

Continental Drift and Plate Tectonics
GLY 47 - Spring 2012

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Web Site: <http://myweb.cwpost.liu.edu/vdivener/tectonics/>
(slides & quizzes): <http://blackboard.liu.edu/> (log in with your C.W. Post email user ID and password)
Required Text: Plate Tectonics by Frisch, Meschede, and Blake (2011)
Recommended: Global Tectonics (3rd Ed.) by Kearey, Klepeis, and Vine (2009)

Course Objectives: We will study the large scale structure and dynamics of the planet Earth and the methods used to study it and the observations that led to the plate tectonic revolution.

Academic Integrity: Plagiarism will be dealt with severely. All work presented on quizzes, exams, homework, and papers must be your own. Any written passages not in your own words must be in quote marks with the source noted. Papers may not be constructed by paraphrasing or simply rearranging the words of extended passages from the source. In papers, the source of ideas presented, even in your own words, must also be cited. For the case of the scientific journal article summaries you only need to cite your source article once and place a full bibliographic entry at the end. Information referred to from any other source articles must be properly cited in the body and fully listed in the bibliography.

Semester Project: TBA

Quizzes & Exercises: Several short, open-book, open-note quizzes will be given on the Blackboard web site. We will have a number of in class exercises as well as homework exercises to complete. Watch for due dates for taking quizzes and completing homework on the lecture notes page and in Blackboard.

Attendance, tardiness, and class participation will be noted and may affect your grade (for better or worse).

Cell Phones, iPads, etc.: All cell phones must be turned off before entering the classroom. All electronic devices must be off during exams or you will receive an automatic zero!

Grading

Quizzes	15%
Exercises	15%
Semester Projects	20%
Midterm Exam	25%
Final Exam	25%

Important Dates

February 20:	No Classes - President's Day
February 21:	Class (Monday classes meet on Tuesday)
March 5:	Midterm Exam
March 12:	No Classes - Spring Break
March 26:	project topic deadline
April 23:	semester projects due
April 30:	Final Exam

Lecture Topics	Frisch	Kearey
Why are There Mountains? - Geosynclinal Theory	1	1
Continental Drift (Wegener and DuToit)	1	1 & 3
continental geometries, paleoclimatic indicators		
fossil indicators, geologic considerations		
Paleomagnetic Evidence for Continental Motions		3
paleomagnetism		
apparent polar wander		
Seafloor Spreading - A Mechanism for Continental Motions	1	4
marine magnetic anomalies, magnetic reversals		
seismicity, transform zones, and fracture zones		
direct measurement of plate motion	2	5
Earthquake Seismology and the Structure of the Earth	2	2
earthquakes and earthquake measurement		
earth structure and composition		
crust, mantle, core		
The Framework and Geometry of Plate Motions	2	5
Divergent Boundaries		
midocean ridges	5	6
continental rifts & passive margins	3 & 4	7
Transform Boundaries		
midocean ridge offsets	8	6
Convergent Boundaries		
subduction zones	7	9
orogenic belts	11-13	10
Transform Boundaries, revisited		
continental strike-slip zones	8	8
Hotspots and Mantle Plumes	6	5
Hotspot Fixity		
True Polar Wander		
The Mechanism of Plate Tectonics	5 & 7	12
Expanding and/or Contracting Earth Hypotheses		
Mantle Convection		
Driving Forces of Plate Tectonics		