

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. Lec, lab.

Prerequisites: none.

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

General Education Requirements: NS+

Last Taught: Summer 2025, Spring 2025, Fall 2024, Summer 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. 2 hrs lec, 3 hrs lab.

Prerequisites: none.

Course Rules: Field trip for which fee is assessed.

General Education Requirements: NS+

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

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: NS

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

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. Lec.

Prerequisites: none.

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

General Education Requirements: NS

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

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.

General Education Requirements: NS+

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: NS

Last Taught: Summer 2025, Spring 2025, Fall 2024, Summer 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. Lec/Lab.

Prerequisites: none.

General Education Requirements: NS+

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. Lec, voluntary dis.

Prerequisites: none.

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

General Education Requirements: NS

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

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.

General Education Requirements: NS+

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

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).

General Education Requirements: NS

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); course in college chem.

Last Taught: Fall 2024, Fall 2023, Fall 2022, Fall 2021.

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 2024, Fall 2023, Fall 2022, Fall 2021.

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

GEO SCI 381 Honors Seminar:

3 cr. Undergraduate.

Selected topics.

Prerequisites: sophomore standing, HONORS 200(P), 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: NS

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 2024.

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 2024.

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 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 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.

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 2024.

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 2024.

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

Prerequisites: jr st; GEO SCI 511(P).

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

Prerequisites: jr st; GEO SCI 511(P).

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. 3 hrs lec, 3 hrs lab, and field trips.

Prerequisites: jr st; GEO SCI 102 or GEO SCI 108.

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. 3 hrs lec, 3 hrs lab, and field trips.

Prerequisites: jr st; GEO SCI 102 or GEO SCI 108.

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), satisfaction of OWC-A requirement, and CHEM 102(C).

General Education Requirements: OWCB

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), satisfaction of OWC-A requirement, and CHEM 102(C).

General Education Requirements: OWCB

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 2023.

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 2023.

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 2022.

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 2022.

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 OWC-A GER (ENGLISH 102 or placement equivalent, and one of the following: GEO SCI 301(P), ASTRON 211(P), or ASTRON 400(P)).

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

General Education Requirements: OWCB

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 OWC-A GER (ENGLISH 102 or placement equivalent, and one of the following: GEO SCI 301(P), ASTRON 211(P), or ASTRON 400(P).**Course Rules:** No credit for students with credit in GEO SCI 697 with the same topic.**General Education Requirements:** OWCB**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:** Spring 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:** Spring 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'.

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: Summer 2025, Spring 2025, Fall 2024, Summer 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: Summer 2025, Spring 2025, Fall 2024, Summer 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: Spring 2025, Fall 2024, Spring 2024, Fall 2023.

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