

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 Area of Emphasis (<http://catalog.uwgb.edu/undergraduate/programs/geoscience/major/>)

Students must complete requirements in one of the following areas of emphasis: (<http://catalog.uwgb.edu/undergraduate/programs/geoscience/major/>)

- Geoscience (<http://catalog.uwgb.edu/undergraduate/programs/geoscience/major/>)
 - Geoscience (Accelerated) - Integrated with graduate Environmental Science & Policy program (<http://catalog.uwgb.edu/undergraduate/programs/geoscience/major/>)

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 | |

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|-------------|--|
| 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*

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