GEOPHYSICS, B.S.

Degree Requirements (128 hours)

Program of Study

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<tr>
<th>Requirements</th>
<th>Credit Hours</th>
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<td>1. Carolina Core</td>
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Founding Documents Requirement

All undergraduate students must take a 3-credit course or its equivalent with a passing grade in the subject areas of History, Political Science, or African American Studies that covers the founding documents including the United States Constitution, the Declaration of Independence, the Emancipation Proclamation and one or more documents that are foundational to the African American Freedom struggle, and a minimum of five essays from the Federalist papers. This course may count as a requirement in any part of the program of study including the Carolina Core, the major, minor or cognate, or as a general elective. Courses that meet this requirement are listed here (https://academicbulletins.sc.edu/undergraduate/founding-document-courses/).

1. Carolina Core Requirements (34-46 hours)

CMW – Effective, Engaged, and Persuasive Communication: Written (6 hours)

*must be passed with a grade of C or higher

- any CC-CMW courses (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

ARP – Analytical Reasoning and Problem Solving (8 hours)

*must be passed with a grade of C or higher

- MATH 141
- MATH 142

SCI – Scientific Literacy (8 hours)

- PHYS 211 & PHYS 211L
- PHYS 212 & PHYS 212L

GFL – Global Citizenship and Multicultural Understanding: Foreign Language (0-6 hours)

Demonstration of proficiency in one foreign language equivalent to the minimal passing grade on the exit examination in the 122 course is required. Students can demonstrate this proficiency by successfully completing Phase II of the Proficiency Test or by successfully completing the 122 course, including the exit exam administered as part of that course.

- CC-GFL courses (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

It is strongly recommended that students continuing the study of a foreign language begin college-level study of that language in their first semester and continue in that language until their particular foreign language requirement is completed.

GHS – Global Citizenship and Multicultural Understanding: Historical Thinking (3 hours)

- any CC-GHS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

GSS – Global Citizenship and Multicultural Understanding: Social Sciences (3 hours)

- any CC-GSS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

AIU – Aesthetic and Interpretive Understanding (3 hours)

- any CC-AIU course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

CMS – Effective, Engaged, and Persuasive Communication: Spoken Component¹ (0-3 hours)

- any overlay or stand-alone CC-CMS course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

INF – Information Literacy¹ (0-3 hours)

- any overlay or stand-alone CC-INF course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

VSR – Values, Ethics, and Social Responsibility¹ (0-3 hours)

- any overlay or stand-alone CC-VSR course (https://academicbulletins.sc.edu/undergraduate/carolina-core-courses/)

' Carolina Core Stand Alone or Overlay Eligible Requirements — Overlay-approved courses offer students the option of meeting two Carolina Core components in a single course. A maximum of two overlays is allowed. The total Carolina Core credit hours must add up to a minimum of 31 hours. Some programs may have a higher number of minimum Carolina Core hours due to specified requirements.

2. College Requirements (15-18 hours)

Foreign Language (0-3 hours)

- only if needed to meet 122-level proficiency

Analytical Reasoning (6 hours)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAT 509</td>
<td>Statistics for Engineers</td>
<td>3</td>
</tr>
<tr>
<td>or STAT 515</td>
<td>Statistical Methods I</td>
<td></td>
</tr>
<tr>
<td>CSCE 206</td>
<td>Scientific Applications Programming</td>
<td>3</td>
</tr>
<tr>
<td>or CSCE 207</td>
<td>UNIX System Administration</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 6

History (3 hours)

The College of Arts and Sciences requires one additional GHS course beyond the Carolina Core GHS requirement.

- If the Carolina Core GHS requirement is fulfilled by a U.S. history course, the College of Arts and Sciences history requirement must be fulfilled by a non-U.S. history course.
- If the Carolina Core GHS requirement is fulfilled by a non-U.S. history course, the College of Arts and Sciences history requirement must be fulfilled by a U.S. history course.

Please select the College of Arts and Sciences history requirement from the approved list of U.S. and non-U.S. history courses (https://
Social Science and Fine Arts or Humanities (6 hours)
Courses Acceptable for Social Science and Fine Arts or Humanities Credit in Degree Programs in the College of Arts and Sciences (https://academicbulletins.sc.edu/undergraduate/arts-sciences/courses-acceptable-social-science-fine-arts-humanities/)

- Three hours of Social Science
- Three hours of Fine Arts or Humanities

3. Program Requirements (30-45 hours)
Supporting Courses (12 hours)

Select one of the following:

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 101</td>
<td>Introduction to the Earth</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 103</td>
<td>Environment of the Earth</td>
<td></td>
</tr>
<tr>
<td>GEOL 201</td>
<td>Observing the Earth</td>
<td></td>
</tr>
<tr>
<td>CHEM 111 &amp; 111L</td>
<td>General Chemistry I and General Chemistry I Lab</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 112 &amp; 112L</td>
<td>General Chemistry II and General Chemistry II Lab</td>
<td>4</td>
</tr>
</tbody>
</table>

Total Credit Hours 12

Cognate (13-14 hours)

must be passed with a grade of C or higher

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 241</td>
<td>Vector Calculus</td>
<td>3</td>
</tr>
<tr>
<td>MATH 242</td>
<td>Elementary Differential Equations</td>
<td>3</td>
</tr>
<tr>
<td>MATH 344 &amp; 344L</td>
<td>Applied Linear Algebra and Applied Linear Algebra Lab</td>
<td>4</td>
</tr>
</tbody>
</table>

Select one of the following: 3-4

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 520</td>
<td>Ordinary Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 521</td>
<td>Boundary Value Problems and Partial Differential Equations</td>
<td></td>
</tr>
<tr>
<td>MATH 522</td>
<td>Wavelets</td>
<td></td>
</tr>
<tr>
<td>MATH 525</td>
<td>Mathematical Game Theory</td>
<td></td>
</tr>
<tr>
<td>MATH 526</td>
<td>Numerical Linear Algebra</td>
<td></td>
</tr>
<tr>
<td>MATH 527</td>
<td>Numerical Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 550</td>
<td>Vector Analysis</td>
<td></td>
</tr>
<tr>
<td>MATH 552</td>
<td>Applied Complex Variables</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 13-14

Electives (4-20 hours)

No courses of a remedial, developmental, skill-acquiring, or vocational nature may apply as credit toward degrees in the College of Arts and Sciences. The College of Arts and Sciences allows the use of the Pass-Fail option on elective courses. Further clarification on inapplicable courses can be obtained from the College of Arts and Sciences.

Note: No electives will be needed to reach hours to graduate if completing the Degree with Distinction.

4. Major Requirements (34 hours)

a minimum grade of C is required in all major courses

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOL 302</td>
<td>Rocks and Minerals</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 315</td>
<td>Surface and Near Surface Processes</td>
<td></td>
</tr>
<tr>
<td>GEOL 325</td>
<td>Stratigraphy and Sedimentary Basins</td>
<td></td>
</tr>
<tr>
<td>GEOL 345</td>
<td>Igneous and Metamorphic Processes</td>
<td></td>
</tr>
<tr>
<td>GEOL 355</td>
<td>Structural Geology and Tectonics</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 531</td>
<td>Plate Tectonics</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 548</td>
<td>Environmental Geophysics ¹</td>
<td>4</td>
</tr>
<tr>
<td>GEOL 554</td>
<td>Applied Seismology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 555</td>
<td>Elementary Seismology</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 556</td>
<td>Seismic Reflection Interpretation</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 575</td>
<td>Numerical Modeling for Earth Science Applications</td>
<td>3</td>
</tr>
<tr>
<td>GEOL 546 &amp; 582</td>
<td>Marine Geophysics and Marine Hydrodynamics</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours 34

¹ An approved field course may substitute as the Capstone Experience.

Degree with Distinction in Geophysics

Available to students majoring in Geophysics who wish to participate in significant research activities in their major field under the supervision of a faculty mentor. Students who successfully fulfill all of these requirements will be awarded their degree with “Distinction in Geophysics” upon graduation. South Carolina Honors College students taking this route would graduate with both Honors in SCHC and “Distinction in Geophysics”.

Requirements:

- A minimum GPA of 3.5 in the major and 3.3 overall.
- A written sponsorship agreement from the faculty mentor on file in the department.
- Public presentation of the Senior Thesis research accompanied by a written document approved by the faculty mentor and a second reader that follows the guidelines of the School of the Earth, Ocean and Environment.
- 2 courses (6 hours) in addition to the general major requirements, including:
  - GEOL 498 or GEOL 499
  - GEOL 699

Note: No electives will be needed to reach hours to graduate if completing the Degree with Distinction.