GEOLOGY | ENVIRONMENTAL GEO SCIENCES

A geology degree provides an understanding of issues associated with the physical earth and skills which are in demand in today’s job market. The geology graduate will have a detailed understanding of climate change, sustainability of the Earth’s resources, and the close interplay between human activity and the environment.

About this Program

- **College**: Liberal Arts and Sciences
- **Degrees**: Bachelor of Arts | B.A.: Environmental Geosciences | Bachelor of Science
- **Credits for Degree**: 120
- **Additional Information**
  - **Related Geology Programs**

To graduate with this major, students must complete all university, college, and major requirements.

Techniques such as environmental assessment, geological hazard assessment, field-based techniques, and geographic information systems (GIS) are used to evaluate the impact of humans on the physical earth and hydrologic environment. The practical and flexible curriculum, small class sizes, computer-based learning, strong faculty, and coursework in several areas of general education make this major appealing to students who want skills linked to employment or preparation for entry to professional schools (e.g., law, medicine, business).

Geology majors learn about the Earth’s physical environment including climate, non-renewable geological resources, renewable geological resources, geological hazards and remediation as well as basic skills required by geologists. These skills and the geological perspective open doors to employment in government agencies and private firms that deal with water management, mining and petroleum exploration, climate change, the environment, and education.

Coursework for the Major

The geology major has three different specializations: the Bachelor of Arts, the Bachelor of Arts in environmental geosciences (a joint program with the Department of Geography), and the Bachelor of Science. Students who are uncertain which program best suits them should consult the Department of Geology’s undergraduate coordinator for information and guidance on curriculum planning.

Bachelor of Arts

This degree is the most flexible degree, and best suited for students interested in careers in education or environmental policy making. The degree also allows students flexibility to pursue advanced degrees in environmental law or environmental medicine.

Bachelor of Arts: Environmental Geosciences

Co-offered by the Department of Geography, this specialization is designed for students interested in land and water aspects of the environment. It can be tailored to focus on water and mineral exploration and management, geological hazards, environmental planning, resource sustainability, or earth science education.

Bachelor of Science

This degree is designed for students planning to take the professional geology (PG) licensure exam and/or to continue on to graduate study in geology. It emphasizes a core understanding of petrology, structural geology, field methodology and paleontology, and it requires significant introductory coursework in calculus, general chemistry, and physics.

Relevant Minors and/or Certificates

UFTeach Program

More Info

There is a severe shortage of qualified secondary science teachers in Florida and nationwide. Students interested in becoming part of this high-demand profession should see the undergraduate coordinator about the UFTeach program. UFTeach students can complete the UFTeach minor in science teaching along with their B.A. or B.S in geology and have the coursework and preparation for professional teacher certification in Florida when they graduate.

Research

Students in geology who wish to graduate with high or highest honors will be required to conduct an independent research project under the direction of a faculty member. Students are also afforded the opportunity to conduct research within the department’s laboratories regardless of their honors status.

Related Geology Programs

- **Combined Degree**
- **Bachelor of Arts in Geology, UF Online**
- **Geology minor**
- **Geological Sciences certificate**

Bachelor of Arts: Environmental Geosciences

This specialization is well-suited for students interested in environmental science, environmental policy, Earth science teaching, or environmental law and offers a unique interdisciplinary perspective between geology and geography. The major requires a minimum of 40 credits of coursework and is a joint offering between the Department of Geological Sciences and Department of Geography. Students must earn a minimum grade of C for coursework to count toward the major.

Required Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>GEO 2200</td>
<td>Physical Geography</td>
<td>4</td>
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<tr>
<td>&amp; 2200L</td>
<td>and Physical Geography Laboratory</td>
<td></td>
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<tr>
<td>GIS 3043</td>
<td>Foundations of Geographic Information Systems</td>
<td>4</td>
</tr>
<tr>
<td>GLY 2010C</td>
<td>Physical Geology</td>
<td>4</td>
</tr>
<tr>
<td>GLY 2100C</td>
<td>Historical Geology</td>
<td>4</td>
</tr>
<tr>
<td>or GLY 3105C</td>
<td>Evolution of Earth and Life</td>
<td></td>
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<tr>
<td>GLY 3202C</td>
<td>Earth Materials</td>
<td>3</td>
</tr>
<tr>
<td>GLY 4155C</td>
<td>Geology of Florida</td>
<td>3</td>
</tr>
<tr>
<td>Select two of the following geology electives:</td>
<td>6-8</td>
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<tr>
<td>GLY 3074</td>
<td>Oceans and Global Climate Change</td>
<td></td>
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<tr>
<td>GLY 3163</td>
<td>Geology American National Parks</td>
<td></td>
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<tr>
<td>GLY 3603C</td>
<td>Paleontology</td>
<td></td>
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<tr>
<td>GLY 3882C</td>
<td>Hydrogeology and Human Affairs</td>
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</tbody>
</table>
GLY 4310C  Igneous and Metamorphic Petrology
GLY 4400C  Structural Geology and Tectonics
GLY 4552C  Sedimentary Geology
GLY 4734  Coastal Morphology and Processes
GLY 4750L  Geological Field Methods
Select three of the following geography electives:  9-12
GEO 3162C  Introduction to Quantitative Analysis for Geographers
GEO 3250  Climatology
GEO 3280  Principles of Geographic Hydrology
GEO 3341  Extreme Floods
GEO 3352  The Human Footprint on Landscape
GEO 3372  Conservation of Resources
GEO 4167C  Intermediate Quantitative Analysis for Geographers
GLY 4734  Coastal Morphology and Processes
GEO 4281  River Forms and Processes
GEO 4285  Models in Geographic Hydrology
GEO 4300  Environmental Biogeography
GIS 4021C  Aerial Photo Interpretation
GIS 4037  Digital Image Processing
MET 3503  Weather and Forecasting
MET 4522  Hurricanes

Total Credits 37-42

Related Coursework
• STA 2023

Critical Tracking
Critical Tracking records each student’s progress in courses that are required for entry to each major. Please note the critical-tracking requirements below on a per-semester basis.

For degree requirements outside of the major, refer to CLAS Degree Requirements: Structure of a CLAS Degree.

Equivalent critical-tracking courses as determined by the State of Florida Common Course Prerequisites may be used for transfer students.

Semester 1
• 2.0 UF GPA required

Semester 2
• Complete one critical-tracking course with laboratory (GEO 2200/GEO 2200L or GLY 2010C) with a 2.5 critical-tracking GPA
• 2.0 UF GPA required

Semester 3
• Complete the other critical-tracking course with laboratory (GEO 2200/GEO 2200L or GLY 2010C) with a 2.5 critical-tracking GPA
• 2.0 UF GPA required

Semester 4
• Complete STA 2023 and maintain a 2.5 critical-tracking GPA
• 2.0 UF GPA required

Semester 5
• Complete 2 additional GLY or GEO courses with a 2.5 critical-tracking GPA. (GLY 2100C or GLY 3105C recommended)
• 2.0 UF GPA required

Model Semester Plan
Students are expected to complete the writing requirement while in the process of taking the courses below. Students are also expected to complete the general education international (GE-N) and diversity (GE-D) requirements concurrently with another general education requirement (typically GE-C, H, or S).

To remain on track, students must complete the appropriate critical-tracking courses, which appear in bold. These courses must be completed by the terms as listed above in the Critical Tracking criteria.

This semester plan represents an example progression through the major. Actual courses and course order may be different depending on the student’s academic record and scheduling availability of courses. Prerequisites still apply.

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Semester One</td>
<td>IUF 1000  What is the Good Life (Gen Ed Humanities)</td>
<td>3</td>
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<tr>
<td></td>
<td>State Core Gen Ed Composition; Writing Requirement</td>
<td>3</td>
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<tr>
<td></td>
<td>Foreign language</td>
<td>4-5</td>
</tr>
<tr>
<td></td>
<td>State Core Gen Ed Mathematics</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>13-14</strong></td>
</tr>
<tr>
<td>Semester Two</td>
<td>Select one:</td>
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<tr>
<td></td>
<td>GLY 2010C  Physical Geology (Critical Tracking; Gen Ed Physical Sciences; or equivalent)</td>
<td>4</td>
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<td></td>
<td>GEO 2200 &amp; 2200L Physical Geography (Critical Tracking; Gen Ed Physical Sciences)</td>
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<td></td>
<td>State Core Gen Ed Biological Sciences</td>
<td>3</td>
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<tr>
<td></td>
<td>Elective</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Foreign language</td>
<td>3-5</td>
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<tr>
<td></td>
<td>State Core Gen Ed Social and Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>16-18</strong></td>
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<tr>
<td>Semester Three</td>
<td>Select one:</td>
<td></td>
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<tr>
<td></td>
<td>GLY 2010C  Physical Geology (Critical Tracking; Gen Ed Physical Sciences; or equivalent)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>GEO 2200 &amp; 2200L Physical Geography (Critical Tracking; Gen Ed Physical Sciences)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Elective or foreign language if 4-3-3 option</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Elective (3000 level or above, not in major)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>State Core Gen Ed Humanities</td>
<td>3</td>
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<tr>
<td></td>
<td>Gen Ed Social and Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>16</strong></td>
</tr>
<tr>
<td>Semester Four</td>
<td>STA 2023  Introduction to Statistics 1 (Critical Tracking; Gen Ed Mathematics)</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Gen Ed Biological Sciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Gen Ed Composition</td>
<td>3</td>
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<tr>
<td></td>
<td>Gen Ed Humanities</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Gen Ed Social and Behavioral Sciences</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Credits</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>
Semester Five
GIS 3043  Foundations of Geographic Information Systems (Critical Tracking)  4
Select one:
GLY 2100C  Historical Geology (Critical Tracking; Gen Ed Physical Sciences)  4
GLY 3105C  Evolution of Earth and Life (Critical Tracking; Gen Ed Physical Sciences)  4
Electives (3000 level or above, not in major)  6
Credits  14

Semester Six
GLY 3202C  Earth Materials  3
Geology elective  3-4
Electives (3000 level or above, not in major)  9
Credits  15-16

Semester Seven
Geography elective  3-4
Geology elective  3-4
Electives  9
Credits  15-17

Semester Eight
GLY 4155C  Geology of Florida  3
Geography electives  6-8
Electives  7
Credits  16-18
Total Credits  120

Electives to reach the 120-credit total will vary depending on whether students select minimum or maximum credit course options.

Academic Learning Compact

Bachelor of Arts
The Bachelor of Arts in geology provides knowledge of the basic concepts related to earth materials and processes, and how to collect and organize geological data in the field. Through laboratory and field-based exercises, students will learn how to interpret geologic maps and cross sections, and to understand the application of the scientific method to solve these problems in teams and individually.

Before Graduating Students Must
- Pass GLY 4155C Geology of Florida according to the department grading rubric.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to
Student Learning Outcomes (SLOs)
Content
1. Identify, describe and define the basic concepts related to earth materials and processes.
2. Collect data in the field.
3. Organize geologic, temporal and spatial data.

Critical Thinking
4. Interpret geologic maps and cross sections.
5. Interpret results using the scientific method.

Communication
6. Produce a clearly and effectively written synthesis of data collected in the field.

7. Work in teams to solve geologic problems and to present the results of such collaboration effectively.

Curriculum Map
I = Introduced; R = Reinforced; A = Assessed

Courses  SLO 1  SLO 2  SLO 3  SLO 4  SLO 5  SLO 6  SLO 7
GLY 2010C  I  I  I  I  I  I
GLY 2100C  R  R  R  I  R
GLY 3202B  R  R  R  R  R
GLY 3603  R  R  R  R  R
GLY 4155C  A  A  A  A  A  A
Capstone

Assessment Types
- Lab assignments
- Projects
- Exams

Bachelor of Science
The Bachelor of Science in geology provides knowledge of the basic concepts, theories, observational findings related to earth materials and processes, minerals and rocks, geologic time, stratigraphy and landforms. Through laboratory and field-based exercises, students will learn how to analyze data in the published literature, synthesize analog and digital datasets to produce geological maps, and understand the application of the scientific method to solve geological problems in teams and individually.

Before Graduating Students Must
- Pass GLY 4790 Summer Field Camp according to the department grading rubric.
- Complete requirements for the baccalaureate degree, as determined by faculty.

Students in the Major Will Learn to
Student Learning Outcomes (SLOs)
Content
1. Identify, describe and define the basic concepts related to earth materials and processes.
2. Identify and describe minerals and rocks.
3. Define geologic time, stratigraphy and landforms.

Critical Thinking
4. Analyze data in the published literature.
5. Synthesize analog and digital datasets to produce geologic maps.
6. Apply the scientific method to the analysis of published and self-generated data.

Communication
7. Use computers for the presentation of geologic maps and data.
8. Solve geologic problems in teams and present the result of such collaboration effectively.

Curriculum Map
I = Introduced; R = Reinforced; A = Assessed
## Courses SLO 1 SLO 2 SLO 3 SLO 4 SLO 5 SLO 6 SLO 7 SLO 8

- **GLY 2010C**
  - I
  - I
  - I
  - I
  - I
  - I

- **GLY 210R**
  - R
  - R
  - R
  - I
  - R
  - I
  - R

- **GLY 320BC**
  - R
  - R
  - R
  - R
  - R
  - R
  - R

- **GLY 431R**
  - R
  - R
  - R
  - R
  - R
  - R
  - R

- **GLY 479A**

  *Capstone*

### Assessment Types
- Six weeks of practical field exercises and mapping, including
  - observation and data collection in New Mexico and the western USA