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GEO 315.01: Structural Geology

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GEO 315. Structural Geology. Autumn 2013.
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.

Approximate schedule:

| | | |
|-----|----|---|
| Aug | 26 | Introduction |
| | 28 | Fractures |
| | 30 | Dike swarms |
| Sep | 2 | Labor Day Holiday |
| | 4 | Mohr circle |
| | 6 | Mohr circle ex. <i>Due 9-13-13</i> |
| | 9 | Faults - kinds, settings |
| | 11 | Thrust and fold systems |
| | 13 | Fabrics - bedding, cleavage, lineations |
| | 14 | Day-long field trip to gather fabric data |
| | 16 | Compile fabric data |
| | 18 | Plot fabric data |
| | 20 | Plot fabric data using Allmendinger's program. <i>Due 9-27-13</i> |
| | 23 | Cross-sections of fold-thrust systems - kink-fold method |
| | 25 | Cross-sections of fold-thrust systems - ramps and flats |
| | 27 | Drummond x-section. <i>Due 10-4-13</i> |
| | 30 | Stress |
| Oct | 2 | Mohr circle for thrusts |
| | 4 | Mohr circle exercise. <i>Due 10-11-13</i> |
| | 7 | Rock strength, effect of water |
| | 9 | Fault duplexes |
| | 11 | Sun River triangle zone x-section. <i>Due 10-18-13</i> |
| | 14 | Basin inversion - Lewis thrust |
| | 16 | Mega thrust ramps, isostatic subsidence, strength |
| | 18 | Restore Sun River x-section. <i>Due 10-25-13</i> |

| | | |
|-----|----|---|
| | 21 | Rocky Mountain thrust and fold belt |
| | 23 | Fluids in thrust systems |
| | 24 | Thrust rotation |
| | 28 | GSA |
| | 30 | GSA |
| Nov | 1 | Normal faults |
| | 4 | Listric faults |
| | 6 | Earthquakes |
| | 8 | X-sect of Tendoy Fault. <i>Due 11-15-13</i> |
| | 11 | Veterans' Day Holiday |
| | 13 | Continental rifting |
| | 15 | Core complexes cross-section. <i>Due 11-22-13</i> |
| | 18 | Strain, strain rate |
| | 20 | Measuring strain |
| | 22 | Strain exercise. <i>Due 12-6-13</i> |
| | 25 | Metamorphic fabrics |
| | 27 | Thanksgiving travel day |
| | 29 | Thanksgiving holiday |
| Dec | 2 | Strike-slip faults |
| | 4 | Flower structures |
| | 6 | Lewis and Clark line |
| | 12 | FINAL EXAM 8-10 am. Comprehensive. |

Evaluation:

| | |
|------------|-----------|
| Exercises | 90 points |
| Field trip | 20 points |
| Final exam | 40 points |