

GEO 369 – Introduction to Geophysics – 3 credits.

Fall 2004

Instructor: Dr. Andrew M. Goodliffe

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Meeting time

Tuesday/Thursday, 1:00pm - 2:15pm. Bevill 3O/266

Prerequisites

GEO 101, PH 102, MATH 125 or equivalent

Description

This class will be a comprehensive lecture and computer lab based introduction to geophysics. Lectures will focus on the techniques and theory necessary to understand and implement them. Lab based classes will be in Bevill 266 and will make use of the dual monitor PCs. Students will be exposed to a wide range of geophysical processing and modeling software, both PC and UNIX based.

Objectives

At the conclusion of this course students will be familiar with a multitude of geophysical techniques and will be able to apply them at all scales. The students will be able to:

- 1) Determine which geophysical techniques are best suited to solve a particular problem.
- 2) Understand the basic theory of a range of geophysical techniques,
- 3) Understand any processing steps that may have to be applied to the data.
- 4) Interpret the data intelligently.

Topics to be covered

This class emphasizes using geophysical techniques to interpret the geology of a region.

Techniques that will be covered include:

- 1) Radar Interferometry
- 2) Satellite altimetry
- 3) Isostasy
- 4) Earthquakes
- 5) Gravity
- 6) Magnetism
- 7) Paleomagnetism
- 8) Bathymetry
- 9) Sidescan
- 10) GPS
- 11) Seismic Refraction
- 12) Time series analysis
- 13) Seismic Reflection

- 14) Heat Flow
- 15) Down-hole logging
- 16) Vertical seismic profiles
- 17) Geophysical analysis of rock samples

Other topics may be added/deleted depending on the interests of the students in the class.

Attendance Policy

Students are expected to attend all classes. Any absence that is known in advance should be cleared with the professor.

Examinations and assignments

Assignments will consist of additional exercises based on the days topic plus selected readings. There will be both a mid-term and final examination. A final project will be assigned on a topic of the students choosing.

Grading Policy

Letter grade

Policy for making up missed course work

All course work will be made up in the students own time.

Text

An Introduction to Geophysical Exploration, by Kearey, Brooks, and Hill. Though the curriculum does not draw directly from this text, it will be used as reference throughout the class. This text will be supplemented by other readings.

Students with disabilities

Students with disabilities who need accommodations made should present an accommodation letter to me as soon as possible. These letters can be obtained from the Office of Disability Services.