PH.D., GEOPHYSICS

Admission Requirements
Complete the following admission requirements:

• 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.

Program Requirements

Minimum Requirements for Geophysics
Ph.D.: 18 thesis credits

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>GEOS F631</td>
<td>Foundations of Geophysics</td>
<td>4</td>
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<tr>
<td>GEOS F682</td>
<td>Geoscience Seminar (fall semester)</td>
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Complete 6 credits from the following:
GEOS F604 Seismology
GEOS F605 Geochronology
GEOS F626 Applied Seismology
GEOS F655 Tectonic Geodesy
GEOS F671 Volcano Seismology

Snow, Ice and Permafrost Geophysics
Complete 6 credits from the following:
PHYS 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

Advanced Skills Categories
Complete 3 credits each in two of the following four 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

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

Mathematical Methods
MATH F432 Introduction to Partial Differential Equations
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.