

**Continental Drift and Plate Tectonics  
GLY 511 - Spring 2012**

**Instructor:** Dr. Vic DiVenere  
**Office:** Pell Hall 229C (knock loudly on 227)  
**Office Hours:** 12:30-2:30 Tu, Th; 2:00-4:30 & 8:30-9:00 Mon; or by appointment  
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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)

**Department of Earth and Environmental Science:** Room 133 Life Science, 299-2318

**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.

**Summary Papers:** A short paper is required of all students presenting a summary of a scientific journal article listing the critical points made. The journal article must be approved by Prof. D. **no later than March 26**. Summary papers must be accompanied by the articles. Summary papers should be approximately 2-4 pages typed, double-spaced, plus references in a standard bibliographic format, and any figures. Sources must be cited in the body of the paper. Summary papers are due **no later than April 23**.

**Quizzes & Exercises:** Several short, open-book, open-note quizzes will be given on the Blackboard web site. You must complete them on your own (not with study partner(s)). A number of short exercises will be assigned. 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:** All cell phones must be turned off before entering the classroom.

**Grading**

Quizzes & Exercises	20%
Summary Papers	20%
Midterm Exam	30%
Final Exam	30%

### ***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:	article approval deadline (5% penalty for lateness)
April 23:	summary paper deadline
April 30:	Final Exam

<b>Lecture Topics</b>	<b>Frisch</b>	<b>Kearey</b>
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		