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/students/policies-and-rules-for-undergraduate-students/59-00-minors-and-certificates/). In addition, at least six credits of the minor must be unique from the prescribed courses required by a student’s major(s).

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GEOSC 1</td>
<td>Physical Geology</td>
<td>3</td>
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<tr>
<td>MATH 140</td>
<td>Calculus With Analytic Geometry I</td>
<td>4</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

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Geoscience Majors

- GEOSC 203 Physical Processes in Geology
- Select 3 credits from the following:
  - GEOSC 203 Physical Processes in Geology
  - GEOSC 204 Physical Processes in Geology
  - GEOSC 205 Physical Processes in Geology
- EARTH 2 The Earth System and Global Change
- EARTH 101 Natural Disasters: Hollywood vs. Reality
- EARTH 105N Environments of Africa: Geology and Climate Change
- EARTH 106 Physical Geology
- GEOSC 10 Geology of the National Parks
- GEOSC 40 The Sea Around Us
- GEOSC 109H Earthquakes and Society
- Select 11-13 credits of the following:
  - GEOSC 402Y Natural Disasters
  - GEOSC 434 Volcanology
  - GEOSC 452 Hydrogeology
  - GEOSC 483 Environmental Geophysics
  - GEOSC 487 Analysis of Time Series
  - GEOSC 488 An Introduction to Seismology
  - GEOSC 489 Dynamics of the Earth

Non-Geoscience Majors

- PHYS 212 General Physics: Electricity and Magnetism
- 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
- Select 11-13 credits of the following:
  - GEOSC 402Y Natural Disasters
  - GEOSC 434 Volcanology
  - GEOSC 452 Hydrogeology
  - GEOSC 483 Environmental Geophysics
  - GEOSC 487 Analysis of Time Series
  - GEOSC 488 An Introduction to Seismology
  - GEOSC 489 Dynamics of the Earth

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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/students/policies-and-rules-for-undergraduate-students/32-00-advising-policy/)

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