

Soil Mechanics and Geotechnical Analysis

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Overview

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Who am I?



BSc Civil Engineering (2003)

Universidad de los Andes, Colombia

MSc Soil Mechanics and Eng. Seismology (2005)

Imperial College London, UK

PhD Soil Mechanics (2009)

Imperial College London, UK

At Edinburgh Napier University since 2009.

Currently:

Associate Professor of Geotechnical Engineering

Research Lead - Civil Engineering

Lead - Geomechanics Micro to Macro (GM2M)

My research interests



My personal interests



Etape
CALEDONIA
SUNDAY 15 MAY 2022



Programme

Day	08:00-09:30	09:45-11:15	13:00-14:30	14:45-16:15
19/05/25	Introduction	Programming	Phase Rel.	Tutorial
20/05/25	Classification	Tutorial	LAB	LAB
21/05/25	Effective Str.	Tutorial		
22/05/25	Seepage	Tutorial	LAB	LAB
23/05/25	Str. Incr.	Tutorial		
26/05/25	Settl.	Tutorial	Settl.	Tutorial
27/05/25	Tutorial	Shear Str.	LAB	LAB
28/05/25	Shear Str.	Tutorial		
29/05/25	Footings	Tutorial	Piles	Piles
30/05/25	Tutorial	Review		

Course rules - Punctuality



Course rules - Phones and devices



These are welcome! You will use them. Please, put them in “silent” mode

Course rules - Questions



I am very happy to answer questions at any time.

Please interrupt me if you need to!

My expectations



Read/prepare, attend, work, then repeat

What you can expect from me...

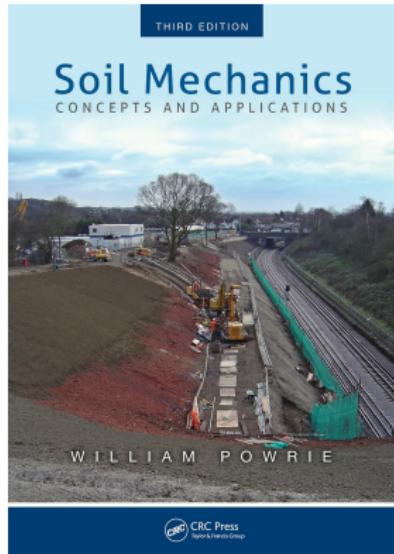
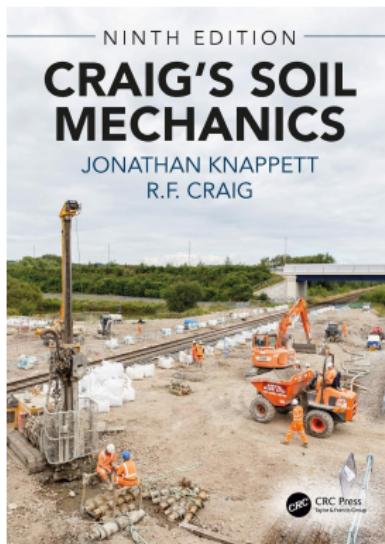
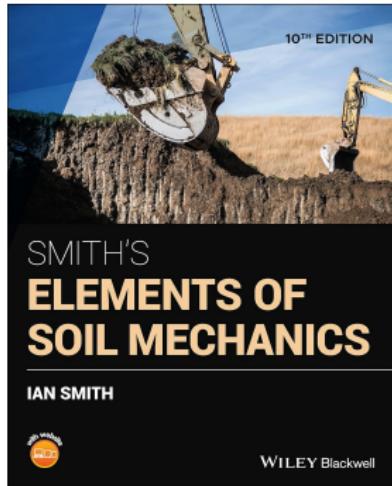
- I will answer to you
- I will challenge you
- I will teach you

*"Give a man a fish,
he'll eat for a day.
Teach a man to fish,
he'll eat for life."*

Lao Tzu

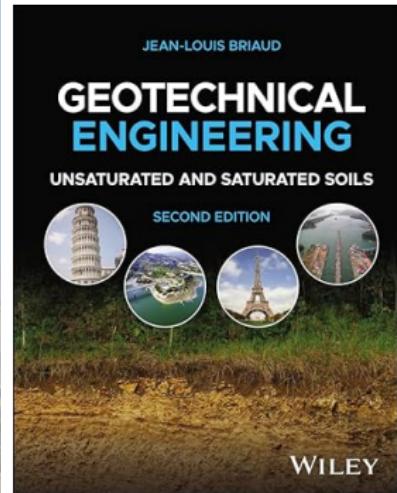
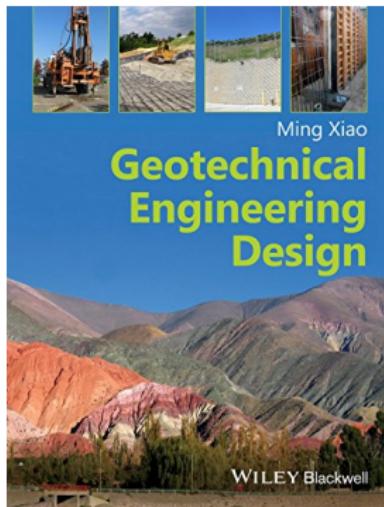


Textbooks and suggested reading



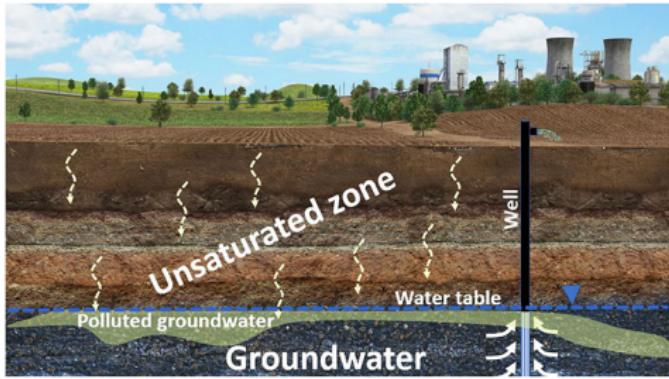
Note: You do not need to buy any of these, but they may be useful if available at your local library.

Textbooks and suggested reading



Note: You do not need to buy any of these, but they may be useful if available at your local library.

Course content and topics



Pre-requisites and programming

You are expected to be familiar with basic mathematical principles. You will also need to be confident in the use of computational devices for some the calculation procedures we will be using.

We will be using basic programming principles (with Python) and Jupyter Notebooks to perform calculations. Using Anaconda and Github repositories will facilitate this.

First, install Anaconda:

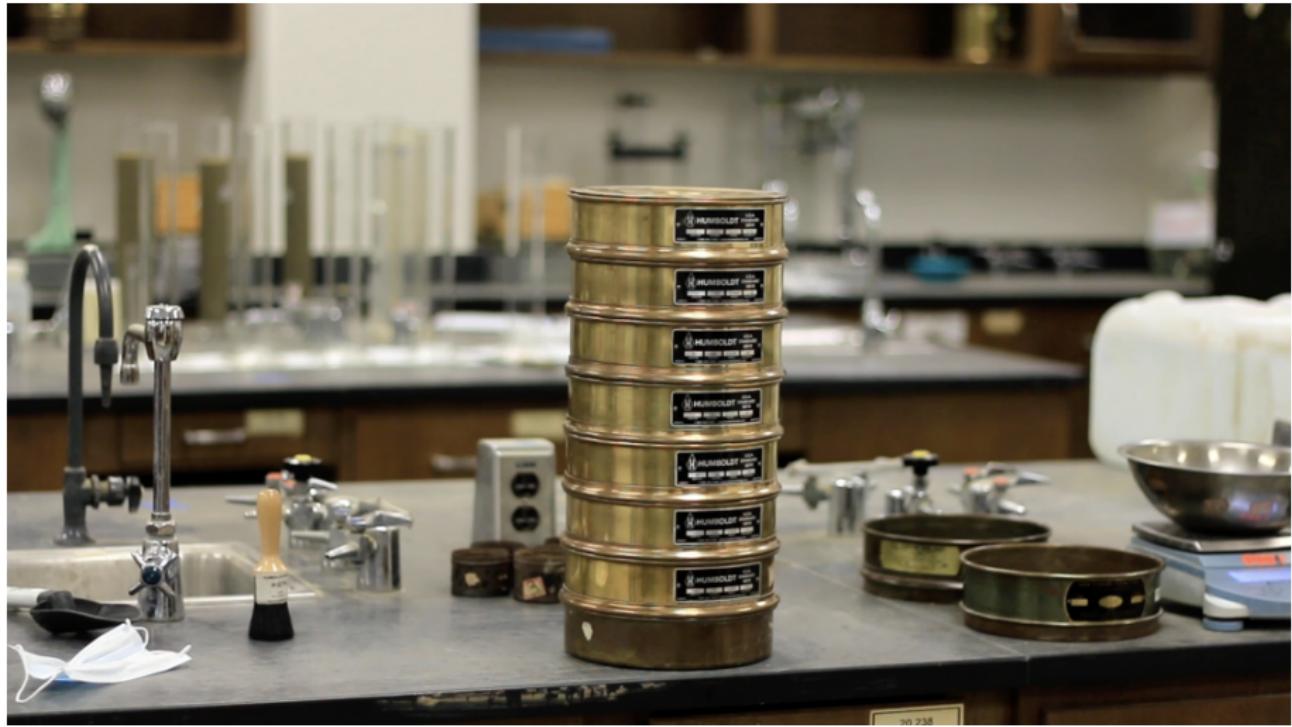
<https://www.anaconda.com/>

More instructions to follow.

Phase relationships



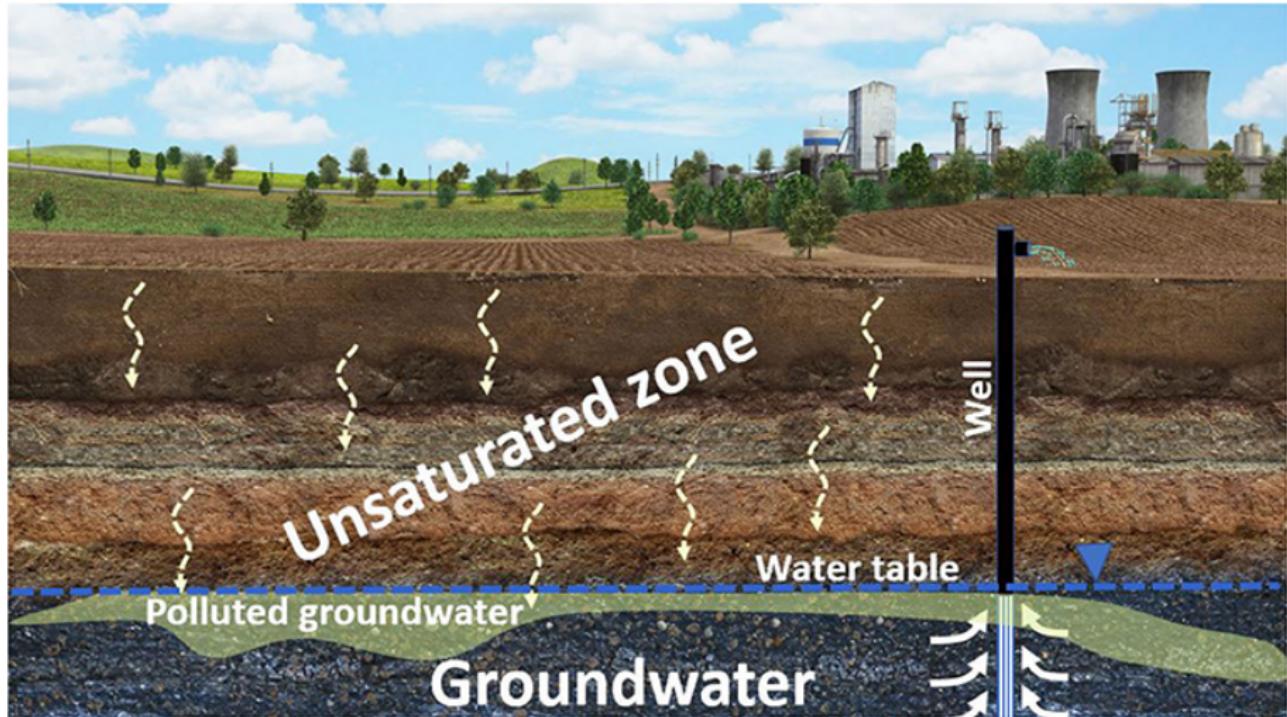
Soil classification and description



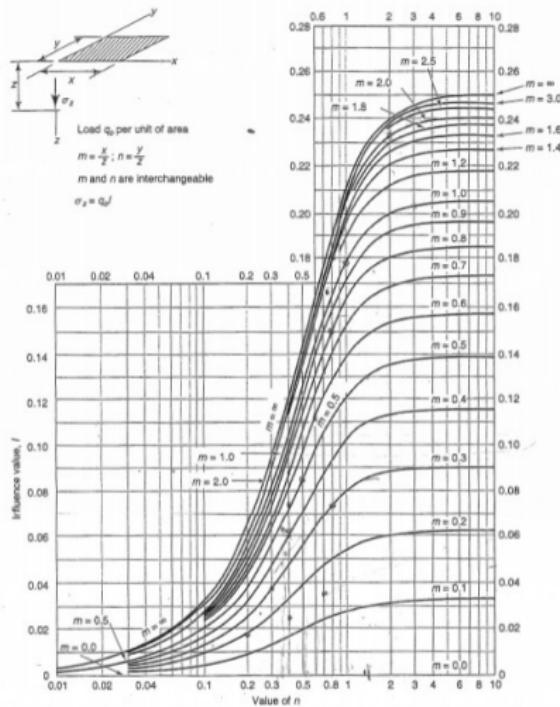
Effective stress



Seepage



Stress increments

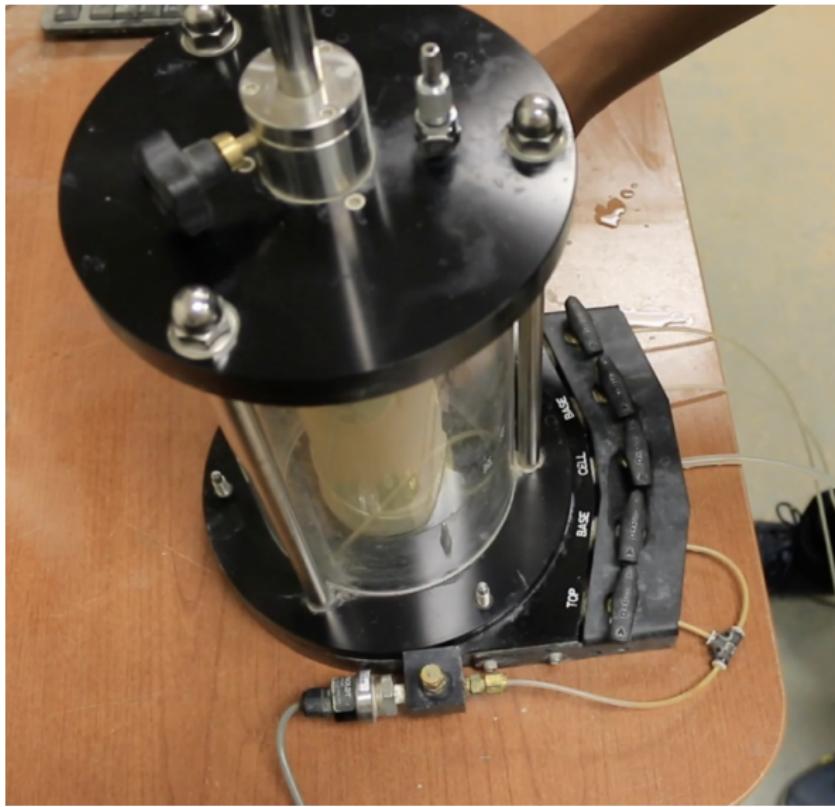


Fadum (1948)

Settlement



Shear strength



Shallow foundations



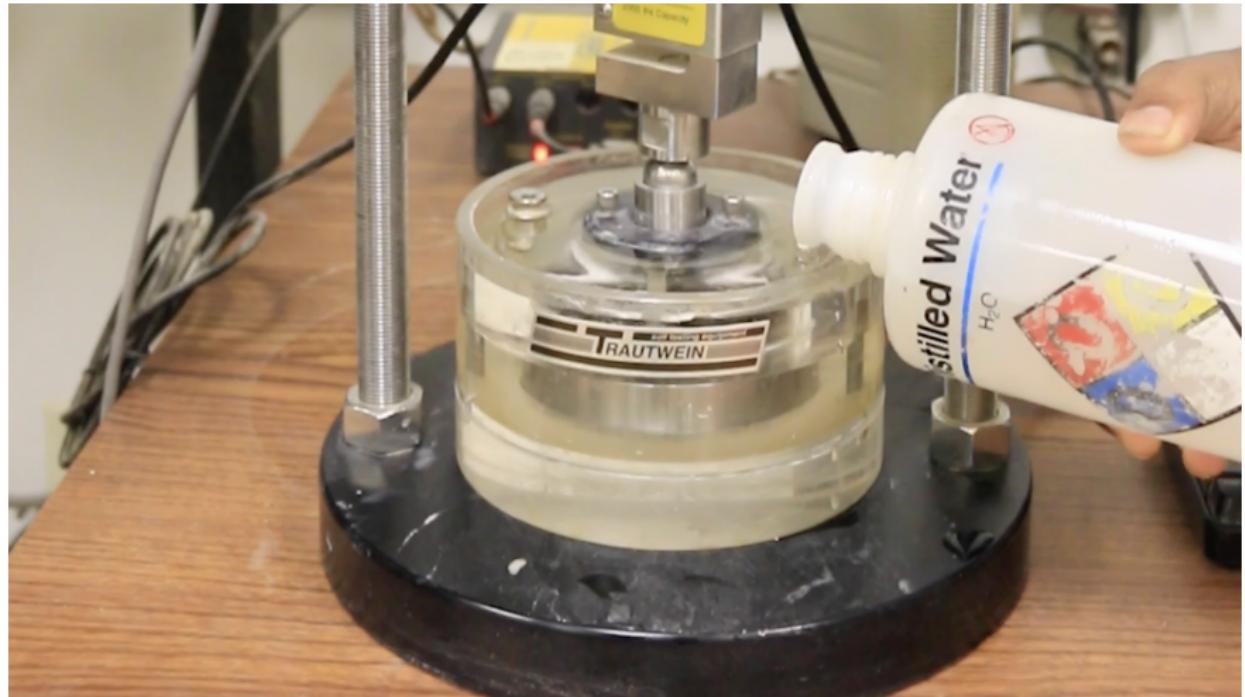
Deep foundations



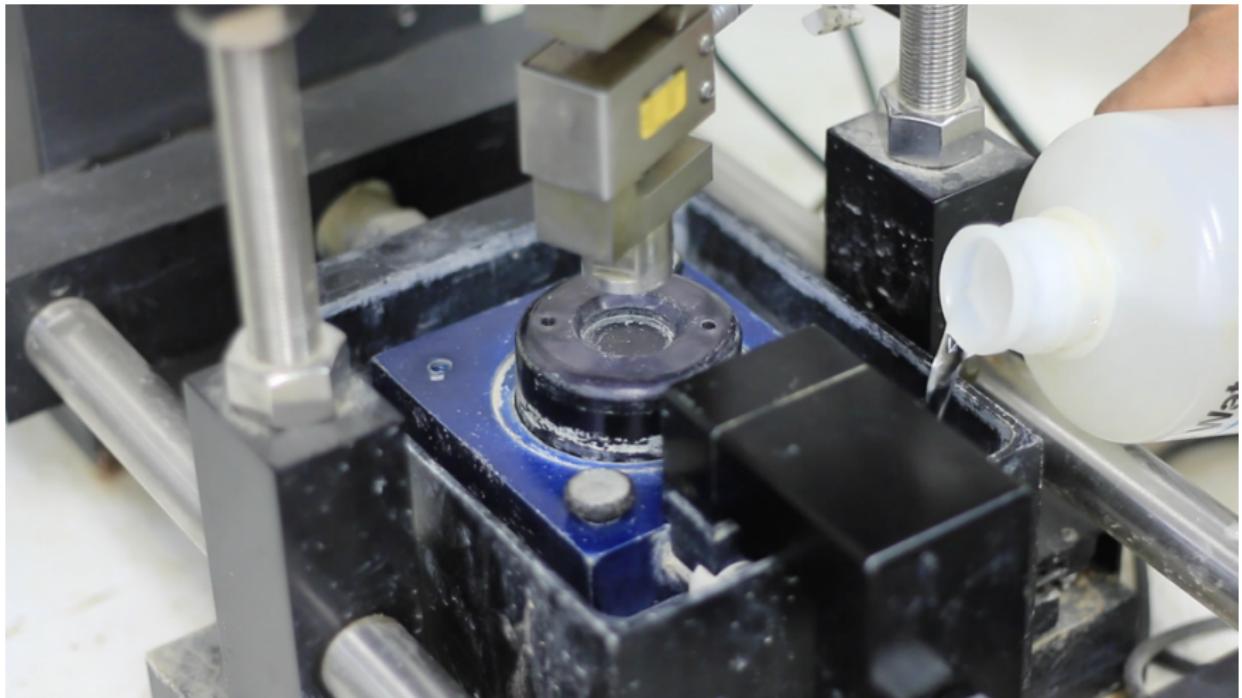
Index tests



Oedometer testing



Direct shear box testing



More information to follow...

Tutorial sessions

At the end of each unit/topic a tutorial session has been scheduled. Tutorials are essential to consolidate your knowledge and ensure that you understand the subject.

You will receive tutorials at the beginning of each session (i.e. a link to a Github repository). These may be provided in advance by your Chinese tutors.

Answers to the tutorials will be provided. However, it is recommended to solve the tutorial questions before looking at the answer.

Note:

- ① Solutions make problems look easier
- ② If you can solve all tutorials on your own, you can solve all the questions that will appear in the exam.

Assessment

There is a final exam with 4 questions. But we will talk about it during the last lecture. For the moment let us just compare British and Chinese examination approaches...

Just before we finish...

Are there any questions?