

Geoscience

(Bachelor of Science)

Geoscience is the study of Earth materials (e.g., rocks, minerals, soil, water, and air), the processes that shape and alter those components, and the interplay between the biosphere and the Earth. The program strongly emphasizes the fundamentals of geoscience, but also places special emphasis on groundwater management, soils, and other earth system processes.

The Geoscience program takes an application-focused, interdisciplinary approach, known as earth system science, in which the physical environment is investigated as many interacting systems. Earth system science emphasizes the interactions between the different systems that make up the Earth. Although earth system science is considered a new approach at many institutions, it has been an integral part of the Geoscience program since the very founding of UW-Green Bay. Interested students should also check Environmental Science course listings for several courses on soils, field geology, and ground water.

Geoscientists can find career opportunities in state and federal government agencies, consulting firms, and private industry. Demand for geoscientists will continue into the future, as demand for resources and energy grow with increasing population. Furthermore, responsible mining practices, remediation of contaminated sites, and forecasting the evolution of Earth conditions requires well-trained geoscientists with a broad understanding of how the Earth works.

Students interested in planning, natural resource or land management, or environmental policy issues typically select interdisciplinary minors in Environmental Science, Public and Environmental Affairs, or Urban and Regional Studies. For those interested in an earth system science perspective in business, Geoscience may also be combined with Business Administration. Many states and localities now require geoscience in their curricula, and high schools offering geoscience courses, in addition to the traditional science courses, is becoming the norm. Geoscience education includes geology, astronomy, oceanography, and weather and climate — with the goal of fostering a better understanding of our home, and encouraging responsible stewardship of our planet. Those seeking teacher certification can pursue several options:

- They can pursue a broad-field science certification in Education and take Geoscience courses to match their interests and employment goals.
- Students interested in elementary and middle school teaching can take an Education major and Geoscience minor.
- Students interested in teaching at the secondary level can take a Geoscience major and Education minor.

All Education students should consult with advisers in Geoscience and Education early in their studies to make sure that their academic program meets all state requirements for certification. Careful planning is essential since the Education course requirements are substantial and state requirements change periodically. Students seeking teacher certification in Geoscience should seriously consider satisfying the certification requirements in another discipline as well, because certification in additional fields will increase their employment opportunities.

Major*

Code	Title	Credits
Supporting Courses		34
CHEM 211	Principles of Chemistry I	
CHEM 212	Principles of Chemistry II	
CHEM 213	Principles of Chemistry I Laboratory	
CHEM 214	Principles of Chemistry II Laboratory	
GEOSCI 202	Physical Geology	
GEOSCI 203	Earth System History	
GEOSCI 204	Earth System History Laboratory	
MATH 202	Calculus and Analytic Geometry I	
MATH 260	Introductory Statistics	
Physics (Choose one of the following combinations):¹		
PHYSICS 103 & PHYSICS 203	Fundamentals of Physics I and Introductory Physics Lab I	
PHYSICS 201 & PHYSICS 203	Principles of Physics I and Introductory Physics Lab I	
Upper-Level Courses		26
ENV SCI 320/520	The Soil Environment [#]	
GEOSCI 340	Introduction to Mineralogy & Petrology	
GEOSCI 432/632	Hydrogeology [#]	
Choose one:		

ENV SCI 330	Hydrology	
GEOSCI 402/602	Sedimentology & Stratigraphy [#]	
Electives		
Choose 12 credits from the following courses:		
ENV SCI 330	Hydrology	
ENV SCI 337	Environmental GIS	
ENV SCI 425/625	Global Climate Change [#]	
GEOSCI 301	Introduction to Geoscience Field Methods	
GEOSCI 350	Structural Geology and Tectonics	
GEOSCI 402	Sedimentology & Stratigraphy	
GEOSCI 421/621	Geoscience Field Trip (Offerings of trip to different areas may be repeated for credit) [#]	
GEOSCI 450	Ore Deposits	
GEOSCI 470/670	Glacial Geology & Landscapes [#]	
GEOSCI 491	Senior Thesis/Research in Geoscience	
GEOSCI 492	Special Topics in Geoscience ²	
GEOSCI 498	Independent Study	
GEOSCI 499	Travel Course	
WATER 321	Stable Isotopes in the Environment	
WATER 444/644	Aqueous Geochemistry [#]	
Total Credits		60

[#] Students must be granted permission through the department to enroll in graduate level coursework. For more information, contact the graduate Environmental Science & Policy office or refer to the graduate catalog (<http://catalog.uwgb.edu/graduate/general-information/academic-rules-regulations/undergrad-in-accelerated/>).

¹ Students who plan to attend graduate school are advised to take Physics 201/203 (calculus-based physics)

² Course topics vary. Offerings of different topics can be repeated for credit.

* includes an accelerated option - Integrated with graduate Environmental Science and Policy program

Minor

Code	Title	Credits
Supporting Courses		20
GEOSCI 202	Physical Geology	
GEOSCI 203	Earth System History	
At least 5 credits of Chemistry at the 100-200 level		
Mathematics (Choose two of the following courses):		
MATH 104	Precalculus	
MATH 202	Calculus and Analytic Geometry I	
MATH 203	Calculus and Analytic Geometry II	
MATH 260	Introductory Statistics	
Upper-Level Courses		12
GEOSCI 340	Introduction to Mineralogy & Petrology	
Choose at least 8 additional credits from the following list:		
ENV SCI 320	The Soil Environment	
ENV SCI 330	Hydrology	
ENV SCI 337	Environmental GIS	
ENV SCI 425	Global Climate Change	
ENV SCI 433	Ground Water: Resources and Regulations	
GEOSCI 301	Introduction to Geoscience Field Methods	
GEOSCI 350	Structural Geology and Tectonics	
GEOSCI 402	Sedimentology & Stratigraphy	
GEOSCI 421	Geoscience Field Trip	

GEOSCI 432	Hydrogeology
GEOSCI 450	Ore Deposits
GEOSCI 470	Glacial Geology & Landscapes
GEOSCI 491	Senior Thesis/Research in Geoscience
GEOSCI 492	Special Topics in Geoscience
GEOSCI 498	Independent Study
GEOSCI 499	Travel Course
WATER 321	Stable Isotopes in the Environment
WATER 444	Aqueous Geochemistry

Total Credits **32**

Curriculum Guide

An example: Four year plan for **Geoscience Major**

120 credits necessary to graduate. Participation in field courses, the Geology Club, internships, and/or independent studies are highly recommended.

Plan is a representation and categories of classes can be switched. Check with your advisor.

Course	Title	Credits
Freshman		
Fall		
GEOSCI 202	Physical Geology	4
MATH 104 or MATH 202	Precalculus or Calculus and Analytic Geometry I	4
WF 100	First Year Writing	3
First Year Seminar		3
General Ed		3
Credits		17
Spring		
GEOSCI 203	Earth System History	3
GEOSCI 204	Earth System History Laboratory	1
GEOSCI 421	Geoscience Field Trip	1-3
MATH 202 or MATH 260	Calculus and Analytic Geometry I or Introductory Statistics	4
WF 105 or COMM 133	Research and Rhetoric or Fundamentals of Public Address	3
General Ed		3
Credits		15-17
Sophomore		
Fall		
CHEM 211	Principles of Chemistry I	4
CHEM 213	Principles of Chemistry I Laboratory	1
ENV SCI 330	Hydrology	3
MATH 202 or MATH 260	Calculus and Analytic Geometry I or Introductory Statistics	4
General Ed		3
Credits		15
Spring		
CHEM 212	Principles of Chemistry II	4
CHEM 214	Principles of Chemistry II Laboratory	1
General Ed		3
Elective		3
Elective		3
GEOSCI 421	Geoscience Field Trip	1-3
Credits		15-17
Junior		
Fall		
GEOSCI 340	Introduction to Mineralogy & Petrology	4
ENV SCI 320	The Soil Environment	4
PHYSICS 201	Principles of Physics I	4
PHYSICS 203	Introductory Physics Lab I	1

General Ed		3
Credits		16
Spring		
GEOSCI/ENV SCI Upper Level Elective		3
GEOSCI/ENV SCI Upper Level Elective		3
Elective		3
Elective		3
Elective		3
GEOSCI 421	Geoscience Field Trip	1-3
Credits		16-18
Senior		
Fall		
GEOSCI/ENV SCI Upper Level Elective		3
Elective		3
Elective		3
Elective		3
General Ed		3
Credits		15
Spring		
GEOSCI 432	Hydrogeology	3
GEOSCI/ENV SCI Upper Level Elective		3
Elective		3
Elective		3
Credits		12
Total Credits		121-127

Faculty

John A Luczaj; Professor; Ph.D., Johns Hopkins University, chair*

Shawn Malone; Assistant Professor; Ph.D., University of Iowa*