GEL 3300 - Structural Geology – Winter 2012

**Lecture** – T-Th 1:00 – 2:30pm 1151 Old Main

**Lab** – T or Th 3:00 – 5:30pm 0319 Old Main

**Instructor:** Sarah Brownlee

0224.4 Old Main, sarah.brownlee@wayne.edu, 313-577-6223

**Office hours:** T-Th 9:00 – 11:00am

**Text:** Structural Geology of Rocks and Regions by Davis, Reynolds, and Kluth 3rd Edition (ISBN: 978-0-471-15231-6)

**Lab Text:** Basic Methods of Structural Geology by Marshak and Mitra

(ISBN: 0-13-065178-8)

Course Syllabus (subject to change)

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| Week of | Lecture Topics | Readings | Lab Topics |
| Jan 9 | Overview/Introduction**Part I - Fundamentals**Nature of Structural Geology | Ch. 1 | No lab |
| Jan 16 | Displacement and Strain | Ch. 2 | Lab 1 – Measuring Attitude and Location |
| Jan 23 | Force, Stress, and Strength | Ch. 2,3 | Lab 2 – Measuring Strain |
| Jan 30 | Deformation Mechanisms and Microstructures | Ch. 3,4 | Lab 3 – Analyzing data from deformation experiments |
| Feb 6 | **Exam 1 – Thursday Feb. 9th** | Ch. 4 | Lab 4 – Stereonets |
| Feb 13 | **Part II – Structures**Joints | Ch. 5 | Lab 5 – Geologic Map Interpretation 1 |
| Feb 20 | Faults | Ch. 6 | Lab 6 – Constructing contour maps |
| Feb 27 | Folds | Ch. 7 | Lab 7 – Slip and Separation; Seismic profile data; Interpretive cross-sections |
| Mar 5 | Fault-Fold interactions**Exam 2 – Thursday, March 8th** | Ch. 8 | Lab 7 continued. |
| Mar 12 | Spring Break |  |  |
| Mar 19 | Foliation and Lineation | Ch. 9 | Lab 8 – Constructing and balancing cross-sections |
| Mar 26 | Field Trip: March 28 – 31 |  | Lab 9 – Field notebooks |
| April 2 | Shear Zones and Progressive Deformation | Ch. 10 | Lab 10 – Geologic Map Interpretation 2 |
| April 9 | **Part III - Tectonics**Active Tectonics | Ch. 11 | Lab 11 – Estimating strain using Fry and Rf/φ methods |
| April 16 | Tectonic History of North America | Ch. 11 | No Lab |
| April 23 | **Exam 3 – Thursday, April 26th** 1:00 – 4:00 pm |  |  |

**Assignments and Grading**

**Labs:** There will be 1 lab assignment per week worth a total of 48% of your final grade. Your lowest lab score will be dropped. Lab assignments are due at the start of the next weeks lab period. Late assignments will not be accepted

**Field Notebooks:** 4% - due at the start of Tuesdays lecture following the trip.

**Exams:** There will be 3 exams worth 16% each = 48% of final grade. If the final exam is better than one of the previous exams, it will be weighted at 24% and the lower of the two previous exams will be weighted at 8%.

Exams will be **cumulative** and based on material covered in both lecture and lab.

Final grades may be curved at instructor’s discretion

Opportunities for extra credit may arise and will be made available to all students. Any extra credit earned will be added AFTER grades have been curved.