

Geology 330. Deformation of the Earth Fall Semester Schedule 2008

Date	Topics	Reading
Aug. 25	Introduction: Earth Composition, driving forces of crustal deformation, tectonic settings, examples of deformed rocks, scales of deformation	p. 2-25
26	Lab: <i>Attitudes of Lines and Planes.</i>	p. 662-669
27	Review of geometric and trigonometric principles applied to geologic structures; lines, planes, and folded surfaces (trigonometry and geometry handout)	
29	Introduction to stereonet: lines and planes PS #1. Stereonet: Lines, Planes, and Poles	p. 691-701
Sept. 1	Stereonet methods continued	
2	Lab: <i>Practicing bedding attitude determination</i>	
3	Geologic maps, cross sections, and apparent dip	p. 626-639, p. 687-689
5	PS #2. Stereonet: Intersection of Lines, and Planes, Angles, Apparent Dip	p. 701-714
8	Strain: Kinematic Analysis	p. 25-51
9	Lab: <i>Outcrop Patterns and Structure Contours</i>	
10	Strain: Kinematic Analysis	
12	Strain: Quantifying deformation. PS #3. Intersection of Lines and Planes, Angles, Apparent Dip, Rake	p. 51-97
15	Strain: Description of deformed rocks	p. 51-97
16	Lab: <i>Outcrop Patterns and Structure Contours (cont.)</i>	
17	Description of folds	p. 372-397
19	PS#4. Strain	
22	Kinematics of folds	p. 150-161
23	Lab: <i>Three Point Problems</i>	p. 690-691
24	PS#5. Stereonet: Analysis of Folding	
26	Dynamic Analysis: Introduction to Stress	p. 98-114
Date	Topics	Reading
29	Stress, brittle fracture of rocks, and Mohr circles	p. 98-114
30	Lab: <i>Interpretation of Geologic Maps</i>	
Oct. 1	Stress and Mohr Circles	
3	PS #6. Stress. More Stress and Mohr circles	p. 122-142
6	Experimentally derived relations: stress and strain	p. 143-149
7	Lab: Mainly Review	
8	Exam I	
10	No Class	

Date	Topics	Reading
13	Fractures, dike propagation, en echelon arrays	p. 204-245 p. 720-730
14	Lab: <i>Geologic Structure Sections</i>	
15	Characteristics of faults and shear zones: breccia, gouge, slickenlines, mylonites	p. 269-286; 292-303
17	PS#7. Stereonets. Rotations of Planes and Lines	
20	Dynamic analysis and faulting	p. 301-304
21	Lab: <i>Geologic Cross-sections I</i>	
22	Reverse faults and contractional tectonics (detachments, duplexes, blind thrusting)	p. 319-339
24	Reverse faults continued: offset, fold-and thrust-belt cross-sections, contractional mountain belts	p. 319-339
27	Reverse faults continued: offset, fold-and thrust-belt cross-sections, contractional mountain belts	p. 319-339
28	Lab: <i>Geologic Cross-sections II</i>	
29	Reverse faults, offset, fault segmentation and recurrence	
31	PS#8. Stereonets: More Rotations of Planes and Lines	
Nov. 3	The development of fold and thrust belts. Mohr-Coulomb law of failure	p. 304-315
1 or 4	Election Day Holiday: Field Trip to HVNP	
5	Review	
7	Exam II	
10	Normal faults characteristics, mechanical considerations, determination of offset	p. 340-357
11	Veterans Day Holiday	
12	Normal faults: offset, segmentation, and recurrence in the Basin and Range Province	p. 340-357
14	Normal faulting in extensional tectonic settings: rifts, basins, continental extension	p. 348-357
17	Basin and Range	
18	Lab: <i>Interpretation of Field Data from HVNP</i>	
19	Strike-slip faulting	p. 357-371
21	Role of strike-slip faulting in mountain belts	p. 357-371
24	Cleavage, foliation, and lineation	p. 424-476
25	Lab: <i>Primary Structures (Wailuku River Canyon)</i>	
26	No class	
28	Thanksgiving Holiday	
Dec. 1	Cleavage, foliation, and lineation continued	p. 424-476
2	Lab: <i>Balanced Cross Sections</i>	
3	Ductile strain and shear zones	p. 493-515
5	Microstructures	p. 515-536
8	Sense of shear indicators	p. 515-536
9	Lab: <i>Review Exercises</i>	
10	Summary and Review	
17	Final Exam 11:50-1:50	

