

# Geophysics Courses

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## Courses

### **GEOP 3320A. Introduction to Geophysics.**

Introduction to Geophysics Survey course in geophysics that introduces students to the field of geophysics and its application to local, regional and global problems.

**Department:** Geophysics

**3 Credit Hours**

**5 Total Contact Hours**

3 Lab Hours

2 Lecture Hours

0 Other Hours

**Prerequisite(s):** (GEOL 3312 w/C or better)

### **GEOP 3320B. Data Interp in the Geosciences.**

Data Interpretation in the Geosciences This course introduces students to data interpretation methods used in geoscience, hydroscience and geophysics. Topics to be covered include seismic and electromagnetic waves, heat flow, slope geomorphology and groundwater flow, filtering of geospatial and time series data sets, gravitational and magnetic potential fields, geodynamics and petrophysical problems. The laboratory will emphasize use of common geoscience software packages.

**Department:** Geophysics

**3 Credit Hours**

**4 Total Contact Hours**

2 Lab Hours

2 Lecture Hours

0 Other Hours

**Prerequisite(s):** (MATH 1312 w/C or better ) AND (GEOL 3312 w/C or better)

### **GEOP 4167. Directed Study, Geophysics.**

Directed Study, Geophysics (0-0-1) Directed study problems in geophysics; hours and subjects to be arranged with each student; for undergraduate students who wish to do work on a special problem. No student may receive credit for more than six hours of directed study work. Application of a directed study towards required upper-division elective hours in the major is subject to prior approval by the departmental undergraduate studies committee. Prerequisite: Junior standing and Department approval.

**Department:** Geophysics

**1 Credit Hour**

**1 Total Contact Hour**

0 Lab Hours

0 Lecture Hours

1 Other Hour

### **GEOP 4267. Directed Study, Geophysics.**

Directed Study, Geophysics (0-0-2) Directed study problems in geophysics; hours and subjects to be arranged with each student; for undergraduate students who wish to do work on a special problem. No student may receive credit for more than six hours of directed study work. Application of a directed study towards required upper-division elective hours in the major is subject to prior approval by the departmental undergraduate studies committee. Prerequisite: Junior standing and Department approval.

**Department:** Geophysics

**2 Credit Hours**

**2 Total Contact Hours**

0 Lab Hours

0 Lecture Hours

2 Other Hours

**GEOP 4306. Meteorology.**

Investigation of the physical principles upon which weather and climate are based, to provide an interpretation of atmospheric phenomena and an introduction to physical and dynamical meteorology. Topics include physical and chemical bases of atmospheric phenomena, the role of the atmosphere in the earth system, and the processes causing atmospheric motions, precipitation, and Earth's climate. Prerequisite: MATH 2313 and PHYS 2421 each with a grade of C or better.

**Department:** Geophysics

**3 Credit Hours**

**3 Total Contact Hours**

0 Lab Hours

3 Lecture Hours

0 Other Hours

**Prerequisite(s):** (MATH 2313 w/C or better ) AND (PHYS 2421 w/C or better ) OR (PHYS 2121 w/C or better AND PHYS 2321 w/C or better)

**GEOP 4332. Explor Geophysics-Seismic Meth.**

Exploration Geophysics: Seismic Methods (2-3) A detailed treatment of seismic prospecting for oil and minerals, includes principles and current practices in seismic refraction and reflection prospecting, as well as related aspects of acoustic logging and other subsurface techniques. Prerequisites: (1) GEOL 1313 and GEOL 1103, or GEOL 1311, or (2) GEOL 3321 and MATH 1312 and PHYS 2420, and PHYS 2421, or instructor approval. Course fee required.

**Department:** Geophysics

**3 Credit Hours**

**5 Total Contact Hours**

3 Lab Hours

2 Lecture Hours

0 Other Hours

**Prerequisite(s):** (GEOL 1103 w/D or better AND GEOL 1313 w/D or better ) OR (GEOL 1311 w/D or better ) OR (GEOL 3321 w/D or better ) OR (GEOL 1111 w/D or better AND GEOL 1211 w/D or better ) AND (PHYS 2420 w/D or better ) OR (PHYS 2120 w/D or better AND PHYS 2320 w/D or better ) AND (PHYS 2421 w/D or better ) OR (PHYS 2121 w/D or better AND PHYS 2321 w/D or better ) AND (MATH 1312 w/C or better ) OR (MATH 2313 w/C or better ) OR (MATH 2326 w/C or better)

**GEOP 4334. Explo Geophys Non-Seismic Meth.**

Exploration Geophysics: Non-Seismic Methods (2-3) A quantitative treatment of gravity and magnetic fields of the earth as applied to exploration for oil and minerals. Some coverage of nuclear and electrical methods of prospecting. Prerequisites: (1) GEOL 1313 and GEOL 1103, or GEOL 1311, or (2) GEOL 3321 and MATH 1312 and PHYS 2420 and and PHYS 2421, or instructor approval. Course fee required.

**Department:** Geophysics

**3 Credit Hours**

**5 Total Contact Hours**

3 Lab Hours

2 Lecture Hours

0 Other Hours

**Prerequisite(s):** (GEOL 1103 w/D or better AND GEOL 1313 w/D or better ) OR (GEOL 1311 w/D or better ) OR (GEOL 3321 w/D or better ) OR (GEOL 1111 w/D or better AND GEOL 1211 w/D or better ) AND (PHYS 2420 w/D or better ) OR (PHYS 2120 w/D or better AND PHYS 2320 w/D or better ) AND (PHYS 2421 w/D or better ) OR (PHYS 2121 w/D or better AND PHYS 2321 w/D or better ) AND (MATH 1312 w/C or better ) OR (MATH 2313 w/C or better ) OR (MATH 2326 w/C or better)

**GEOP 4336. Intro. to Remote Sensing.**

Introduction to Remote Sensing (2-3) An introduction to acquisition, processing, and interpretation of remote sensing data acquired from both satellites and aircraft. Applications in earth and environmental sciences are stressed as is understanding how to obtain and employ the many types of data that are available. Topics covered include basic mapping concepts, how sensors work, the structure of remote sensing data and analysis, thermal and radar techniques, data processing, and classification schemes. Laboratory work is primarily computerized exercises. Corequisite: PHYS 1404 or PHYS 2421. Prerequisites: GEOL 1301 or GEOL 1303, and GEOL 1302 or GEOL 1304.

**Department:** Geophysics

**3 Credit Hours**

**5 Total Contact Hours**

3 Lab Hours

2 Lecture Hours

0 Other Hours

**Prerequisite(s):** (GEOL 1301 w/D or better ) OR (GEOL 1303 w/D or better ) AND (GEOL 1302 w/D or better ) OR (GEOL 1304 w/D or better)

**Corequisite(s):** PHYS 1404, PHYS 2421

**GEOP 4350. Field Geophysics.**

Field Geophysics A 3-week course in field applications of seismic and nonseismic methods. Students will conduct geophysical surveys, process and model collected data and make oral and written presentations.

**Department:** Geophysics

**3 Credit Hours**

**16 Total Contact Hours**

0 Lab Hours

0 Lecture Hours

16 Other Hours

**Prerequisite(s):** (GEOP 3320A w/C or better)

**GEOP 4367. Directed Study, Geophysics.**

Directed Study, Geophysics (0-0-3) Directed study problems in geophysics; hours and subjects to be arranged with each student; for undergraduate students who wish to do work on a special problem. No student may receive credit for more than six hours of directed study work. Application of a directed study towards required upper-division elective hours in the major is subject to prior approval by the departmental undergraduate studies committee. Prerequisite: Junior standing and Department approval.

**Department:** Geophysics

**3 Credit Hours**

**3 Total Contact Hours**

0 Lab Hours

0 Lecture Hours

3 Other Hours

**GEOP 4420A. Applied Geophysics I-Nonseismic.**

Applied Geophysics I-Nonseismic The application of gravity, magnetism heat flow, electrical and electromagnetic techniques to mineral, petroleum, environmental, engineering and whole Earth exploration.

**Department:** Geophysics

**4 Credit Hours**

**6 Total Contact Hours**

3 Lab Hours

3 Lecture Hours

0 Other Hours

**Prerequisite(s):** (GEOP 3320A w/C or better AND GEOP 3320B w/C or better ) AND (PHYS 2421 w/C or better ) OR (PHYS 2121 w/C or better AND PHYS 2321 w/C or better)

**GEOP 4420B. Applied Geophysics II-Seismic.**

Applied Geophysics II-Seismic The application of gravity, magnetism, heat flow, electrical and electromagnetic techniques to mineral, petroleum, environmental, engineering and whole Earth exploration.

**Department:** Geophysics

**4 Credit Hours**

**6 Total Contact Hours**

3 Lab Hours

3 Lecture Hours

0 Other Hours

**Prerequisite(s):** (GEOP 3320A w/C or better AND GEOP 3320B w/C or better ) AND (PHYS 2421 w/C or better ) OR (PHYS 2121 w/C or better AND PHYS 2321 w/C or better)