Time and Location: Tuesday/Thursday 1:35 – 2:55 pm, ES & T, 1229

Instructor:
Zhigang Peng, ES&T 2256, 404-894-0231, zhigang.peng@eas.gatech.edu.
Tim Long, ES&T 2252, 404-894-2860, tim.long@eas.gatech.edu.

General description: This course presents a basic study in seismology, which includes elastic wave propagation, and application of seismic waves for the study of Earth's interior and earthquake source. It introduces basic techniques necessary to interpret seismic data, and help students to build physical intuition and quantitative skills.

Grading:
40% Homework assignment
25% Midterm exam
30% Final exam
5% Attendance and class participation

Text Books
Required:

Recommended:
P. Shearer, Introduction to Seismology, Cambridge University Press.

Class website: http://shadow.eas.gatech.edu/~zpeng/Teaching/EAS6314_F06

Course Outline:
1. Introduction
   a. History of seismology
   b. Seismology and society
2. Math Review
   a. Complex numbers
   b. Scalars and vectors
   c. Matrix algebra
3. Basic Seismological Theory
   a. Stress and strain
   b. Seismic waves
   c. Snell’s law
   d. Plane wave reflection and transmission
e. Surface waves and dispersion
f. Normal modes

4. Seismometers and Seismograms
   a. Seismometers and seismic networks
   b. Basic seismic analysis technique

5. Earth Structure
   a. Refraction/Reflection seismology
   b. Seismic waves in a spherical earth
   c. 3D and Anisotropic earth structure
   d. Attenuation and anelasticity

6. Earthquake Source
   a. Earthquake location
   b. Focal mechanisms and moment tensors
   c. Earthquake source parameters
   d. Earthquake statistics and interaction
   e. Seismic hazard and probabilities

7. Earthquake and Plate Tectonics (if time permits)
   f. Oceanic earthquake and tectonics
   g. Continental earthquake and tectonics
   h. Earthquake faulting and lithosphere deformation

**Academic honesty:**
General: It is expected that all students are aware of their individual responsibilities under the Georgia Tech Academic Honor Code, which will be strictly adhered to in this class. For any questions involving these or any other Academic Honor Code issues, please consult me, or visit www.honor.gatech.edu.

Plagiarism: Plagiarizing is defined by Webster’s as “to steal and pass off (the ideas or words of another) as one's own: use (another's production) without crediting the source.” If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code.

Homework: When working on homework, you may work with other students in the class. However, you must turn in your own solutions, with the following written on it: your name, and the names of everyone you collaborated with. Late homework will not be accepted.

Exams: Reference to texts or other documents such as previous semester course materials during exams is strictly forbidden. Using these materials will be considered a direct violation of academic policy and will be dealt with according to the GT Academic Honor Code. The use of electronic devices (e.g. cellular phones, computers etc.) other than non-programmable calculators during exams and quizzes is not allowed.