

Earth Sciences 4423b / Geophysics 9508b
Applied Seismology
Course Syllabus
 Winter Term 2019

Course Instructor: Dr. Sheri Molnar

Office: B&GS-1040; Office hours by appointment

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COURSE DESCRIPTION: This course provides an advanced overview of seismic hazard analysis for earthquake engineering purposes including strong motion seismology, earthquake site response and earthquake site classification techniques. Students will assess earthquake site amplification from empirical earthquake recordings, numerical simulations, and evaluation of case studies worldwide. Various software programs will be used to extract site characterization information and model predictions of earthquake site amplification.

Prerequisite(s): ES 2200, ES 2222, Calc 2303 or Calc 2503, or permission of the instructor. This course is intended for geology, geophysics, geotechnical and civil engineering senior-level undergraduate and/or graduate students with no significant prior knowledge of the course content. *(Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you will be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.)*

LECTURES: Monday & Wednesday 10:30 – 11:30am in BGS 1056 (**Lectures begin Wed. Jan 9**)

LAB: Wednesdays 2:30 - 5:30pm in BGS 0184

Course Schedule (Proposed):

Week 1: Course orientation and introduction to seismic hazard analysis	Assignment 1
Week 2: History of earthquake engineering and notable large magnitude events	Assignment 1
Week 3: Strong motion seismology and Earthquake site amplification (theory)	Assignment 2
Week 4: Earthquake site amplification (empirical evidence and case studies)	Assignment 3
Week 5: Earthquake site effect metrics and site characterization field techniques	Assignment 4
Week 6: Earthquake site classification and mapping	Quiz 1 (No lab)
Reading Break - Feb 18-22	
Weeks 7,8: Probabilistic seismic hazard analysis and EQHAZ software [delivered by Dr. K. Assatourians]	Assignment 5
Week 9: Non-invasive shear-wave velocity (Vs) profiling methods	Assignment 6a
Week 10: Application of non-invasive Vs profiling methods	Assignment 6b
Weeks 11,12: Earthquake site response theory and numerical analysis	Quiz 2, Project

Method of Evaluation (Proposed):

ES4423 students
 Assignments: 50%
 Quiz 1: 15%
 Quiz 2: 15%
 Project: 20%

GP9508 students
 Assignments: 50%
 Quiz 1: 10%
 Quiz 2: 10%
 Project: 20%
 Lecture presentations: 10%

Scholastic Offences: Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at: http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf.

Plagiarism: Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western Academic Calendar). Cheating on exams (including both lecture and lab exams) will also not be tolerated. Please note that although you are encouraged to work cooperatively with your classmates in the lab periods, it is expected that the written answers you provide in your lab assignments will be entirely your own.

Link to the website for Registrarial Services: <http://www.registrar.uwo.ca>

Link to learning skills services at the Student Development Centre: <http://www.sdc.uwo.ca>