

CIV_ENV 357
Terramechanics
Spring Quarter 2023

Instructor	Prof. James P. Hambleton Office: Tech A122 Office hours: Mon, Wed, and Fri 2:00-3:00 (and by appointment) Phone: (847)491-4858, Email: jphambleton@northwestern.edu
Class Times	Monday and Wednesday, 6:00pm-7:50pm
Location	Technological Institute M120
Class Website	Northwestern Course Management System (Canvas) http://www.it.northwestern.edu/education/login.html
Required Textbook	None
Revision Date*	March 29, 2023

Course Description

Problems defined by the interaction between machines and terrain—or by organisms and terrain—are ubiquitous on Earth, and they are beginning to play important roles elsewhere as we explore, exploit, and perhaps eventually occupy the moon and other planets. While aspects of these problems are understood, much remains to be learned in the field of terramechanics.

The aims of the course are as follows:

1. describe and synthesize key concepts from past and present research in terramechanics
2. assess future directions for research and development
3. connect problems in terramechanics to those in geotechnical engineering and geomechanics
4. explore links to other fields of engineering, mathematics, and physics
5. stimulate broader interest in geotechnical engineering and related fields, particularly among undergraduate students

Activities include classroom discussions on selected topics and assigned reading, self-determined research projects, invited lectures from industry partners (depending on interest and availability), a prediction contest based on experiments performed in the Soil-Machine Interaction Laboratory (SMI Lab), and possible field excursions (again depending on interest and availability).

Assessment

Grades are determined based on the following components, weighted as indicated:

- 20% Class participation (attendance, engagement in activities, etc.)
- 20% Homework and quizzes
- 30% Research project on self-determined topic
- 30% Submission for prediction contest

Inclusivity

The instructors and Northwestern University are committed to creating an inclusive environment in which all students are respected and valued. We will not tolerate disrespectful language or behavior

* This syllabus is subject to revision at any time.

on the basis of age, ability, color/ethnicity/race, gender identity/expression, marital/parental status, military/veteran's status, national origin, political affiliation, religious/spiritual beliefs, sex, sexual orientation, socioeconomic status or other visible or non-visible differences.

Accessibility Statement

Northwestern University is committed to providing the most accessible learning environment as possible for students with disabilities. Should you anticipate or experience disability-related barriers in the academic setting, please contact AccessibleNU to move forward with the university's established accommodation process (e: accessiblenu@northwestern.edu; p: 847-467-5530). If you already have established accommodations with AccessibleNU, please let me know as soon as possible, preferably within the first two weeks of the term, so we can work together to implement your disability accommodations. Disability information, including academic accommodations, is confidential under the Family Educational Rights and Privacy Act.

Recording of Class Sessions

This class or portions of this class will be recorded by the instructor for educational purpose and available to the class during the quarter. Your instructor will communicate how you can access the recordings. Portions of the course that contain images, questions or commentary/discussion by students will be edited out of any recordings that are saved beyond the current term.

Unauthorized student recording of classroom or other academic activities (including advising sessions or office hours) is prohibited. Unauthorized recording is unethical and may also be a violation of University policy and state law. Students requesting the use of assistive technology as an accommodation should contact [AccessibleNU](#). Unauthorized use of classroom recordings – including distributing or posting them – is also prohibited. Under the University's [Copyright Policy](#), faculty own the copyright to instructional materials – including those resources created specifically for the purposes of instruction, such as syllabi, lectures and lecture notes, and presentations. Students cannot copy, reproduce, display, or distribute these materials. Students who engage in unauthorized recording, unauthorized use of a recording, or unauthorized distribution of instructional materials will be referred to the appropriate University office for follow-up.