GEOPHYSICS, MINOR

Requirements for a minor may be completed at any campus location offering the specified courses for the minor. Students may not change from a campus that offers their major to a campus that does not offer their major for the purpose of completing a minor.

Program Description

The Geophysics minor provides the opportunity for students from outside the geosciences to apply the physics, quantitative, and technical skills they are developing in their major program to the geophysical aspects of Earth science, including seismology, volcanology, natural hazards, environmental geophysics, and petroleum and mineral exploration. For students majoring in Geosciences, the completion of the minor will strengthen their physics/quantitative background and develop links between theory and application for these technical and quantitative skills. The minor will prepare students for graduate programs in geophysics and/or employment opportunities in the environmental and exploration industries.

What is Geophysics?

Geophysics is the application of physics to study of Earth (and other planetary bodies). The field is broadly focused on combining physics, mathematics, computation, and geology to investigate Earth's interior and dynamics, to understand and help mitigate natural hazards, and to explore for natural resources such as water, oil, gas, and minerals.

You Might Like This Program If...

- You are curious about the mechanics of earthquakes, volcanism, and other natural hazards.
- You are interested in the physical processes that drive plate tectonics.
- You want to learn more about how geophysics is used to study the inaccessible parts of Earth (and other planets).
- You would like to apply your physics, math, and computer skills to investigate natural hazards and/or to develop a broad understanding of how the Earth works.

Program Requirements

Requirements for the Minor

The minor consists of 18-20 credits satisfying the requirements below.

A grade of C or better is required for all courses in the minor, as specified by Senate Policy 59-10 (https://senate.psu.edu/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/#59-10). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student’s major(s).

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MATH 220</td>
<td>Matrices</td>
<td></td>
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<tr>
<td>MATH 230</td>
<td>Calculus and Vector Analysis</td>
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<td>MATH 250</td>
<td>Ordinary Differential Equations</td>
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<tr>
<td>MATH 251</td>
<td>Ordinal and Partial Differential Equations</td>
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<tr>
<td>GEOSC 203</td>
<td>Physical Processes in Geology</td>
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<tr>
<td>GEOSC 487</td>
<td>Analysis of Time Series</td>
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<tr>
<td>GEOSC 488</td>
<td>An Introduction to Seismology</td>
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<tr>
<td>GEOSC 489</td>
<td>Dynamics of the Earth</td>
<td></td>
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<tr>
<td>PHYS 212</td>
<td>General Physics: Electricity and Magnetism</td>
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Additional Courses: Require a grade of C or better

Non-Geoscience Majors

Select 3 credits from the following:

- GEOSC 1  Physical Geology
- MATH 140  Calculus With Analytic Geometry I
- PHYS 212  General Physics: Electricity and Magnetism

Select 11-13 credits of the following:

- GEOSC 109H Earthquakes and Society
- GEOSC 487 Analysis of Time Series
- GEOSC 488 An Introduction to Seismology
- GEOSC 489 Dynamics of the Earth

Geoscience Majors ¹

Select 3-4 credits of the following:

- MATH 220  Matrices
- MATH 230  Calculus and Vector Analysis
- MATH 231  Calculus of Several Variables
- MATH 232  Integral Vector Calculus
- MATH 250  Ordinary Differential Equations
- MATH 251  Ordinary and Partial Differential Equations
- GEOSC 487  Analysis of Time Series
- GEOSC 488  An Introduction to Seismology
- GEOSC 489  Dynamics of the Earth

1 Geoscience majors may not double count these courses in their major.

Academic Advising

The objectives of the university’s academic advising program are to help advisees identify and achieve their academic goals, to promote their intellectual discovery, and to encourage students to take advantage of both in-and out-of class educational opportunities in order that they become self-directed learners and decision makers.

Both advisers and advisees share responsibility for making the advising relationship succeed. By encouraging their advisees to become engaged in their education, to meet their educational goals, and to develop the habit of learning, advisers assume a significant educational role. The advisee's unit of enrollment will provide each advisee with a primary
academic adviser, the information needed to plan the chosen program of
study, and referrals to other specialized resources.

READ SENATE POLICY 32-00: ADVISING POLICY (https://senate.psu.edu/
policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

University Park
Jacob Hoover
Undergraduate Program Coordinator
542 Deike Building
University Park, PA 16802
814-865-7791
undergrad@geosc.psu.edu

Contact
University Park
DEPARTMENT OF GEOSCIENCES
503 Deike Building
University Park, PA 16802
814-865-6711
contact@geosc.psu.edu

https://www.geosc.psu.edu