

The Geophysics Major Curriculum

Undergraduates in Geophysics are exposed to a broad spectrum of topics in the Earth sciences that describe and predict our planet's evolution. Majors build on a solid foundation of mathematics and natural science with advanced coursework in geophysics to develop the in-depth knowledge needed to pursue advanced graduate study and professional careers in government or the private sector. Please see the Geophysics Bulletin regarding degree requirements: <https://bulletin.stanford.edu/programs/GEOPH-BS>

A primary focus of the Geophysics Major, both as a primary and secondary major, is the senior research project. Students work closely with a faculty mentor to complete an original research paper that can result in published literature. Students selecting Geophysics as a primary major generally pursue specialized skills in areas such as resource exploration, environmental geophysics, seismology, or tectonics. For students pursuing Geophysics as a secondary major, we encourage multidisciplinary approaches applying broad knowledge to achieve a better understanding of the Earth and its future.

GEOPHYSICS CORE COURSES (10-13 units)

| | | |
|---------|---|---|
| GP 101 | Frontiers of Geophysical Research | 3 |
| GP 110 | Intro to the Foundations of Geophysics | 3 |
| GP 120 | Geophysical Mechanics & Dynamics | 3 |
| | Or GP128 Modeling Earth | 3 |
| GP 162A | Laboratory Characterization in Properties Rocks and Geomaterials | 3 |
| | Or PHYSICS 89L Intro Laboratory Physics | 1 |
| | Or PHYSICS 104 Electronics & Intro Experm. | 4 |
| | Or PHYSICS 190 Near Surface Geophysics | 4 |

GEOPHYSICS RESEARCH (12 units)

| | | |
|--------|--------------------------------------|-----|
| GP 196 | Undergraduate Research in Geophysics | 6 |
| GP 197 | Senior thesis in Geophysics | 3-5 |
| | Or GP198 Senior Honors thesis | |
| GP 199 | Senior Seminar | 3 |

SUPPORTING MATH (15 units)

| | | |
|-------------------------|-------------------------|---|
| CME 100 (or Math 51/52) | Vector Calculus | 5 |
| CME 102 (or Math 53) | ODEs | 5 |
| CME 104 (or Math 131p) | Linear Algebra and PDEs | 5 |

SUPPORTING PHYSICS (12 units)

| | | |
|--------------------|---------------------------|---|
| Physics 41 (or 61) | Mechanics | 4 |
| Physics 43 (or 63) | Electricity and Magnetism | 4 |
| Physics 45 (or 65) | Light and Heat | 4 |

SUPPORTING ELECTIVES (18 units)

Eighteen units of geophysics-relevant upper-level electives to be approved by the Director of Undergraduate Studies and selected from offerings across the across the university including, but not limited to courses in mathematics, Earth and other natural sciences, and engineering.

Substitutions allowed with consent of Director of Undergrad. Studies; classes to be taken LGI if offered, grade C or better.

The Geophysics Minor Curriculum

The Geophysics minor provides students with a general knowledge of Geophysics. The minor consists of four courses in Geophysics numbered 100 or higher, plus supporting math: CME 100 (or MATH 51) and physics: Physics 21 (or 41 or 61), Physics 23 (or 43 or 63), and Physics 25 (or 45 or 65).

Student Name: _____ Undergrad Advisor: _____

Date: _____

GEOPHYSICS CORE COURSES (12 units)

QUARTER/YEAR, UNITS, LETTER GRADE

| | | |
|---------|---|-------|
| GP 101 | Frontiers of Geophysical Research | _____ |
| GP 110 | Intro to the foundations of Geophysics | _____ |
| GP 120 | Ice, Water, Fire | _____ |
| GP 162A | Laboratory Characterization in Properties Rocks and Geomaterials | _____ |

GEOPHYSICS RESEARCH (12 units)

| | | |
|--------|--|-------|
| GP 196 | Undergraduate Research in Geophysics | _____ |
| GP 197 | Senior thesis in Geophysics Or GP198 Senior Honors thesis | _____ |
| GP 199 | Senior Seminar | _____ |

SUPPORTING MATH (15 units)

| | | |
|-------------------------|-------------------------|-------|
| CME 100 (or Math 51/52) | Vector Calculus | _____ |
| CME 102 (or Math 53) | ODEs | _____ |
| CME 104 (or Math 131p) | Linear Algebra and PDEs | _____ |

SUPPORTING PHYSICS (12 units)

| | | |
|--------------------|---------------------------|-------|
| Physics 41 (or 61) | Mechanics | _____ |
| Physics 43 (or 63) | Electricity and Magnetism | _____ |
| Physics 45 (or 65) | Light and Heat | _____ |

SUPPORTING ELECTIVES (18 units)

Eighteen units of geophysics-relevant upper-level electives to be approved by the Director of Undergraduate Studies and selected from offerings across the across the university including, but not limited to courses in mathematics, Earth and other natural sciences, and engineering.

Substitutions allowed with consent of Director of Undergrad. Studies; classes to be taken LGI if offered, grade C or better.

UPPER-LEVEL ELECTIVES (18 units)

| <u>Course #</u> | <u>Course title</u> | <u>QUARTER/YEAR, UNITS, LETTER GRADE</u> |
|-----------------|---------------------|--|
| 1) _____ | _____ | _____ |
| 2) _____ | _____ | _____ |
| 3) _____ | _____ | _____ |
| 4) _____ | _____ | _____ |
| 5) _____ | _____ | _____ |
| 6) _____ | _____ | _____ |

For more information: visit <https://earth.stanford.edu/geophysics/>
or contact **Professor Dustin Schroeder** (dustinms@stanford.edu) Director of Undergraduate Studies, Mitchell 361