

Preliminary Syllabus, v.3

ESCI 323: EARTH STRUCTURE AND DEFORMATION (4 Credits) Spring 2015

Lecture:	MWF 10:00 - 10:50 AM
Lab:	Th 1:00 - 4:00 PM
Professor:	Julia Morgan (KWGL Rm 315; morganj)
TA:	Cliff Yu (KWGL Rm 232b; chy1)
Office Hours:	Open Door Policy
Text:	van der Pluijm, B.A., and Marshak, S. (2004) Earth Structure: An Introduction to Structural Geology and Tectonics (2nd edition)
Background:	Press, Siever, Grotzinger, and Jordan (2003): Understanding the Earth.
Lab Text:	Rowland, S.M., Duebendorfer, E.M., and Schiefelbein, L.M. (2007): Structural Analysis and Synthesis: A Laboratory Course in Structural Geology (3rd Edition), Wiley-Blackwell, 320 pp. [ISBN: 978-1-4051-1652-7]
Field Trip:	A mandatory field trip will take place over Spring Recess (Details TBA)
Grading Criteria:	Exams (2) & Quizzes (5 top)-60%; Field Trips/Participation – 10%; Labs - 30%.
Absence Policies:	Students must notify instructors in advance of absences, and arrange to make up missed material, quizzes, or exams.

Course Objectives & Learning Outcomes: This course provides an introduction to the internal structure of the Earth, the forces that control it, and processes that deform it. Students will learn to recognize a range of different geologic structures, both large- and small-scale, and understand the plate tectonic settings in which they occur, interpret the geologic history of tectonic systems around the world, understand the causes of earthquakes and interpret their source mechanisms, and develop the quantitative skills to manipulate structural and geophysical data.

Week	Date	Topic	Text	Lab
Week 1	Jan 12	Introduction & Structures	Ch. 1,2	
	Jan 14	Whole Earth Structure	Ch. 14	
	Jan 16	Plate Tectonics	Ch. 14	Ch. 1
Week 2	Jan 19	**MLK DAY – NO CLASS**		
	Jan 21	Plate Tectonics		
	Jan 23	Force & Stress	Ch. 3	Ch. 2,4
Week 3	Jan 26	(QUIZ 1) Force & Stress		
	Jan 28	Brittle Deformation	Ch. 6	
	Jan 30	Brittle Deformation		Ch. 13
Week 4	Feb 02	EQ Mechanisms; Joints & Veins	Ch. 7	
	Feb 04	Faults & Fault Geometries	Ch. 8	
	Feb 06	(QUIZ 2) Fault Geometries		Ch. 5
Week 5	Feb 09	Faults & Fault Rocks		
	Feb 11	Deformation & Strain	Ch. 4	
	Feb 13	- CLASS CANCELLED -		Ch. 14
Week 6	Feb 16	Deformation & Strain		
	Feb 18	(QUIZ 3) Rheology	Ch. 5	
	Feb 20	Rheology		Ch. 9
Week 7	Feb 23	Rheology & Mech Strat		
	Feb 25	Ductile Deform Mechanisms	Ch. 9	
	Feb 27	EXAM #1 (19 LECTURES)		Ch. 10
Week 8	Mar 02	**SPRING BREAK – NO CLASS**		
	Mar 04	**SPRING BREAK – NO CLASS**		
	Mar 06	**SPRING BREAK – NO CLASS**		
				NO LAB

Any student with a disability requiring accommodations in this class is encouraged to contact me after class. Additionally, students should contact the Disabled Student Services office in the Ley Student Center.

Week 9	Mar 09	- CLASS CANCELLED -		
	Mar 11	Ductile Deform Mechanisms		
	Mar 13	Defm Microstruct. & Mech Maps		Ch. 12
Week 10	Mar 16	Folds & Classification	Ch. 10	
	Mar 18	(QUIZ 4) Folding Mechanisms		
	Mar 20	Fabrics & Classification	Ch. 11	Ch. 6,7
Week 11	Mar 23	Ductile Shear Zones	Ch. 12	
	Mar 25	Defm, Met, & Time	Ch. 13	
	Mar 27	Regional Structure & Tectonics	Ch. 14	Ch. 16
Week 12	Mar 30	Divergent Tectonics	Ch. 16	
	Apr 01	(QUIZ 5) Rifts & Mid Ocean Ridges		
	Apr 03	**SPRING RECESS – NO CLASS**		**NO LAB**
Week 13	Apr 06	Convergent Tectonics	Ch. 17	
	Apr 08	Subduction Zones		
	Apr 10	Collision & Post-Orogen. Collapse	Ch. 18	Rift Bathymetry
Week 14	Apr 13	(QUIZ 6) Indentor Tectonics		
	Apr 15	Strike-slip Tectonics	Ch. 19	
	Apr 17	Strike-slip Tectonics		Converg. margins
Week 15	Apr 20	Gravity & Salt Tectonics	TBA	
	Apr 22	Gravity & Salt Tectonics		
	Apr 24	EXAM #2 (19 LECTURES)		GOC Seismic