GEOLOGY | BS

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.

Required Coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introductory Coursework</td>
<td>Select one of the following General introductory courses:</td>
<td>3-4</td>
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<tr>
<td>GGL 2010C</td>
<td>Physical Geology</td>
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<tr>
<td>GGL 2030C</td>
<td>Environmental and Engineering Geology</td>
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<tr>
<td>Any 1000-2000 level GGL, GCE or ESC course</td>
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<tr>
<td>Select one of the following Historical geology courses:</td>
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<tr>
<td>GGL 2100C</td>
<td>Historical Geology</td>
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<tr>
<td>GGL 3105C</td>
<td>Evolution of Earth and Life</td>
<td></td>
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<tr>
<td>Geology BS Core Coursework</td>
<td>GGL 3200C Principles of Mineralogy</td>
<td>4</td>
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<tr>
<td>GGL 4310C</td>
<td>Igneous and Metamorphic Petrology</td>
<td>4</td>
</tr>
<tr>
<td>GGL 4400C</td>
<td>Structural Geology and Tectonics</td>
<td>4</td>
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<tr>
<td>GGL 4552C</td>
<td>Sedimentary Geology</td>
<td>4</td>
</tr>
<tr>
<td>Select 8 credits minimum of additional geology courses at the 3000 level or higher</td>
<td>8</td>
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</table>

The major requires 39-40 credits of geology coursework. Students must earn minimum grades of C for coursework to count toward the major.

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 Science
The professional degree is for students who want to pursue graduate school and careers in geosciences and/or environmental science. The major is extremely flexible and allows specialization in a number of subdisciplines (geochemistry, geophysics, geobiology, and hydrogeology).

The major requires 39-40 credits of geology coursework. Students must earn minimum grades of C for coursework to count toward the major.
Related Coursework
At least 15-16 credits of related coursework

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>CHM 2045</td>
<td>General Chemistry 1</td>
<td>4</td>
</tr>
<tr>
<td>&amp; 2045L</td>
<td>and General Chemistry 1 Laboratory</td>
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</tr>
<tr>
<td>MAC 2311</td>
<td>Analytic Geometry and Calculus 1</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following semesters of physics and laboratory:
- PHY 2004: Applied Physics 1
- & 2004L: and Laboratory for Applied Physics 1
- PHY 2048: Physics with Calculus 1
- & 2048L: and Laboratory for Physics with Calculus 1
- PHY 2053: Physics 1
- & 2053L: and Laboratory for Physics 1

Select remaining coursework from the following:
- 3-4 credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>CGS 2531</td>
<td>Problem Solving Using Computer Software</td>
</tr>
<tr>
<td>CHM 2046</td>
<td>General Chemistry 2</td>
</tr>
<tr>
<td>CHM 2046L</td>
<td>General Chemistry 2 Laboratory</td>
</tr>
<tr>
<td>PHY 2005</td>
<td>Applied Physics 2</td>
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<tr>
<td>PHY 2005L</td>
<td>Laboratory for Applied Physics 2</td>
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<tr>
<td>PHY 2049</td>
<td>Physics with Calculus 2</td>
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<tr>
<td>PHY 2049L</td>
<td>Laboratory for Physics with Calculus 2</td>
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<tr>
<td>PHY 2054</td>
<td>Physics 2</td>
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<tr>
<td>PHY 2054L</td>
<td>Laboratory for Physics 2</td>
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<td>MAC 2312</td>
<td>Analytic Geometry and Calculus 2</td>
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<td>MAC 2313</td>
<td>Analytic Geometry and Calculus 3</td>
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<td>STA 2023</td>
<td>Introduction to Statistics 1</td>
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</table>

Other science credits at the 2000 level and above approved by the department
Total Credits: 15-17

Specific courses selected from among the alternatives listed above will depend upon the student’s primary interest.

Students interested in graduate school are urged to take a year of chemistry, calculus and physics. Students should contact a departmental advisor as early as possible.

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
- 2.0 UF GPA required

Semester 3
- Complete one general introductory course (GLY 2100C Physical Geology, GLY 2030C Environmental and Engineering Geology, or any 1000-2000 level GLY, OCE, or ESC course).

GLY 2010C is recommended as it is a prerequisite for many upper-level courses.
- 2.0 UF GPA required

Semester 4
- Complete historical geology course (GLY 2100C or GLY 3105C) or GLY 3000-level geology course.
- Complete one related coursework requirement (CHM 2045/CHM 2045L, MAC 2311, or PHY 2004PHY 2048/PHY 2053 and associated lab)
- 2.5 Critical Tracking GPA
- 2.0 UF GPA required

Semester 5
- Complete one 3000-level geology course (or historical geology course if not taken in semester 4)
- Complete one additional related coursework requirement (CHM 2045/CHM 2045L, MAC 2311, or PHY 2004/PHY 2048/PHY 2053 and associated lab)
- 2.5 Critical Tracking GPA
- 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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<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>MAC 2311: Analytic Geometry and Calculus 1</td>
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</tr>
<tr>
<td></td>
<td>[Critical Tracking; State Core Gen Ed Mathematics]</td>
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</tr>
<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>Credits</td>
<td>14-15</td>
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</table>

| Semester Two | CHM 2045/CHM 2045L: General Chemistry 1         | 4       |
|              | [Critical Tracking; State Core Gen Ed Physical Sciences] |         |
|              | Select one:                                     | 4       |
|              | MAC 2312: Analytic Geometry and Calculus 2       |         |
|              | PHY 2004/PHY 2048L: Applied Physics 1            |         |
|              | Foreign language                                | 3-5     |
|              | State Core Gen Ed Social and Behavioral Sciences | 3       |
|              | Credits                                         | 14-16   |
### Semester Three
Select one: 4
- CHM 2046 & 2046L: General Chemistry 2 and General Chemistry 2 Laboratory (Gen Ed Physical Sciences)

Approved science course (Gen Ed Physical Sciences)

Select one: 3-4
- GLY 2010C: Physical Geology (Critical Tracking; Gen Ed Physical Sciences)

Introductory GLY course (Critical Tracking; Gen Ed Physical Sciences)

Select one: 4

Approved science course (Gen Ed Physical Sciences)

### Semester Four
Select one: 4
- GLY 2100C: Historical Geology (Critical Tracking; Gen Ed Physical Sciences)

GLY 3105C: Evolution of Earth and Life (Critical Tracking)

Gen Ed Biological Sciences 3
State Core Gen Ed Humanities 3
Gen Ed Mathematics (or elective if Calculus 2 taken in semester two) 3
Gen Ed Social and Behavioral Sciences 3

### Semester Five
- GLY 3202C: Principles of Mineralogy (Critical Tracking; Gen Ed Physical Sciences)
- GLY 4750L: Geological Field Methods 2
- Electives (3000 level or above, not in major) 5
Gen Ed Humanities 3

### Semester Six
- GLY 4310C: Igneous and Metamorphic Petrology (Gen Ed Physical Sciences) 4
- GLY 4400C: Structural Geology and Tectonics 4
Gen Ed Biological Sciences 3
Geology elective (any GLY course 3000 level or above) 2
Elective (3000 level or above, not in major) 3

### Summer After Semester Six
- GLY 4790: Geology Summer Field Camp 6

### Semester Seven
- GLY 4552C: Sedimentary Geology 4
Gen Ed Composition 3
Geology elective (any GLY course 3000 level or above) 3
Elective (3000 level or above, not in major) 3

### Semester Eight
- GLY 3603C: Paleontology (Gen Ed Physical Sciences) 4
- GLY 4905: Individual Work (or one elective) 3
Electives (3000 level or above, not in major) 6

### Total Credits
120

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### 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

<table>
<thead>
<tr>
<th>Courses</th>
<th>SLO 1</th>
<th>SLO 2</th>
<th>SLO 3</th>
<th>SLO 4</th>
<th>SLO 5</th>
<th>SLO 6</th>
<th>SLO 7</th>
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#### 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*

<table>
<thead>
<tr>
<th>Courses</th>
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<th>SLO 2</th>
<th>SLO 3</th>
<th>SLO 4</th>
<th>SLO 5</th>
<th>SLO 6</th>
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<td>GLY 2010C</td>
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<td>GLY 3200C</td>
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**Assessment Types**
- Six weeks of practical field exercises and mapping, including observation and data collection in New Mexico and the western USA