

GEOL 3511 (CRN 2038)
Structural Geology
Spring 2016

Instructor: Dr. Sam Peavy

Office: Roney 206

Text: *Structural Geology* by Haakon Fossen

Class: Roney 203

TR 11:00 - 12:15 PM

Lab: Roney 203

W 2:00 - 3:50 PM

Class Goals: By the end of the course the student will be able to:

- 1) recognize and describe evidence of strain and perform kinematic analyses of geologic systems using tools such as stereographic projection;
- 2) recognize and describe the various stresses that act on rocks, and analyze various systems to produce a dynamic history of deformation in a rock or region;
- 3) describe and evaluate geologic structures such as joints, faults, folds, etc. at all scales;
- 4) be able to measure, record and evaluate orientations of geologic structures to interpret the type of structure and the kinematic and dynamic history of an area.

Class Policies:

- 1) All students at Georgia Southwestern State University are to abide by published rules outlining academic honesty. Please review the "Policy on Academic Integrity" from the undergraduate bulletin that can be found on p.100 at the following URL:

<https://gsw.edu/Assets/RegistrarsOffice/bulletin/Current-Undergraduate.pdf>

You will be asked to sign a pledge stating that you have read and fully understand the policy. Any violations of academic integrity will result in a grade of zero on an assignment or exam for the first violation, and an "F" in the course for any additional violations.

In addition it is possible that this course will involve the use of plagiarism-prevention technology. For example, you may be required to submit written assignments on-line through a plagiarism-prevention service or to allow me to submit copies of your writing to such a service. The written assignments may then be retained by the service for the sole purpose of checking for plagiarized content in future student submissions.

- 2) A student requesting classroom accommodations or modifications due to a documented disability must notify me within the first two weeks of the semester. The student has not already done so, he or she must contact the Office of Disability Services located in room 302 of Sanford Hall. The phone number is 229-931-2661.
- 3) Attendance is required for both lecture and lab. If you miss an exam or lab, you must have an excuse from a doctor or the Student Health Center to make up missed graded material. **Failure to provide an adequate excuse will result in a grade of 0 ("zero") for the assignment.**
- 4) Come to class prepared to learn. You should not be talking with your neighbor during class unless it is necessary for an activity. Pay attention and take notes as appropriate. In addition, all electronic must be turned OFF before class begins. You will be asked to leave for the rest of that class if your phone rings, I catch you texting, etc. If there is a special situation, you must see me BEFORE class for permission.
- 5) I will be available in my office for questions from 9:00-9:45 AM and 1:00-1:45 TR (other times by appointment only). I can also be called at 931-2330 or reached by email at speavy@gsw.edu.

- 6) Your grade will be based on lecture and lab exams, lab reports, a field project, reading quizzes and a comprehensive Final Exam at the end of the semester. Your course grade will be determined as follows:

4 Lecture Exams	400 points (100 each)
2 Lab Exams	120 points (60 each)
Final Exam	100 points
Homework	50 points
Quizzes	50 points
Lab Exercises	160 points (20 each)
Field Report	120 points
Total	1000 points

- 7) There will be several homework assignments during the term. It is recommended that students complete the homework assignments as these will help the students to perform better on laboratory exercises and exams.
- 8) The style and substance of lab reports and the field exercise will be explained during the first lab period. The field exercise will be a mini-research project where you will collect structural data on the field trip, analyze the data and produce a report. All labs are due the following week at the beginning of the lab period. The field project is due by 5 PM on April 20th. Failure to turn in labs on time will result in a **10% per day** penalty. In addition, **any lab turned in more than one week late will receive zero points**. No reports will be accepted after March 30th (first lab meeting after Spring Break).
- 9) Quizzes will cover information in chapters and will be given as shown in the schedule below. Quizzes will consist of 10 questions in multiple choice and fill-in-the-blank format and will be based upon information found in the textbook.

Chapter Quiz Dates

Date	Chapter
Jan. 19	Chapter 2
Jan. 26	Chapter 3
Feb. 4	Chapter 4
Feb. 11	Chapter 5
Feb. 18	Chapter 6
Mar. 1	Chapters 7
Mar. 8	Chapter 8
Mar. 15	Chapter 9 & 10
Apr. 5	Chapter 11
Apr. 12	Chapters 12 & 13

10)The grading scale will be as follows:

Point Total	Letter Grade
900+	A
800 – 899.9	B
700 – 799.9	C
600 – 699.9	D
Less than 600	F

Lecture Topic List

Date	Topic	Readings
Jan. 12-14	Introduction; Deformation	Chapters 1 & 2
Jan. 19-21	Deformation; Strain in Rocks	Chapters 2 & 3
Jan. 26-28	Strain in Rocks	Chapter 3
Feb. 2	Exam 1	Chapters 1 – 3
Feb. 4	Stress	Chapter 4
Feb. 9-11	Stress; Stress in the Lithosphere	Chapters 4 & 5
Feb. 18-20	Stress in the Lithosphere; Rheology	Chapters 5 & 6
Feb. 23	Rheology	Chapters 6
Feb. 25	Exam 2	Chapters 4 – 6
Mar. 1-3	Fracture and Brittle Deformation	Chapter 7
Mar. 8-10	Faults	Chapter 8
Mar. 15-17	Kinematics, Paleostress and Microscale Deformation	Chapters 9 & 10
Mar. 21-25	Spring Break – Have Fun!	
Mar. 29	Exam 3	Chapters 7-10
Mar. 31	Folds and Faulting	Chapter 11
Apr. 1 – Apr. 3	<i>Field Trip to Central Alabama</i>	
Apr. 5-7	Folds and Folding; Foliation	Chapters 11 & 12
Apr. 15-17	Cleavage; Lineations	Chapters 12 & 13
Apr. 19	Lineations	Chapter 13
Apr. 21	Exam 4	Chapters 11-13
April 28	Final Exam, 10:30-12:30	All Covered Topics

Lab Manual and Materials: Handouts for each lab will be distributed that day. Readings from the textbook and other sources will be used in conjunction with lab lectures and pre-lab exercises (practice, practice, practice!). You will need to purchase the following materials in time for the first formal lab on January 20th.

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| 1 set of colored pencils | 1 mechanical pencil |
| 1 good artist's eraser | 1 plastic right triangle* |
| 1 drawing compass * | 1 protractor* |
| 1 ruler with metric and English scales | 1 three-ring binder |
| 1 scientific calculator | |

Tentative Lab Schedule

Date	Lab Exercise
Jan. 13	Lab 0: Pre Test / Introduction
Jan. 20	Lab 1: Measurement of Strike and Dip; Mapping With a Compass
Jan. 27	Lab 2: Geometric Methods I: Attitude Calculations
Feb. 3	Lab 3: Geometric Methods II: Dimension Calculations
Feb. 10	Lab 4: Interpretation and Construction of Contour Maps
Feb. 17	Lab Exam 1 (Labs 1-4)
Feb. 24	Lab 5: Stereographic Projections Part I
Mar. 2	Lab 6: Stereographic Projections Part II
Mar. 9	Lab 7: Measurement and Plotting of Linear and Planar Attitudes
Mar. 16	Lab 8: Geologic Structures – Folds and Faults
Mar. 30	The Geology of NE Alabama and NW Georgia
Apr. 1-Apr. 3	Field Trip to Central Alabama
Apr. 6	No Lab - Review
Apr. 13	Lab Exam 2 (Labs 5-8)
Apr. 20	No Lab – Project Reports Due!

* You will be assigned a Brunton compass and a drawing tool kit. **You will have to pay to replace these items if you break or lose them.**