# PH.D., GEOPHYSICS

Complete the following admission requirement:

- Submit GRE scores.
- Complete a master’s degree in geology, geophysics or an appropriate field of physical science or engineering.

## Admission to Ph.D. Geophysics Program Directly from a Bachelor’s Program

Entering graduate students whose highest earned degree is the baccalaureate are normally admitted as Master of Science candidates. However, exceptionally able and accomplished students in this category are eligible for direct admission to the Ph.D. program. For direct admission from the baccalaureate to the Ph.D. program, a student must receive approval from the graduate admission committee and also meet one of three criteria:

1. At least one first-authored manuscript published, accepted or submitted for publication in a peer-reviewed scientific journal
2. Receipt of an NSF, NIH or similar prestigious pre-doctoral fellowship.
3. Demonstrated research proficiency AND either
   - attained a GPA of at least 3.5 in mathematics and science courses at the undergraduate level, or
   - scored at or above the 80th percentile in two of three categories in the GRE.

The requirement of demonstrated research proficiency can be waived for exceptionally promising students. In this case the student is required to complete a research or review paper focusing on a thesis-related topic approved by the graduate advising committee. The paper should be roughly 4,000-5,000 words and must be submitted and approved by the advising committee within the first three semesters to maintain Ph.D. status. Failure will result in changing the student’s status to M.S. candidate.

After admission, M.S. candidates may, in exceptional cases, petition for conversion to the Ph.D. program if they satisfy one of the above criteria. Such petitions must be approved both by the student’s current (M.S.) and proposed (Ph.D.) advisory committee and the department director or designee.

## Minimum Requirements for Degree: 18 thesis credits

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>GEOS F626</td>
<td>Applied Seismology</td>
<td></td>
</tr>
<tr>
<td>GEOS F655</td>
<td>Tectonic Geodesy</td>
<td></td>
</tr>
<tr>
<td>GEOS F671</td>
<td>Volcano Seismology</td>
<td></td>
</tr>
</tbody>
</table>

## Snow, Ice and Permafrost Geophysics

Complete 6 credits from the following:

- GEOS F614  Ice Physics
- GEOS F615  Sea Ice
- GEOS F616  Permafrost
- GEOS F617  Glaciers

## Remote Sensing

Complete 6 credits from the following:

- ATM F613  Atmospheric Radiation
- GEOS F622  Digital Image Processing in the Geosciences
- GEOS F639  InSar and Its Applications
- GEOS F654  Visible and Infrared Remote Sensing
- GEOS F657  Microwave Remote Sensing
- GEOS F676  Remote Sensing of Volcanic Eruptions

## Advanced Skills Categories

Complete 3 credits each in two of the following advanced skills categories:

### Digital Signal Analysis and Remote Sensing

- GEOS F622  Digital Image Processing in the Geosciences
- GEOS F654  Visible and Infrared Remote Sensing
- GEOS F657  Microwave Remote Sensing
- PHYS F628  Digital Time Series Analysis

### Statistics and Parameter Estimation

- ATM F610  Analysis Methods in Meteorology and Climate
- GEOS F627  Inverse Problems and Parameter Estimation
- STAT F401  Regression and Analysis of Variance
- STAT F461  Applied Multivariate Statistics

### Mathematical Methods

- MATH F421  Applied Analysis
- MATH F614  Numerical Linear Algebra
- MATH F615  Numerical Analysis of Differential Equations
- MATH F661  Optimization
- ME F601  Finite Element Analysis in Engineering

### Skills course

One graduate-level advanced skills course approved by the student’s advisory committee

## Ph.D. Degree Requirements

Complete the Ph.D. degree requirements. (http://catalog.uaf.edu/graduate/#phd)

Complete and pass a written and oral comprehensive examination.

Complete and submit a written thesis proposal for approval.

Complete a research program as arranged with the graduate advisory committee.
Ph.D., Geophysics