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GEO 315.01: Structural Geology

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GEO 315. Structural Geology. Autumn, 2014.

University of Montana

Jim Sears, CHCB 362

Office Hours M, T 10-11 am, F 11

This course examines structures of deformed rocks; mechanical principles; graphical interpretation of structural problems, and tectonic principles. The course has no assigned textbook, but students are expected to find and read auxiliary material on the internet or in the library. Attendance required. I'll take roll 20 times during the course.

Approximate schedule:

Aug	25	Introduction
	27	Fractures
	29	Kim Williams Trail: fabric measurements.
Sep	1	Labor Day Holiday
	3	Stereonet
	5	Stereonet plot of fabrics. <i>Due 9-12-14</i>
	6	Day-long field trip to gather fabric data. 8 am-6 pm.
	8	Fabrics - bedding, cleavage, lineations
	10	Compile fabric data
	12	Plot fabric data using Allmendinger's program. <i>Due 9-26-14</i>
	15	Faults - kinds, settings
	17	Thrust and fold systems
	19	Cross-sections of fold-thrust systems - kink-fold method
	22	Cross-sections of fold-thrust systems - ramps and flats
	24	Cross-sections of fold-thrust systems - duplexes
	26	Rattler Gulch x-section. <i>Due 10-3-14</i>
	29	Stress
Oct	1	Mohr circle introduction
	3	Mohr circle exercise. <i>Due 10-10-14</i>
	6	Rock strength, effect of water
	8	Igneous intrusion and structure
	10	Brittle/plastic strength. <i>Due 10-17-14</i>
	13	Fluids in thrust systems
	15	Mega thrust ramps, isostatic subsidence, strength
	17	Rocky Mountain thrust and fold belt

- 20 Basin inversion - Lewis thrust
- 22 Thrust rotation
- 24 Sun River x-section. *Due 10-31-14*

- 27 GSA
- 29 GSA
- 31 Sun River cross-section. Complete.

- Nov 3 **Extensional fault systems**
- 4 **VOTE !!**
- 5 Listric faults
- 7 X-sect of Timber Hill Fault. *Due 11-14-14*

- 10 Earthquakes
- 12 Continental rifting
- 14 Core complexes cross-section. *Due 11-21-14*

- 17 **Strain, strain rate**
- 19 Measuring strain
- 21 Strain exercise. *Due 12-5-14*

- 24 Metamorphic fabrics
- 26 Thanksgiving travel day
- 28 Thanksgiving holiday

- Dec 1 **Strike-slip fault systems**
- 3 Flower structures
- 5 Lewis and Clark line

- 10 **FINAL EXAM** 8-10 am. Comprehensive.

Evaluation:

Attendance	20 Points
Exercises	45 points
Field trip	15 points
Final exam	20 points