and Pleistocene Geology**

4 cr. Undergraduate/Graduate.

Mechanics of glacial flow, Pleistocene stratigraphy, and laboratory techniques.

Prerequisites: junior standing and GEO SCI 100(P), GEO SCI 101(P), GEOG 120(P), or GEOG 121(P). GEO SCI 102(R) or GEO SCI 108(R).**Course Rules:** 3 hrs lec, 3 hrs lab. Field trips for which fees are assessed.**Last Taught:** Spring 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 443G Glacial and Pleistocene Geology**

4 cr. Undergraduate/Graduate.

Mechanics of glacial flow, Pleistocene stratigraphy, and laboratory techniques.

Prerequisites: junior standing and GEO SCI 100(P), GEO SCI 101(P), GEOG 120(P), or GEOG 121(P). GEO SCI 102(R) or GEO SCI 108(R).**Course Rules:** 3 hrs lec, 3 hrs lab. Field trips for which fees are assessed.**Last Taught:** Spring 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 455 Field Geology**

3-8 cr. Undergraduate.

Geologic field work and mapping. Taken off-campus, usually during the summer.

Prerequisites: senior standing, GEO SCI 302(P), and GEO SCI 414(P).**Course Rules:** May be retaken to 8 cr max.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 463 Physical Hydrogeology**

4 cr. Undergraduate/Graduate.

Study of ground water occurrence, its interrelationship with surface water, aquifer properties, groundwater flow and water supply development, including well hydraulics, water quality, and groundwater law.

Prerequisites: junior standing; GEO SCI 100(P) or GEO SCI 101(P); MATH 232(P).**Course Rules:** 3 hrs lec, 3 hrs lab, & field trip.**Last Taught:** Fall 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 463G Physical Hydrogeology**

4 cr. Undergraduate/Graduate.

Study of ground water occurrence, its interrelationship with surface water, aquifer properties, groundwater flow and water supply development, including well hydraulics, water quality, and groundwater law.

Prerequisites: junior standing; GEO SCI 100(P) or GEO SCI 101(P); MATH 232(P).**Course Rules:** 3 hrs lec, 3 hrs lab, & field trip.**Last Taught:** Fall 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 464 Chemical Hydrogeology**

4 cr. Undergraduate/Graduate.

Natural chemical processes that occur in groundwater systems, how they are modified by human activity and contamination, and attempts to regulate them.

Prerequisites: junior standing and CHEM 102(P).**Course Rules:** FRSHWTR 464 & GEO SCI 464 are jointly-offered and count as repeats of one another. 3 hrs lec, 3 hrs lab.**Last Taught:** Spring 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 464G Chemical Hydrogeology**

4 cr. Undergraduate/Graduate.

Natural chemical processes that occur in groundwater systems, how they are modified by human activity and contamination, and attempts to regulate them.

Prerequisites: junior standing and CHEM 102(P).**Course Rules:** FRSHWTR 464 & GEO SCI 464 are jointly-offered and count as repeats of one another. 3 hrs lec, 3 hrs lab.**Last Taught:** Spring 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 480 Applications of GIS for Earth Scientists**

3 cr. Undergraduate.

Introduction to principles and application of geographic information systems (GIS), with emphasis on GIS analysis techniques utilizing (mostly) geologic data sets, culmination in a final GIS project.

Prerequisites: GEO SCI 100(P) or GEOG 120(P).**Course Rules:** Counts as a repeat of GEO SCI 696 with the same topic.

Not open to students with credit in GEO SCI 680.

Current Offerings: <https://catalog.uwm.edu/course-search/>**GEO SCI 497 Study Abroad:**

1-12 cr. Undergraduate/Graduate.

Designed to enroll students in UWM sponsored program before course work level, content, and credits are determined and/or in specially prepared course work.

Prerequisites: junior standing and acceptance for Study Abroad Program.**Course Rules:** May be retaken with change in topic.**Last Taught:** Fall 2023, Spring 2015.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 497G Study Abroad:**

1-12 cr. Undergraduate/Graduate.

Designed to enroll students in UWM sponsored program before course work level, content, and credits are determined and/or in specially prepared course work.

Prerequisites: junior standing and acceptance for Study Abroad Program.**Course Rules:** May be retaken with change in topic.**Last Taught:** Fall 2023, Spring 2015.**Current Offerings:** <https://catalog.uwm.edu/course-search/>

GEO SCI 499 Ad Hoc:

1-6 cr. Undergraduate.

Course created expressly for offering in a specified enrollment period.

Requires department and associate dean approval. In exceptional circumstances, can be offered in one additional semester.

Prerequisites: junior standing; additional prerequisites may be assigned to specific topic.

Course Rules: May be retaken with change in topic.

Last Taught: Fall 1996, Summer 1988.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 511 Stratigraphy and Sedimentation

4 cr. Undergraduate/Graduate.

Techniques and principles of sedimentology and stratigraphy, including methods of correlation, analysis of facies, stratigraphic mapping, and tectonic controls of sedimentation.

Prerequisites: junior standing and GEO SCI 102(P) or equivalent.

Course Rules: 3 hrs lec, 3 hrs lab. Required field trip for which fee is assessed.

Last Taught: Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 511G Stratigraphy and Sedimentation

4 cr. Undergraduate/Graduate.

Techniques and principles of sedimentology and stratigraphy, including methods of correlation, analysis of facies, stratigraphic mapping, and tectonic controls of sedimentation.

Prerequisites: junior standing and GEO SCI 102(P) or equivalent.

Course Rules: 3 hrs lec, 3 hrs lab. Required field trip for which fee is assessed.

Last Taught: Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 515 Physical Sedimentology

4 cr. Undergraduate/Graduate.

Physical properties, processes, and environments of clastic sediments.

Prerequisites: junior standing and GEO SCI 511(P).

Course Rules: 3 hrs lec, 3 hrs lab, field trip for which fee is assessed.

Last Taught: Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 515G Physical Sedimentology

4 cr. Undergraduate/Graduate.

Physical properties, processes, and environments of clastic sediments.

Prerequisites: junior standing and GEO SCI 511(P).

Course Rules: 3 hrs lec, 3 hrs lab, field trip for which fee is assessed.

Last Taught: Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 520 Introduction to Paleontology

4 cr. Undergraduate/Graduate.

General study of fossils and theoretical principles used in the study of paleontology.

Prerequisites: junior standing and GEO SCI 102(P) or GEO SCI 108(P).

Course Rules: 3 hrs lec, 3 hrs lab, field trips.

Last Taught: Fall 2023.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 520G Introduction to Paleontology

4 cr. Undergraduate/Graduate.

General study of fossils and theoretical principles used in the study of paleontology.

Prerequisites: junior standing and GEO SCI 102(P) or GEO SCI 108(P).

Course Rules: 3 hrs lec, 3 hrs lab, field trips.

Last Taught: Fall 2023.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 523 Applied Geophysics

3 cr. Undergraduate.

Theory and practical experience of geophysical techniques commonly used to examine shallow sub-surface features, often with a practical or economic aim.

Prerequisites: GEO SCI 316(P) and MATH 211(P).

Course Rules: Counts as a repeat of GEO SCI 696 with similar topic.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 525 Terroir: Geology in a Glass

3 cr. Undergraduate/Graduate.

The geology, soil types, and climate of famous wine regions; factors that influence the production of fine wine.

Prerequisites: junior standing and GEO SCI 100(P).

Course Rules: No credit for students with credit in GEO SCI 696 with the same topic.

Last Taught: Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 525G Terroir: Geology in a Glass

3 cr. Undergraduate/Graduate.

The geology, soil types, and climate of famous wine regions; factors that influence the production of fine wine.

Prerequisites: junior standing and GEO SCI 100(P).

Course Rules: No credit for students with credit in GEO SCI 696 with the same topic.

Last Taught: Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 545 X-Ray Analytical Methods

3 cr. Undergraduate/Graduate.

Methods in x-ray diffractometry and spectrometry. Nature and generation of x-rays, collection and interpretation of powder diffraction patterns and elemental analysis using x-ray spectrometry.

Prerequisites: junior standing, GEO SCI 301(P), and completion of Oral and Written Communication Competency Part A (OWC-A) requirement or ENGLISH 102(P); or graduate standing.

Last Taught: Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 545G X-Ray Analytical Methods

3 cr. Undergraduate/Graduate.

Methods in x-ray diffractometry and spectrometry. Nature and generation of x-rays, collection and interpretation of powder diffraction patterns and elemental analysis using x-ray spectrometry.

Prerequisites: junior standing, GEO SCI 301(P), and completion of Oral and Written Communication Competency Part A (OWC-A) requirement or ENGLISH 102(P); or graduate standing.

Last Taught: Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 558 Conducted Field Trip:

1-3 cr. Undergraduate/Graduate.

Field trip to a classical geologic area. Preceded by a seminar.

Prerequisites: junior standing or consent of instructor.

Course Rules: May be retaken with change in topic to 9 cr max, only 3 cr of which may be applied toward geosciences major.

Last Taught: Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 558G Conducted Field Trip:

1-3 cr. Undergraduate/Graduate.

Field trip to a classical geologic area. Preceded by a seminar.

Prerequisites: junior standing or consent of instructor.

Course Rules: May be retaken with change in topic to 9 cr max, only 3 cr of which may be applied toward geosciences major.

Last Taught: Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 562 Environmental Surface Hydrology

3 cr. Undergraduate/Graduate.

Land-atmosphere interactions, modeling of runoff generation, and water movement in the vadose zone.

Prerequisites: junior standing and MATH 232(P); or consent of instructor.

Course Rules: 3 hrs lec.

Last Taught: Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 562G Environmental Surface Hydrology

3 cr. Undergraduate/Graduate.

Land-atmosphere interactions, modeling of runoff generation, and water movement in the vadose zone.

Prerequisites: junior standing and MATH 232(P); or consent of instructor.

Course Rules: 3 hrs lec.

Last Taught: Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 563 Field Methods in Hydrogeology

4 cr. Undergraduate/Graduate.

Introduction to current equipment and methodology used in field evaluation of hydrologic systems. Well installation and monitoring, stream gauging, indirect surface observations.

Prerequisites: junior standing and GEO SCI 463(P).

Course Rules: Lab, field trip for which fee is assessed.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 563G Field Methods in Hydrogeology

4 cr. Undergraduate/Graduate.

Introduction to current equipment and methodology used in field evaluation of hydrologic systems. Well installation and monitoring, stream gauging, indirect surface observations.

Prerequisites: junior standing and GEO SCI 463(P).

Course Rules: Lab, field trip for which fee is assessed.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 614 Advanced Structural Geology

3 cr. Undergraduate/Graduate.

Advanced analysis of deformation as applied to geological structures from microscopic through regional scales.

Prerequisites: junior standing and GEO SCI 414(P); MATH 231(C).

Course Rules: Lec, field trip for which fee is assessed.

Last Taught: Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 614G Advanced Structural Geology

3 cr. Undergraduate/Graduate.

Advanced analysis of deformation as applied to geological structures from microscopic through regional scales.

Prerequisites: junior standing and GEO SCI 414(P); MATH 231(C).

Course Rules: Lec, field trip for which fee is assessed.

Last Taught: Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 635 Volcanology

3 cr. Undergraduate/Graduate.

Why and when volcanoes erupt; predicting whether eruptions will be explosive or passive.

Prerequisites: junior standing and GEO SCI 302(P); or consent of instructor.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 635G Volcanology

3 cr. Undergraduate/Graduate.

Why and when volcanoes erupt; predicting whether eruptions will be explosive or passive.

Prerequisites: junior standing and GEO SCI 302(P); or consent of instructor.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 637 Planetary Geology

3 cr. Undergraduate/Graduate.

Advanced study of planetary geology, for advanced undergraduate and graduate students.

Prerequisites: junior standing, completion of Oral and Written Communication Competency Part A (OWC-A) requirement or ENGLISH 102(P), and one of the following: GEO SCI 301(P) or ASTRON 211(P); or graduate standing.

Course Rules: No credit for students with credit in GEO SCI 697 with the same topic.

Last Taught: Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 637G Planetary Geology

3 cr. Undergraduate/Graduate.

Advanced study of planetary geology, for advanced undergraduate and graduate students.

Prerequisites: junior standing, completion of Oral and Written Communication Competency Part A (OWC-A) requirement or ENGLISH 102(P), and one of the following: GEO SCI 301(P) or ASTRON 211(P); or graduate standing.

Course Rules: No credit for students with credit in GEO SCI 697 with the same topic.

Last Taught: Spring 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 638 Advanced Igneous Petrology

3 cr. Undergraduate/Graduate.

Recent trends and applications in the fields of igneous petrology. Quantitative modelling of important petrologic processes. Critical reading of journal articles in petrology.

Prerequisites: junior standing and GEO SCI 302(P).**Course Rules:** Lec.**Last Taught:** Fall 2023.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 638G Advanced Igneous Petrology**

3 cr. Undergraduate/Graduate.

Recent trends and applications in the fields of igneous petrology. Quantitative modelling of important petrologic processes. Critical reading of journal articles in petrology.

Prerequisites: junior standing and GEO SCI 302(P).**Course Rules:** Lec.**Last Taught:** Fall 2023.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 655 Topics in Structure and Tectonics:**

1-3 cr. Undergraduate/Graduate.

Application of structural geology techniques and complimentary geosciences are used to acquire in-depth knowledge of structural processes, tectonic processes, or earth's tectonic history.

Prerequisites: junior standing and GEO SCI 414(P) or consent of instructor.**Course Rules:** May be retaken with change in topic to 9 cr max.**Last Taught:** Fall 2024.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 655G Topics in Structure and Tectonics:**

1-3 cr. Undergraduate/Graduate.

Application of structural geology techniques and complimentary geosciences are used to acquire in-depth knowledge of structural processes, tectonic processes, or earth's tectonic history.

Prerequisites: junior standing and GEO SCI 414(P) or consent of instructor.**Course Rules:** May be retaken with change in topic to 9 cr max.**Last Taught:** Fall 2024.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 694 Undergraduate Seminar:**

1-3 cr. Undergraduate.

Intensive study of a selected topic in a seminar format.

Prerequisites: junior standing or consent of instructor.**Course Rules:** May be retaken with change in topic to 9 cr max, of which up to 3 cr may count in major requirements.**Last Taught:** Spring 2011, Fall 2010, Fall 2009, Spring 2009.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 695 Internship in Geoscience**

1-3 cr. Undergraduate/Graduate.

An internship consistent with the student's plan of study in geosciences. Requirements and evaluation determined by the department on an individual basis.

Prerequisites: junior standing and consent of department.**Last Taught:** Summer 2024, Summer 2015.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 695G Internship in Geoscience**

1-3 cr. Undergraduate/Graduate.

An internship consistent with the student's plan of study in geosciences. Requirements and evaluation determined by the department on an individual basis.

Prerequisites: junior standing and consent of department.**Last Taught:** Summer 2024, Summer 2015.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 696 Topics in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Additional prerequisites announced in Schedule of Classes each time course offered.

Prerequisites: junior standing.**Course Rules:** May be retaken with change in topic to 9 cr max.**Last Taught:** Fall 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 696G Topics in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Additional prerequisites announced in Schedule of Classes each time course offered.

Prerequisites: junior standing.**Course Rules:** May be retaken with change in topic to 9 cr max.**Last Taught:** Fall 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 697 Seminar in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Specific credits and additional prerequisites announced in Schedule of Classes each time course is offered.

Prerequisites: junior standing.**Course Rules:** May be retaken with change in topic to 9 cr max.**Last Taught:** Spring 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 697G Seminar in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Specific credits and additional prerequisites announced in Schedule of Classes each time course is offered.

Prerequisites: junior standing.**Course Rules:** May be retaken with change in topic to 9 cr max.**Last Taught:** Spring 2025.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 699 Advanced Independent Reading**

1-3 cr. Undergraduate.

Advanced independent geologic study under supervision of Geo Sci faculty or instructional academic staff member. Students must submit a study proposal. For more information, consult supervising instructor or department chair.

Prerequisites: junior standing, 2.0 GPA, and consent of instructor, department chair, and Assistant Dean for Student Academic Services.**Course Rules:** May be retaken with change in topic to 3 cr max.**Last Taught:** Fall 2024, Spring 2024, Fall 2023, Spring 2023.**Current Offerings:** <https://catalog.uwm.edu/course-search/>

GEO SCI 720 Methods in Paleomagnetism and Environmental Magnetism
3 cr. Graduate.

This course is designed to provide students with a theoretical and practical foundation in paleomagnetism and environmental magnetism, including hands-on work with samples and real data.

Prerequisites: grad st; MATH 231(R); PHYSICS 210(R) or PHYSICS 122(R)

Course Rules: Counts as a repeat of GEO SCI 696 with the same topic.

Not open to students w/ credit in GEO SCI 420.

Last Taught: Fall 2023, Spring 2022.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 721 Conservation Paleontology

3 cr. Graduate.

Application of theories and analytical tools of paleontology to biodiversity conservation.

Prerequisites: graduate standing.

Course Rules: Counts as a repeat of GEO SCI 696 with topic 'Conservation Paleontology'.

Last Taught: Fall 2025.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 722 Plant-Insect Interactions in Deep Time

3 cr. Graduate.

Fossil record of interactions between plants and insects, focusing primarily on herbivory and pollination; basic overview of the fossil record and evolutionary history of plants and insects.

Prerequisites: graduate standing.

Course Rules: Counts as a repeat of GEO SCI 696 with topic 'Plant and Insect Relationships in Deep Time'.

Last Taught: Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 723 Applied Geophysics

3 cr. Graduate.

Theory and practical experience of geophysical techniques commonly used to examine shallow sub-surface features, often with a practical or economic aim.

Prerequisites: graduate standing.

Course Rules: Counts as a repeat of GEO SCI 696G with similar topic.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 730 Modelling Techniques for Hydrogeology

3 cr. Graduate.

Study and application of modelling techniques in hydrogeology. Includes finite difference and finite element techniques for groundwater flow, contaminant transport, and geochemistry.

Prerequisites: grad st; Geo Sci 463; knowledge of fortran or equiv; cons instr.

Last Taught: Spring 2025, Spring 2023, Spring 2021, Spring 2015.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 740 Carbonate Sedimentology

3 cr. Graduate.

Depositional processes, environments and stratigraphic analysis of carbonate rocks. Lec, lab, field trip, for which fee is assessed.

Prerequisites: grad st; Geo Sci 511 or equiv.

Course Rules: Field trip for which fee is assessed.

Last Taught: Fall 2023, Fall 2019, Fall 2017, Fall 2015.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 749 Biogeochemistry of Soils

3 cr. Graduate.

Biogeochemical processes in soils and their impact on water quality.

Prerequisites: graduate standing and GEO SCI 464(P) or consent of instructor.

Course Rules: 3 hrs lec.

Last Taught: Spring 2024, Spring 2020, Spring 2009.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 750 Contaminant Hydrogeology

3 cr. Graduate.

Transport and fate of contaminants in aquifers, aquitards, and unsaturated geologic materials.

Prerequisites: grad st; Geo Sci 464(C).

Last Taught: Fall 2022, Fall 2019, Fall 2017, Fall 2015.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 780 Applications of GIS for Earth Scientists

3 cr. Graduate.

Introduction to principles and application of geographic information systems (GIS), with emphasis on GIS analysis techniques utilizing (mostly) geologic data sets, culmination in a final GIS project.

Prerequisites: graduate standing.

Course Rules: Counts as a repeat of GEO SCI 696G with the same topic.

Not open to students with credit in GEO SCI 480.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 790 Graduate Seminar in the Geological Sciences:

1-3 cr. Graduate.

Add'l prereqs announced in schedule of classes each time course offered.

Prerequisites: grad st.

Course Rules: Retakable w/chg in topic to 9 cr max.

Last Taught: Spring 2015, Spring 2006, Spring 2002.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 888 Candidate for Degree

0 cr. Graduate.

Available for grad students who must meet minimum cr load requirement.

Prerequisites: graduate standing.

Course Rules: Fee for 1 cr assessed; unit does not count towards credit load for Fin Aid. Repeatable. Satisfactory/Unsatisfactory only.

Last Taught: Fall 2017, Fall 2016, Summer 2016, Summer 2015.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 990 Master's Thesis

1-8 cr. Graduate.

Prerequisites: grad st; cons instr & completed thesis proposal.

Last Taught: Fall 2025, Summer 2025, Spring 2025, Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 997 Doctoral Externship

1-12 cr. Graduate.

Prerequisites: grad st; admis to candidacy for Ph.D.

Last Taught: Spring 2019, Fall 2018.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 998 Doctoral Dissertation

1-12 cr. Graduate.

Prerequisites: grad st.

Last Taught: Fall 2025, Summer 2025, Spring 2025, Fall 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>

GEO SCI 999 Advanced Independent Reading

1-4 cr. Graduate.

Independent geologic study.

Prerequisites: grad st & cons instr.

Course Rules: Retakable to 4 cr max.

Last Taught: Fall 2025, Spring 2025, Fall 2024, Spring 2024.

Current Offerings: <https://catalog.uwm.edu/course-search/>