

GEOSCIENCES (GEO SCI)

GEO SCI 100 Introduction to the Earth

3 cr. Undergraduate.

Study of earth processes and materials as they relate to man and the environment. Lec, lab.

Prerequisites: none.

Course Rules: Voluntary field trip for which fee is assessed. No cr for students w/cr in Geo Sci 185.

General Education Requirements: NS+

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

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

GEO SCI 102 Principles of Historical Geology

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 2021, Fall 2020, Spring 2020, Fall 2019.

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 2021, Spring 2021, UWinterIM 2021, Fall 2020.

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: Summer 2021, Spring 2021, Fall 2020, Summer 2020.

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 2021, Spring 2021, Fall 2020, Summer 2020.

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 2021, Spring 2020, Spring 2019, Spring 2018.

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: Summer 2021, Spring 2021, Fall 2020, Summer 2020.

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 2021, Spring 2020, Spring 2019, Spring 2018.

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

GEO SCI 185 Introductory Earth Science for Teachers

3 cr. Undergraduate.

A study of the rock cycle, water cycle and atmosphere of the earth and the essential processes that affect them. 2 hrs lec; 2 hrs lab/dis.

Prerequisites: regis in elem, early childhood, or exc educ curric, EDDBA classif, or cons instr.

Course Rules: Not open for cr to students w/cr in Geo Sci 100, 105, or Atm Sci 105. Required field trips for which fees are assessed.

General Education Requirements: NS+

Last Taught: Fall 2020, Fall 2019, Fall 2018, Fall 2017.

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: Spring 2013, Fall 2011, Summer 2011, Spring 2011.

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

GEO SCI 208 Geology of Wisconsin

1 cr. Undergraduate.

Introduction to the geologic events and processes which shaped the scenic Wisconsin landscape with emphasis on geologically significant recreational areas accessible to the public.

Prerequisites: college course in physical geology or physical geography.

Course Rules: Not open for cr to students with Geo Sci 011.

General Education Requirements: NS

Last Taught: Fall 2010, Spring 2009, Spring 1998, Spring 1997.

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

GEO SCI 250 Marine Science at Sea: A Hands-On Laboratory

3 cr. Undergraduate.

Marine field work at sea from an oceanographic vessel.

Prerequisites: Geo Sci 150(P) or cons instr.

Course Rules: Not open for cr to students who completed Geo Sci 150 at sea in UWinteriM 2003.

General Education Requirements: NS+

Last Taught: UWinteriM 2009, UWinteriM 2007, UWinteriM 2005, UWinteriM 2004.

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 299 Ad Hoc:

1-6 cr. Undergraduate.

Course created expressly for offering in a specified enrollment period. Requires only dept & assoc dean approval. In exceptional circumstances, can be offered in one add'l sem.

Prerequisites: none; add'l prereqs may be assigned to specific topic.

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

Last Taught: Spring 2007, Spring 2003, UWinteriM 2003, Spring 1995.

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 2020, Fall 2019, Fall 2018, Fall 2017.

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. 3 hrs lec, 3 hrs lab.

Prerequisites: GEO SCI 301(P).

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

Last Taught: Spring 2021, Spring 2020, Spring 2019, Spring 2018.

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. 3 hrs lec, 3 hrs lab.

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

Last Taught: Fall 2020, Fall 2019, Fall 2018, Fall 2017.

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

GEO SCI 317 Stable Isotope Geochemistry

3 cr. Undergraduate/Graduate.

To understand the fractionation and mass balance of stable isotope systems in nature and their application to geologic problems.

Prerequisites: jr st or consent of instructor; GEO SCI 100(P) or GEO SCI 101(P); CHEM 100 (C) and GEO SCI 301(P).

Last Taught: Spring 2019, Spring 2018.

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

GEO SCI 317G Stable Isotope Geochemistry

3 cr. Undergraduate/Graduate.

To understand the fractionation and mass balance of stable isotope systems in nature and their application to geologic problems.

Prerequisites: jr st or consent of instructor; GEO SCI 100(P) or GEO SCI 101(P); CHEM 100 (C) and GEO SCI 301(P).

Last Taught: Spring 2019, Spring 2018.

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

GEO SCI 381 Honors Seminar:

3 cr. Undergraduate.

Selected topics.

Prerequisites: soph st; Honors 200(P); cons Honors College dir.

Course Rules: May be retaken w/chg in topic to 9 cr max. Field trips may be required.

General Education Requirements: NS

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

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. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; CHEM 102(P); MATH 232(P); or consent of instructor.

Last Taught: Fall 2020.

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. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; CHEM 102(P); MATH 232(P); or consent of instructor.

Last Taught: Fall 2020.

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

GEO SCI 401 General Soil Science

3 cr. Undergraduate/Graduate.

Soil profile development, weathering, soil mineralogy, water and nutrient relationships, classification of soil. 2 hrs lec, 3 hr lab.

Prerequisites: jr st; Chem 104(P) or equiv or cons instr.**Course Rules:** Required field trips for which fees are assessed.**Last Taught:** Spring 2019, Spring 2018.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 401G General Soil Science**

3 cr. Undergraduate/Graduate.

Soil profile development, weathering, soil mineralogy, water and nutrient relationships, classification of soil. 2 hrs lec, 3 hr lab.

Prerequisites: jr st; Chem 104(P) or equiv or cons instr.**Course Rules:** Required field trips for which fees are assessed.**Last Taught:** Spring 2019, Spring 2018.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 405 Geology for In-Service Teachers:**

1-3 cr. Undergraduate/Graduate.

Basic, advanced or new topics in geology for in-service teachers.

Prerequisites: in-service teacher, additional prereqs depending on topic.**Course Rules:** May be retaken w/chg in topic to max of 9 cr.**Last Taught:** Summer 2014, Spring 2014.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 405G Geology for In-Service Teachers:**

1-3 cr. Undergraduate/Graduate.

Basic, advanced or new topics in geology for in-service teachers.

Prerequisites: in-service teacher, additional prereqs depending on topic.**Course Rules:** May be retaken w/chg in topic to max of 9 cr.**Last Taught:** Summer 2014, Spring 2014.**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. 3 hrs lec, 3 hrs lab, field trips for which fee is assessed.

Prerequisites: jr st; GEO SCI 100(P), GEOG 120(P), or GEOG 121(P).**Last Taught:** Fall 2020, Fall 2019.**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. 3 hrs lec, 3 hrs lab, field trips for which fee is assessed.

Prerequisites: jr st; GEO SCI 100(P), GEOG 120(P), or GEOG 121(P).**Last Taught:** Fall 2020, Fall 2019.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 414 Structural Geology**

4 cr. Undergraduate/Graduate.

Description and analysis of primary and secondary geological structures; regional and global frameworks of geological structures. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; Math Placement Level 40; GEO SCI 302(C).**Course Rules:** Field trip for which fee is assessed.**Last Taught:** Spring 2021, Spring 2020.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 414G Structural Geology**

4 cr. Undergraduate/Graduate.

Description and analysis of primary and secondary geological structures; regional and global frameworks of geological structures. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; Math Placement Level 40; GEO SCI 302(C).**Course Rules:** Field trip for which fee is assessed.**Last Taught:** Spring 2021, Spring 2020.**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: jr 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 720.

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: jr st; Geo Sci 102(P) or cons instr.**Last Taught:** Fall 2020.**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: jr st; Geo Sci 102(P) or cons instr.**Last Taught:** Fall 2020.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 440 Geochemical Thermodynamics**

3 cr. Undergraduate/Graduate.

Basic equilibrium thermo-dynamics applied to low-temperature and high-temperature geochemical problems.

Prerequisites: jr st, Chem 104(P), Geo Sci 301(P), & Math 231(P).**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 440G Geochemical Thermodynamics**

3 cr. Undergraduate/Graduate.

Basic equilibrium thermo-dynamics applied to low-temperature and high-temperature geochemical problems.

Prerequisites: jr st, Chem 104(P), Geo Sci 301(P), & Math 231(P).**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. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; 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:** Field trips for which fees are assessed.**Last Taught:** Spring 2021.**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. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; 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:** Field trips for which fees are assessed.**Last Taught:** Spring 2021.**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: sr st; Geo Sci 302(P) & 414(P).**Course Rules:** May be retaken to 8 cr max.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 461 Physical Oceanography**

3 cr. Undergraduate/Graduate.

Overview of physical oceanography, conservation of mass, salinity and momentum, thermodynamics, equations of motion. Waves, currents and circulation.

Prerequisites: jr st; Math 232(P); & Physics 123(P) or 210(P).**Last Taught:** Fall 2012, Fall 2008.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 461G Physical Oceanography**

3 cr. Undergraduate/Graduate.

Overview of physical oceanography, conservation of mass, salinity and momentum, thermodynamics, equations of motion. Waves, currents and circulation.

Prerequisites: jr st; Math 232(P); & Physics 123(P) or 210(P).**Last Taught:** Fall 2012, Fall 2008.**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. 3 hrs lec, 3 hrs lab, & field trip.

Prerequisites: jr st; GEO SCI 100(P) or GEO SCI 101(P); MATH 232(P).**Last Taught:** Fall 2020.**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. 3 hrs lec, 3 hrs lab, & field trip.

Prerequisites: jr st; GEO SCI 100(P) or GEO SCI 101(P); MATH 232(P).**Last Taught:** Fall 2020.**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. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; CHEM 102(P).**Course Rules:** FRSHWTR 464 & GEO SCI 464 are jointly-offered; they count as repeats of one another.**Last Taught:** Spring 2021.**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. 3 hrs lec, 3 hrs lab.

Prerequisites: jr st; CHEM 102(P).**Course Rules:** FRSHWTR 464 & GEO SCI 464 are jointly-offered; they count as repeats of one another.**Last Taught:** Spring 2021.**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: jr st; acceptance for Study Abroad Prog.**Course Rules:** May be retaken w/chg in topic.**Last Taught:** Spring 2015, Spring 2008.**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: jr st; acceptance for Study Abroad Prog.**Course Rules:** May be retaken w/chg in topic.**Last Taught:** Spring 2015, Spring 2008.**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 only dept & assoc dean approval. In exceptional circumstances, can be offered in one add'l sem.

Prerequisites: jr st; add'l prereqs may be assigned to specific topic.**Course Rules:** May be retaken w/chg in topic.**Last Taught:** Fall 1996, Summer 1988.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 501 Phanerozoic Evolutionary Trends**

3 cr. Undergraduate/Graduate.

Examination of Earth's paleoecological patterns and their driving mechanisms. Counts as repeat of Geo Sci 696 or 697 w/same topic.

Prerequisites: jr st; GEO SCI 102 102(P).**Last Taught:** Spring 2017.**Current Offerings:** <https://catalog.uwm.edu/course-search/>

GEO SCI 501G Phanerozoic Evolutionary Trends

3 cr. Undergraduate/Graduate.

Examination of Earth's paleoecological patterns and their driving mechanisms. Counts as repeat of Geo Sci 696 or 697 w/same topic.

Prerequisites: jr st; GEO SCI 102 102(P).**Last Taught:** Spring 2017.**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. 3 hrs lec, 3 hrs lab, and field trips.

Prerequisites: jr st; GEO SCI 102(P) or equiv.**Last Taught:** Spring 2021.**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. 3 hrs lec, 3 hrs lab, and field trips.

Prerequisites: jr st; GEO SCI 102(P) or equiv.**Last Taught:** Spring 2021.**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 2018, Fall 2014.**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 2018, Fall 2014.**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 2020.**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 2020.**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: jr st; Geo Sci 100(P).**Course Rules:** No cr for students w/cr in Geo Sci 696 w/same topic.**Last Taught:** Fall 2018, Fall 2015.**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: jr st; Geo Sci 100(P).**Course Rules:** No cr for students w/cr in Geo Sci 696 w/same topic.**Last Taught:** Fall 2018, Fall 2015.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 528 Biogeochemistry and the Fossil Record**

3 cr. Undergraduate/Graduate.

Fermentation as a metabolic process; the organic geochemistry of fermentation; and procedures and protocols for fermentation experiments.

Prerequisites: jr st.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 528G Biogeochemistry and the Fossil Record**

3 cr. Undergraduate/Graduate.

Fermentation as a metabolic process; the organic geochemistry of fermentation; and procedures and protocols for fermentation experiments.

Prerequisites: jr st.**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: jr st; Geo Sci 301(P); satisfaction of OWC-A req; Chem 102(C).**General Education Requirements:** OWCB**Last Taught:** Spring 2020.**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: jr st; Geo Sci 301(P); satisfaction of OWC-A req; Chem 102(C).**General Education Requirements:** OWCB**Last Taught:** Spring 2020.**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: jr st; cons instr.

Course Rules: May be retaken w/chg in topic to 9 cr max, only 3 cr of which may be applied toward geo sci major.

Last Taught: Spring 2020.

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: jr st; cons instr.

Course Rules: May be retaken w/chg in topic to 9 cr max, only 3 cr of which may be applied toward geo sci major.

Last Taught: Spring 2020.

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. 3 hrs lec.

Prerequisites: jr st; Math 232(P); or cons instr.

Last Taught: Spring 2021.

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. 3 hrs lec.

Prerequisites: jr st; Math 232(P); or cons instr.

Last Taught: Spring 2021.

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. Lab, field trip for which fee is assessed.

Prerequisites: jr st; GEO SCI 463(P).

Last Taught: Fall 2012, Fall 2010.

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. Lab, field trip for which fee is assessed.

Prerequisites: jr st; GEO SCI 463(P).

Last Taught: Fall 2012, Fall 2010.

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

GEO SCI 564G 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. Lab, field trip for which fee is assessed.

Prerequisites: jr st; GEO SCI 463(P).

Last Taught: Fall 2012, Fall 2010.

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

GEO SCI 599 Geology of Wisconsin--Field Course

3 cr. Undergraduate/Graduate.

Multi-institutional team-taught, conducted field course throughout Wisconsin; instruction in the field, using exposures on which Wisconsin's geological history has been interpreted.

Prerequisites: jr st; Geo Sci 302(P).

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

GEO SCI 599G Geology of Wisconsin--Field Course

3 cr. Undergraduate/Graduate.

Multi-institutional team-taught, conducted field course throughout Wisconsin; instruction in the field, using exposures on which Wisconsin's geological history has been interpreted.

Prerequisites: jr st; Geo Sci 302(P).

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. Lec, field trip for which fee is assessed.

Prerequisites: jr st; Geo Sci 414(P); Math 231(C).

Last Taught: Fall 2019.

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. Lec, field trip for which fee is assessed.

Prerequisites: jr st; Geo Sci 414(P); Math 231(C).

Last Taught: Fall 2019.

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: jr st; Geo Sci 302(P) or cons instr.

Last Taught: Fall 2019.

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: jr st; Geo Sci 302(P) or cons instr.

Last Taught: Fall 2019.

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

GEO SCI 636 Geochronology

3 cr. Undergraduate/Graduate.

Theory and application of radiometric and other numerical dating methods in geology, archaeology, and paleoanthropology.

Prerequisites: jr st, Anthro 101(P) or 103(P) or Geo Sci 100(P), & cons instr; or grad st & cons instr.

Course Rules: Anthro 636 & Geo Sci 636 are jointly offered; they count as repeats of one another.

Last Taught: Spring 2009, Spring 2007.

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

GEO SCI 636G Geochronology

3 cr. Undergraduate/Graduate.

Theory and application of radiometric and other numerical dating methods in geology, archaeology, and paleoanthropology.

Prerequisites: jr st, Anthro 101(P) or 103(P) or Geo Sci 100(P), & cons instr; or grad st & cons instr.**Course Rules:** Anthro 636 & Geo Sci 636 are jointly offered; they count as repeats of one another.**Last Taught:** Spring 2009, Spring 2007.**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: jr st; Geo Sci 301(P) or Astron 211(P) or 400(P); completion of OWC-A GER (English 102 or equiv placement).**Course Rules:** No cr for students w/cr in Geo Sci 697 w/same topic.**General Education Requirements:** OWCB**Last Taught:** Spring 2021.**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: jr st; Geo Sci 301(P) or Astron 211(P) or 400(P); completion of OWC-A GER (English 102 or equiv placement).**Course Rules:** No cr for students w/cr in Geo Sci 697 w/same topic.**General Education Requirements:** OWCB**Last Taught:** Spring 2021.**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. Lec.

Prerequisites: jr st; Geo Sci 302(P).**Last Taught:** Fall 2020.**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. Lec.

Prerequisites: jr st; Geo Sci 302(P).**Last Taught:** Fall 2020.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 655 Topics in Structure and Tectonics:**

1-3 cr. Undergraduate/Graduate.

Prerequisites: jr st; Geo Sci 414(P) or cons instr.**Course Rules:** May be retaken w/chg in topic to 9 cr max.**Last Taught:** Fall 2020.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 655G Topics in Structure and Tectonics:**

1-3 cr. Undergraduate/Graduate.

Prerequisites: jr st; Geo Sci 414(P) or cons instr.**Course Rules:** May be retaken w/chg in topic to 9 cr max.**Last Taught:** Fall 2020.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 668 Geoelectrical Methods**

3 cr. Undergraduate/Graduate.

Fundamentals of electrical resistivity surveys and electromagnetic methods, with an emphasis on surficial and environmental applications.

Prerequisites: jr st; Geo Sci 316(C), 463(C), or 661(C).**Last Taught:** Spring 2010, Spring 2007.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 668G Geoelectrical Methods**

3 cr. Undergraduate/Graduate.

Fundamentals of electrical resistivity surveys and electromagnetic methods, with an emphasis on surficial and environmental applications.

Prerequisites: jr st; Geo Sci 316(C), 463(C), or 661(C).**Last Taught:** Spring 2010, Spring 2007.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 688 Seminar in Geosciences for Teachers:**

1-6 cr. Undergraduate/Graduate.

Seminar modules on various topics in geosciences offered for teachers.

Prerequisites: current teaching contract.**Course Rules:** Open only to practicing science teachers with demonstrable expertise in geoscience. May be retaken w/chg in topic to 9 cr max.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 688G Seminar in Geosciences for Teachers:**

1-6 cr. Undergraduate/Graduate.

Seminar modules on various topics in geosciences offered for teachers.

Prerequisites: current teaching contract.**Course Rules:** Open only to practicing science teachers with demonstrable expertise in geoscience. May be retaken w/chg in topic to 9 cr max.**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: jr st; cons instr.**Course Rules:** May be retaken w/chg 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: jr st; cons dept.**Last Taught:** Summer 2015, Spring 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: jr st; cons dept.**Last Taught:** Summer 2015, Spring 2015.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 696 Topics in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Add'l prereqs announced in Schedule of Classes each time course offered.

Prerequisites: jr st.**Course Rules:** May be retaken w/chg in topic to 9 cr max.**Last Taught:** Spring 2021.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 696G Topics in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Add'l prereqs announced in Schedule of Classes each time course offered.

Prerequisites: jr st.**Course Rules:** May be retaken w/chg in topic to 9 cr max.**Last Taught:** Spring 2021.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 697 Seminar in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Specific credits and add'l prereqs announced in Schedule of Classes each time course offered.

Prerequisites: jr st.**Course Rules:** May be retaken w/chg in topic to 9 cr max.**Last Taught:** Spring 2019, Spring 2018.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 697G Seminar in the Geological Sciences:**

1-3 cr. Undergraduate/Graduate.

Specific credits and add'l prereqs announced in Schedule of Classes each time course offered.

Prerequisites: jr st.**Course Rules:** May be retaken w/chg in topic to 9 cr max.**Last Taught:** Spring 2019, Spring 2018.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 698 Research Experience for Teachers**

1-6 cr. Undergraduate/Graduate.

Enrichment of students' geoscience background. Work with faculty mentor to develop an innovative teaching program for use in students' own classrooms.

Prerequisites: current teaching contract.**Course Rules:** Open only to practicing science teachers with demonstrable expertise in geoscience. May be retaken w/chg in topic to 9 cr max.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 698G Research Experience for Teachers**

1-6 cr. Undergraduate/Graduate.

Enrichment of students' geoscience background. Work with faculty mentor to develop an innovative teaching program for use in students' own classrooms.

Prerequisites: current teaching contract.**Course Rules:** Open only to practicing science teachers with demonstrable expertise in geoscience. May be retaken w/chg in topic to 9 cr max.**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 instr or dept chair.

Prerequisites: jr st; 2.0 GPA; 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:** Spring 2020, Fall 2019, Summer 2019, Fall 2018.**Current Offerings:** <https://catalog.uwm.edu/course-search/>**GEO SCI 703 Biotic Crises in Earth's History**

3 cr. Graduate.

The interconnectedness among the physical, chemical, and biological processes on Earth and throughout Earth's history.

Prerequisites: grad st; Geo Sci 520(P) or equiv.**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.

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 2021, Spring 2015, Spring 2014, Spring 2012.**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 2019, Fall 2017, Fall 2015, Fall 2012.**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. 3 hrs lec.

Prerequisites: grad st; Geo Sci 464(P) or cons instr.**Last Taught:** 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 2019, Fall 2017, Fall 2015, Fall 2013.**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:** Spring 2021, Fall 2020, Spring 2020, Fall 2019.**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:** Spring 2021, Fall 2020, Spring 2020, Fall 2019.**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 2021, Spring 2020, Fall 2019, Spring 2019.**Current Offerings:** <https://catalog.uwm.edu/course-search/>