GE4500/GE5400
Plate Tectonics and Global Geophysics
Spring 2007

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Text: *The Solid Earth: An Introduction to Global Geophysics* by C. M. R. Fowler

I. Introduction (Chapter 1)

II. Plate Tectonics (Chapter 2: ~6 weeks)
   a. The stereonet and plate tectonics; Global coordinates vs. local coordinates
   b. Instantaneous angular and linear velocities – tectonics on a sphere
   c. Migration and stability of triple junctions
   d. Earthquakes, slip vectors, and focal mechanisms
   e. Finite rotations
   f. Earth's magnetic field
   g. Linear magnetic anomalies
   h. Paleomagnetism and apparent polar wandering

III. Seismology and the internal structure of Earth (Chapters 3 and 8: ~ 4 weeks)
   a. Seismic waves and elasticity theory
   b. Earthquake seismology
   c. Focal mechanisms and moment tensors
   d. Earth's interior as defined by seismic waves
   e. Radial variations of density, pressure, temperature and composition

IV. Lithosphere and asthenosphere (Chapters 5, 8, and 9: ~ 3 weeks)
   a. Isostasy, gravity, topography
   b. Thermal lithosphere
   c. Flexure of the lithosphere
   d. Subduction and mantle convection

Course grade will be determined from Homework assignments (1-2 per week), one midterm, a final, and a term paper.