Course Syllabus

GLY4400 Structural Geology and Tectonics

Spring 2022 MWF Lecture 12:50 202 Williamson Hall

Textbook:

http://psgt.earth.lsa.umich.edu (http://psgt.earth.lsa.umich.edu)

We will be using this eBook for the semester. Once you pay the $10 fee (through this link), you will have access through the end of the semester.

The eBook is a reorganized and streamlined version of the following book (in case you want a hardcopy): EARTH STRUCTURE: AN INTRODUCTION TO STRUCTURAL GEOLOGY AND TECTONICS Author: Van der Pluijm & Marshak 2ND edition, ISBN: Publisher: W.W. NORTON & CO.

Instructor: Dr. Jim Vogl 277 Williamson Hall 392-6987 jvogl@ufl.edu

Office Hours: TBA and by appointment

TAs: Laura Mulrooney **lmulrooney@ufl.edu (mailto:lmulrooney@ufl.edu)** 274 Williamson Hall Office hours: Tuesdays 10:00-12:00 and by appointment

Course objectives

Introduce you the variety of structures and rock fabrics formed at range of scales, temperature & depth conditions, and tectonic settings

Provide a qualitative and quantitative understanding of the forces and stresses responsible for the development of geologic structures

Provide the background necessary for the kinematic interpretation of structures and strain observed in rocks

Expand your knowledge gained about structures, strain, and stress to a larger scale and place it in framework of a range of plate tectonic settings

Further prepare you for summer fieldcamp.

Topics to be covered are grouped under the following main headings:

Stress

The Frictional Regime

Faulting & brittle deformation

The Plastic Regime

Strain

Ductile-plastic strain

Rheology

Folding

Deformation fabrics (foliations, lineations, etc.)

Mechanics and kinematics of Plate Tectonics

Deformation patterns in contractional, extensional, & strike-slip settings

Fieldtrip (southern Appalachians) There will be a required five-day field trip to Tennessee and North Carolina toward the end of the semester. This will not be show-and-tell style trip, rather you will be making observations and taking Brunton measurements, etc. that will be analyzed (including on stereonets) and used to make interpretations as part of a rigorous graded assignment. The trip will straddle either the last weekend in March or the first weekend in April.

Lab The lab exercises have been designed with two goals in mind: (1) to provide hands-on experience and strengthen the concepts covered in lecture and (2) to extend the application of these concepts beyond what can be covered in class. I have prepared the lab schedule to synchronously cover the material discussed in lecture. Many of the labs will also have a component of material necessary for structural geology and field camp (e.g., maps, cross- sections, stereonets, rock samples, etc.).

Exams Will consist of a variety of different types of questions, ranging from multiple choice, fill in the blank, short answer to calculations and

half-page explanations. There will be three exams during the semester and a cumulative final exam during finals week. Material for exam will be covered in lecture. In some instances, however, I may assign specific reading topics for which you will be responsible. Any such instances will be clearly communicated.

Suggested approach for success Being a 4000-level course, structural geology will include quite a few concepts, analyses, and calculations that may not be fully digested by sitting in lectures. Complete understanding of these topics will require reading the textbook and analyzing your notes as we go through the material. It is unlikely that success will be achieved by taking notes and studying one or two days before exams. Keep up on the material!

Course grading grade breakdown (tentative)

45%	Three "in-class" exams during term (each 15%)
15%	Final Exam
30%	Lab assignments
10%	Fieldtrip assignments

Course Summary:

Date	Details	Due