

ES406 Structural Geology Lab
Western Oregon University
Fall Term 2008, 1 CR, By Arrangement, NS218

INSTRUCTOR: Dr. S. Taylor
OFFICE HOURS: M-R 4-5 PM;
By Appointment

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REQUIRED TEXT:

Twiss, R.J., and Moores, E.M., Structural Geology: W.H. Freeman and Co., New York, 532 pp.

Rowland, S.M. and Duebendorfer, E.M., Structural Analysis and Synthesis, 2nd Ed.: Blackwell Scientific Publications, Boston, 279 pp.

ADDITIONAL READING:

Compton, R.R., 1962, Manual of Field Geology: John Wiley and Sons, New York, 378 pp. (photocopied readings will be provided by instructor).

COURSE DESCRIPTION:

Structural geology is the study of the architecture of rocks as resulting from tectonic deformation. Classic structural geology is concerned with the study of rock deformation features such as folds, joints, faults and foliation. More recent work focuses on the timing and kinematics of deformation; i.e. what tectonic processes were operating when, to result in observed rock deformation patterns. Structural geology is interdisciplinary in practice and involves aspects of stratigraphy, sedimentology, petrology, mineralogy, geophysics, seismology and rock mechanics. This course will focus on the classification of rock structures, analytical techniques and deformation processes.

EVALUATIONS AND EXPECTATIONS:

Student performance will be evaluated on the basis of 3 lecture exams, 3 lab exams and class participation. The following is a breakdown of evaluation points, dates, and letter grades:

Lab Exercises	50 pts
Class Participation	50 pts
TOTAL:	100 pts

CLASS NOTES:

A comprehensive set of instructor class notes are available for download via the internet. The class web site is at URL <http://www.wou.edu/taylor> ... and follow the links to the "ES406 - Structure" home page.

The class notes are available as Adobe Acrobat Reader files (*.pdf file). Acrobat Reader is free and is installed on many campus PC's. For home installation, Acrobat Reader is also available for download at the class web site, but you will be responsible for properly installing the software (and will do so at your own risk!).

LAB EXERCISES

Weekly lab exercises will be completed using the Rowland and Duebendorfer lab manual. Thursday will generally be lab day. We will review the labs as needed. It is the student's responsibility to make sure that the exercises are done properly, an answer key will be made available for each lab (after they have been checked for completeness). This is a self-paced class involving independent study.

TENTATIVE COURSE OUTLINE: This outline should be considered tentative at best. The following schedule may be modified as class ideas evolve throughout the term. For reading assignments, T-M = Twiss and Moore; R-D = Rowland and Dubendorfer. Copies of text and lab manual will be available in NS218.

Date	Class Content	Text Reading
Week 1	No Class / Organizational Week	N/A
Week 2	Text Content: Basic Principles/Overview Lab: Attitudes of Lines and Planes	T-M Chap 1-2 R-D, Chap. 1
Week 3	Text Content: Fractures/Joints Lab: Outcrop Patterns / Structure Contours	T-M Chap. 3 R-D Chap. 2
Week 4	Text Content: Intro to Faults Lab: Geologic Maps	T-M Chap. 4 R-D Chap. 3
Week 5	Text Content: Intro to Folding Lab: Cross Sections	T-M Chap. 11 R-D Chap. 4
Week 6	Text Content: Foliations and Lineation Lab: Intro. to Stereonets	T-M Chap 13 R-D Chap. 5
Week 7	Text Content: Stress Lab: Folds in Outcrop	T-M Chap. 8 R-D Chap 6
Week 8	Text Content: Fracture Mechanics Lab: Fold Analysis with Stereonets	T-M Chap. 10 R-D Chap. 7
Week 9	Text Content: Folding Mechanisms Lab: Faults	T-M Chap. 12 R-D Chap. 9
Week 10	Text Content: Intro. to Strain Lab: Geologic Map Interpretation/Synthesis	T-M Chap. 14 (p. 282-283) Chap. 15 TBA
Week 11	No Class / Final Portfolios Due	