# GEOS 312 - Geophysics Spring 2006

**Instructor:** Christoph Geiss,
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**Office hours:** Wednesday 1:30 - 2;30 PM or by appointment

**Class Time:** M, W, F 10:00 - 10:50 AM
I would like to shift our class time a little bit, by skipping (most) Friday lectures and starting at 9:00 AM on Wednesdays (or Mondays). This would give us more time for some experiments.

**Textbook:** W. Lowrie, *Fundamentals of Geophysics*, Cambridge University Press

**Grading:**

| | |
|---|---|
| Homework exercises | 20% |
| 2 hour exams | 50 % (25% each) |
| Class presentation | 10% |
| Poster presentation at Science Symposium | 20% |

**Comments:** *General Structure of the Course*
I want to try a combination of lectures and hands-on experiments for this course. After a short introduction to Plate Tectonics - the fundamental framework for most geological and geophysical processes - we will learn about. To make it easier to do some hands-on stuff in class I ask you to move Friday's lecture to Monday or Wednesday morning.

*Homework*
I will assign a variety of homework exercises, ranging from reading assignments to problem sets. These assignments will be posted at my website and announced in class.

*Class presentation*
You will give a brief (10 minutes) presentation on a topic of your choice on the last day of classes (May 2nd). I will hand out a list of possible topics in the second week of class.

*Poster Presentation*
This course does not have a laboratory component, but I would like you to do some research and experiments. We have equipment to do seismology and paleomagnetic experiments as well as a set of temperature sensors that record variations in ground temperature on the south side of McCook hall. We will do a series of experiments in seismology, rock magnetism and heat conduction. All of you will hand in a summary of your results, but you will also present these results to a larger audience at the Science Symposium on May 3rd.

*Exams*
one hour, no books, but you can bring one handwritten page of notes and your calculator

**Very Tentative Syllabus**

I have no idea how long some of the experiments will take. That's why the syllabus is even more tentative than usual, but here is the general plan:

| Week | Dates | Topic | Comments |
|---|---|---|---|
| 1 | 1/23 - 1/27 | rocks, plate tectonics, general structure of the earth | |
| 2 | 1/30 - 2/03 | | |
| 3 | 2/06 - 2/10 | gravity and figure of the earth, tides | |
| 4 | 2/13 - 2/17 | | |
| 5 | 2/20 - 2/24 | seismology, interior structure of the earth | |
| 6 | 2/27 - 3/03 | | |
| 7 | 3/06 - 3/10 | | Trinity Days - no class on 2/27 |
| 8 | 3/13 - 3/17 | | **1. exam** (gravity and seismology) |
| 9 | 3/20 - 3/24 | | Spring break - no class |
| 10 | 3/27 - 3/31 | the Earth's magnetic field, paleomagnetism | |
| 11 | 4/03 - 4/07 | | |
| 12 | 4/10 - 4/14 | rock-magnetism | taught by A. Smirnov - Yale |
| 13 | 4/17 - 4/21 | thermal properties of the Earth | |
| 14 | 4/24 - 4/28 | | **2. exam** (magnetism, heat) |
| 15 | 5/1 | class presentations | |