TME 310 - Computational Physical Modeling

Lecture 1 - Introduction

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Introduction

About the course

Read the syllabus!

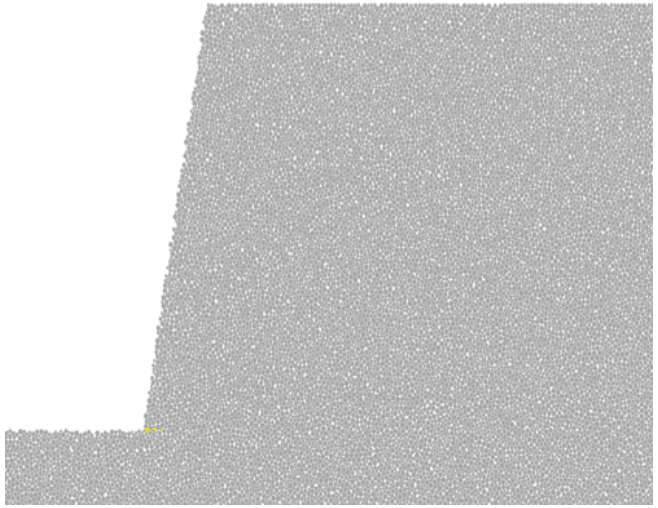
But here are some quick highlights. The course focuses on:

- Understanding the “modeling framework”
- Using coding (implemented in Python) to perform engineering analysis
- Evaluating computer output
  - Are the AI tools helping write the Python code you want?
  - Is the Python code doing what you want?

Introduction

About me

- 7 years of professional engineering experience
  - Geotechnical engineering (mechanics of earth materials and their interactions with built infrastructure).
- I chose to major in civil engineering to avoid coding
- Then I went to graduate school and spent 4 years coding 🤦🏽
- Eventually, I enjoyed coding!



Modern Coding

Using AI tools to help you generate code is encouraged.

As a modeler and engineer, you are responsible for the content you submit.

You will have to understand Python code to be successful in this course. But you don’t need to start with a blank slate!

Coding Platform

The course will use GitHub for assignments (links through Canvas). A coding environment with Copilot is provided through GitHub Codespaces.

Git
: software for tracking and controlling your files

Repository (or “repo”)
: a collection of files and folders

GitHub
: an online service for managing your repos with Git

Brace yourself

These tools serve the learning goals of the class.

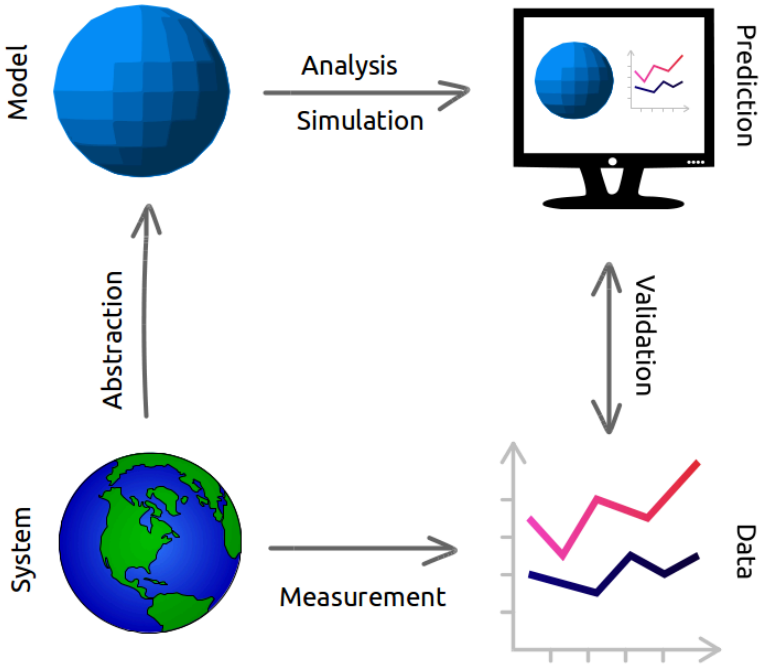
And they’re good things to know.

But they can be painful at first.

Modeling Framework

The modeling framework we'll use in this course consists of four **elements** and four **activities**.

(more on this later)



Today's Plan

We're going to try to work on **Homework 1**. Homework 1 is primarily about making sure you can access and use the tools you'll need to complete course assignments.

Let's head to Canvas and step through the GitHub Classroom assignment process.