Dynamic Analysis in Geotechnical Engineering Syllabus

CEE6442, Spring 2027

Instructor Information

Instructor: Sheng Dai

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General Course Information

Description

This course introduces the basics of laboratory and field characterization methods of soil dynamic properties, as well as the basics of signal (dynamics, waves) processing.

Course Learning Outcomes

(1) Understand and be able to define basic terms.

(2) Have conceptual understanding of the phenomena and mechanisms in soil dynamics, mainly because 'everything in dynamics is relative'.

(3) Be able to derive critical theories/governing equations (e.g., body wave, wave reflection/refraction, resonant column, etc.) using engineering 'common sense' (e.g., compatibility, force equilibrium, and mass conservation).

(4) Be able to provide critical reviews on technical papers studying soil dynamics, lab & field testing, earthquake engineering, and soil behavior under THCM cycles.

Required Course Materials

[T1] Kramer, S.L. (1996). Geotechnical Earthquake Engineering. Prentice Hall, Inc., Upper Saddle River, New Jersey, 653 pp. ($27.90 Paperback)

[T2] Santamarina and Fratta (2006). Discrete signals and inverse problems: An introduction for engineers and scientists. Online link: http://onlinelibrary.wiley.com/book/10.1002/0470021896

Note: Copies of required/recommended references for this course will be distributed during the term. Additional reference books include:

Das, B., & Ramana, G. V. (2010). Principles of soil dynamics. Cengage Learning.

 Verruijt, A. (2010). An introduction to soil dynamics (Vol. 24). Springer Science & Business Media.

Grading Policy:

Exam I	Thursday, February 7, 2019	20%
Exam II	Thursday, March 14, 2019	20%
Final Exam	Tuesday, April 30, 2019	20%
Homework	(see class schedule for details)	40%

Course Policies

Attendance and/or Participation

Attendance at all lectures is mandatory. In accordance with the Institute requirement, verification of participation of the class will be reported to the Registrar's Office and the Office of Scholarships and Financial Aid.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Core IMPACTS

Core IMPACTS is the University System of Georgia's General Education curriculum. If you are teaching a course that counts towards Core IMPACTS, you should include a syllabus statement about the Core area and associated career competencies. This resource developed by the Center for Excellence in Teaching and Learning and Online Education at Georgia State University includes template syllabus statements for each of the Core IMPACTS areas that you may adapt for your course.

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services (404-894-2563) as soon as possible to make an appointment to discuss

your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulate some basic expectations that you can have of me and that I have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.