

STRUCTURAL GEOLOGY LAB SCHEDULE

Handouts will be provided in class. You will need to bring supplies to each class including: a lead pencil, colored pencils, a ruler, a protractor, a compass, graph paper, and tracing paper. You will also need a calculator for the stress and strain labs. A paper on field methods will be put on reserve and should be read (problems recommended) for the corresponding lab. Labs are due by 11:59:59 pm on the date indicated. In other words, they must be under my door before 8:30 am the following morning. Late labs and projects will be docked 5%/day.

<u>Week</u>	<u>TOPICS</u>	<u>DUE DATE</u>
1	Problems with Planar Beds: Structure Contours, Apparent Dip, Cross-sections	1/25
2	Fold Profiles: Down-plunge projections and Outcrop patterns	2/1
3	Stereonet I: Plotting of Planes and Poles, Apparent Dip Solutions	2/8
4	Stereonet II: Fold Analysis, Counting, Rotations	2/15
5	Integration of Nets and Maps I: Rotation, Cross-sections Analysis	2/22
6	Practical Strain Measurements: Various	3/1
7	Joint Analysis: Rose Diagrams, Scanlines	3/8
8	Mohr Circle Analysis: Mohr Space, Stress on Fractures, Coulomb Envelopes	3/22
9	Nets and Maps II: Large Complex Area	4/5
11	Field Project I: Analysis of a Folded Terrane	4/19
13	Field Project II: Analysis of a Faulted Terrane	4/26
14	LAB PRACTICAL	4/27

BRING THIS SYLLABUS TO CLASS

STRUCTURAL GEOLOGY

Professor Alec Gates
Office: 137 Smith Hall
Hours: Th 1-2:30

Lecture and Lab:
F 9:00 am-3:00pm
Room: 128 Smith Hall

TEXTBOOK: Earth Structure by Van Der Pluijm and Marshak.

Always bring the textbook to class. GRADING: 3 exams (15% each), 9 laboratory exercises (27%), 2 field projects (12%), lab exam (10%), participation (6%).

<u>WEEK</u>	<u>TOPICS</u>	<u>READING</u>
1	Introduction: Organization, Structural Geology, Tectonics	Ch. 1 & 2
1-2	Primary Features: Orientation, Cross-sections	Ch. 2
2-3	Folds: Geometry, Classification, Processes	Ch. 10
4	Foliations and Lineations: Form, Processes, Models	Ch. 11
4-5	Strain: Classification, Finite, Incremental, Measurements	Ch. 4
6	EXAM #1	
6	Fractures and Joints	Ch. 7
7	Introduction to Faults and Failure	Ch. 6 & 8
8	Stress: Tensors, Mohr Circles	Ch. 3 & 5
9	Material Properties: Stress-Strain Curves, Defects, Models	Ch. 5 & 9
10	EXAM #2	
10-12	Thrust Fault Systems	Ch. 12, 18 & 22.4
12	Normal Fault Systems	Ch. 16 & 22.7
14	Strike-slip Fault Systems	Ch. 19 & 21.2
	FINAL EXAM	

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STRUCTURAL GEOLOGY

COURSE EXPECTATIONS

(i.e.: How to get a good grade in this class)

This is a course in basic Structural Geology. You should come away with an understanding of the basic principles of Structural Geology including terminology and processes.

The tests in this class are non-cumulative and are short answer, short essay and calculations. The material for the tests comes from class notes; no material from the reading will appear on the test if it is not covered in class. Reading is essential and serves to reinforce the class material. The reading should be done prior to the class in which the material is covered.

General

Students who have difficulty with Structural Geology do so because it requires the ability to visualize in 3D, translate from 3D objects to 2D diagrams, and use semi-quantitative analysis. Simplification, organization and the use of props to help visualize structures insure success in the course. If you are asked to describe structures, do so completely using the classifications presented in lecture. Describing a structure simply as a "fold" or a "fault" is at Planet Earth level and insufficient for the level of the course. Read the textbook.

Note Taking

You can do "A" studying but if you use "C" notes the best you will get is a "C". Define all terms covered in class using terms that you understand. Diagrams are important in this class. Copy the diagrams as neatly as possible and clearly label using terms that you understand. Write notes next to the diagram explaining how things work. The textbook should be brought to every class; the diagrams appear in the book and will be referred to. The most important thing is that you understand principles.

Studying

Although you must know terminology, the most important part of studying is to understand the processes and principles. Be able to reproduce and label diagrams as well as interpreting them. Calculations and analyses that are discussed in class but done in lab may appear on the test. You will be warned if lab material can be included on the test. Review sessions will be scheduled if interest exists.

Labs and Field Projects

You are expected to complete 60-80% of the lab project and understand how to finish it by the end of the lab period. Doing a lab by yourself at home will require twice the work and is **strongly** discouraged. Most labs build on the previous lab, therefore all labs are due the day before class unless otherwise noted. Late labs and field projects will be docked 5%/day for one week after which they will not be accepted. Deficiencies in background Planet Earth and Earth History Lab material including topographic maps and basic map pattern interpretation are expected to be evaluated and remedied by the student. **WARNING: DO NOT FALL BEHIND.**