

INTRODUCTION TO GEOPHYSICS
GE 391 Course Outline
Fall 2011

Professor Alan Kafka
Department of Earth and Environmental Sciences
Boston College

Office Hours - T Th 1:30-2:30, Devlin 312
E-mail: kafka@bc.edu, Web Site: www2.bc.edu/alan-kafka

This syllabus provides a basic summary of the course. Other course materials will be posted on the course web site, which is on the BC *Blackboard* course management system.

This course provides an introduction to the fundamental principles of “solid earth geophysics”, the study of: (1) the physical properties of the Earth’s surface and interior: Such as, differences between continents and oceans, seismological properties of the Earth’s interior, the Earth’s gravity field, and the Earth’s magnetic field; and (2) The manner in which internal processes produce features and phenomena that are observed at (or near) the surface of the Earth: Such as, geology, topography, earthquakes, volcanoes, continents, oceans, and plate tectonics.

Lecture: T Th: 10:30-11:45, Devlin 201

Textbook: There is no book that adequately covers the material in this course at the level that we will be covering it. The closest is probably *Introduction to Geophysics*, by G.D. Garland (1979), which is out of print. So, we will be using on-line materials, plus copies of printed materials such as chapters from Garland (and/or other geophysics texts). A recommended book for those who want a complete coverage of geophysics and a future reference book for topics covered in this course is *Fundamentals of Geophysics*, by William Lowrie.

The following topics will be covered:

Introduction
The Earth's Gravitational Field
The Earth's Magnetic Field
Seismology and the Earth's Interior
Earthquakes
Plate Tectonics
Additional Topics (To be announced)

The order of topics may change as the semester progresses.

Course grades will be based on homework assignments, a research project, two exams during the semester, and a final exam.

Grades will be determined as follows:

- (1) Average of grades on homework assignments ~30% of course grade. Homework assignments will include some combination of problem sets, other types of exercises, and progress reports related to your research project.
- (2) Research Project Report(s) ~30% of course grade.
- (3) Exam grades ~40% of course grade.

Research Project: For this course, you will be required to conduct a research project on any topic in geophysics that you are interested in investigating. Your work on this research project will involve one or more Research Reports during the semester and a Final Research Report (due at the end of the semester).

Students are responsible for knowing all of the information in this syllabus. There may be corrections or addenda to what is written here, and if so they will be posted on the course *Blackboard* web site. The most current version of syllabus will always be the version on the web.