

# GLY5455 Introduction to Geophysics/Geodynamics Syllabus Fall 2015

Instructor: Mark Panning

Location: Williamson 218

Time: Tuesday and Thursday, 1:55-3:10pm

## Contact Info

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Office hours: Can be arranged at any time via email

## Textbook

Turcotte & Schubert, *Geodynamics*, 3<sup>rd</sup> Edition (required)

We will also be pulling material from the following books (not required)

*Physics of the Earth*, Stacey and Davis (2008)

*The Magnetic Field of the Earth*, Merrill, McElhinny, and McFadden (1996)

*Introduction to Seismology*, Shearer (2006)

## Pre-reqs

You will ideally have completed 1 year of calculus and a semester of physics. This class will deal with vector calculus... if this worries you, check out *div grad curl and all that*, by H.M. Schey (available for around \$30 online).

## Grading

60% Homework

20% Midterm

20% Final

## Course topics (roughly 2-3 weeks per topic... but very flexible!)

### Topic

Gravity

Heat

Magnetism

### Text

Ch. 5 + other notes

Ch. 4

Material from *The Magnetic Field of the Earth*

Seismology

Ch. 2, 3, and material  
from *Introduction to  
Seismology*

Plate Tectonics & Mantle Geodynamics

Ch. 1,6,7

Geophysical inverse theory (if time allows)

Outside readings TBA

### **Class notes**

Lecture notes will be distributed, sometimes before the material is covered in lecture, and sometimes after. Regardless, as always, such notes are meant to be supplementary to your own notes. I may cover things not in the distributed notes, and likewise may not cover everything in lecture that is included in the notes.

### **Homework**

The first homework assignment will be assigned in week 2. They will always be due 1 week after assignment, and will be assigned approximately every other week. Working with each other is acceptable, and expected to some degree, but you should turn in work that is your own. Homework should be turned in on time, and will be penalized at 10% a day and won't be accepted more than 4 days late (not counting weekends, since I won't be around to collect anything).

### **Software**

There will likely be problems in homework that can either be aided, or in some cases may require you to use some computer assistance. I would recommend that everyone make sure they have access to Matlab, but other software, such as Mathcad, may be acceptable. The new edition of Turcotte and Schubert includes Matlab-based problems and solutions, and these will likely be incorporated into your homework.

### **Exams**

The midterm and final exam will consist of problems derived from the homework assignments, so make sure you understand all of the problems and their solutions. The midterm will be in class, and the final will be take-home.

### **Course objectives and goals**

When you're done with the course, you should be comfortable in your understanding of the basic physics important to the formation and current conditions of the Earth. You should also be familiar with the kinds of geophysical data and methods used to explore the Earth at many different scales: global (depths to 1000's of km), oil/mineral exploration (depths to several km), and geotechnical/structural (depths up to several meters).

## **Attendance Policy**

Attendance is not mandatory or part of your grade, but I encourage you to notify me if you will not be able to attend class.

## **Make-up work**

A makeup homework assignment will be given at the end of the semester, which can either replace a missed assignment, or replace the lowest homework grade. Alternate exam times can be worked out if the student is unable to attend the exam.

## **Accommodation of disabilities**

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

## **Grading**

Final grades in the class will be determined based on the distribution of the final scores, rather than a fixed grading scale. The University's general policies on grade points, etc. can be found at <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>