

**GEOLOGY 326**  
**Geophysics & Geotectonics**  
**Spring, 2012**

Instructor: Tim Paulsen  
Office: 306 Harrington  
Office Hours: T,Th, 12:30-1:30 or by appointment

Lectures: M, W; 10:20-11:20; Room 217, Harrington

Laboratory: T; 8:00-11:20; Room 313, Harrington  
Attendance is required. Weekly homework exercises will be assigned during lab. All lab assignments are due at the start of lecture on the Monday following a given lab.

Laboratory Materials: You should always bring the following to lab: paper, pencil, eraser, scale, protractor, calculator, thinking cap, onion skin/tracing paper (when doing paleomagnetism and focal mechanism solution work)

Exams: Two hourly lecture exams.  
One cumulative lecture exam during the final lab period

Grading: Lecture = 75% of total grade  
•1<sup>st</sup> exam = 20%  
•2<sup>nd</sup> exam = 25%  
•3<sup>rd</sup> exam = 30%

Laboratory = 25% of total grade  
•weekly lab assignments

Required Text: Fowler, C.M.R., *The Solid Earth*, Cambridge University Press.

Tentative Lecture Schedule

***Topic***

- 1) Introduction
- 2) Continental Drift
- 3) Paleomagnetism & Marine Geophysics
- 4) Magnetic Anomalies & Sea Floor Spreading
- 5) Plate Tectonics
- 6) Flat Plates
- 7) Plates on a Sphere
- 8) Triple Junctions
- \*\*EXAM 1**
- 9) Aulacogens
- 10) Seismic Reflection

***Suggested Reading***

- Fowler-Chapter 1  
Fowler-Chapter 1  
Fowler-Chapter 3  
Fowler-Chapter 3  
Fowler-Chapter 2  
Fowler-Chapter 2  
Fowler-Chapter 2  
Fowler-Chapter 2, 3  
  
Fowler-Chapter 4

11) Ridges	Fowler-Chapter 9
12) Seismic Refraction	Fowler-Chapters 4
13) Rifts	Fowler-Chapters 10
14) Gravity Anomalies & Isostasy	Fowler-Chapters 5 & 10
<b>**EXAM 2</b>	
12) Subduction Zones	Fowler-Chapter 9
13) Earthquake Sources	Fowler-Chapter 4
14) Double-Couple Model	Fowler-Chapter 4
15) Earthquake Size	Fowler-Chapter 4
16) Recording Earthquakes	Fowler-Chapter 4
17) Fault Plane Solutions	Fowler-Chapter 4
18) Fate of Subducted Slabs	Fowler-Chapter 9
19) Shallow Structure of Subduction Zones	Fowler-Chapter 9
<b>**EXAM 3 (cumulative; during last lab period)</b>	

### Tentative Lab Schedule

<i>LAB</i>	<i>Topic</i>	<i>Reading</i>
Jan. 31	Present Plate Motion Literature	TBD
Feb. 7	Presentations/Discussion	
Feb. 14	GPS	
Feb. 21	Magnetic Anomalies	Fowler Chapter 3
Feb. 28	Paleomagnetism & Polar Wandering	Fowler Chapter 3
March 6	Paleomagnetism Literature	TBD
March 13	Presentations/Discussion/Plates on a Flat Earth	Fowler Chapter 2
March 20	Spring Break	
March 27	Triple Junctions on a Flat Earth	Fowler Chapter 2
April 3	Magnetometer Surveying	
April 10	Electromagnetic Surveying	
April 17	Gravimeter Surveying	Fowler Chapter 5
April 24	Gravity Project	Fowler Chapter 5
May 1	Seismicity & Focal Mechanism Solutions	Fowler Chapter 4
May 8	<i>Final Lecture Exam</i>	