



# CASFM Continuing Education

## A Crash Course in Scientific Programming & Data Analytics for Civil Engineering

Friday January 24<sup>th</sup>, 2025 (one-day offering), 8:30am-4:30pm

Location: MHFD (12575 W. Bayaud Ave. Lakewood, 80228)

### Workshop Description

This introductory programming seminar will focus on fundamental tools and skills to begin using python for civil engineering, planning, and data analysis. Participants will be guided through the processes of creating a reproducible environment on their laptops, importing packages from the vast open-source ecosystem, reading both common and uncommon file types, performing data quality checks, doing data analysis, and visualizing results in computational notebooks. These are the foundations for applying modern data skills to quantitative engineering, GIS, and planning tasks.

The agenda will prioritize hands-on coding experience, theory and application of programming best practices, and arriving at a working and repeatable analysis using real data from the industry. The intended audience is those with little to no python experience, however we will cover intermediate level topics at a high level. Applications will be directly related to civil engineering, most notably water resources.

**\*Attendees should bring their own laptop with a modern web browser**

### Learning Outcomes

1. Access a fully functional python environment through the browser using Pyodide and JupyterLite.
2. Gain a theoretical understanding of open-source software and python's ecosystem of open-source libraries by using the python standard library, pandas, and others.
3. Read civil engineering data from flat files, hydraulic models, GIS data, and the web.
4. Perform basic data analysis using numpy and visualize data with the matplotlib visualization library.
5. How to setup computational workbooks for reusability, adaptability, and clarity.
6. Integrating python skills with generative AI, Github, and cloud
7. Cover resources for ongoing development and learning.

**Cost:** Early Registration \$440 (+ cc fees)  
Late Registration \$500 (+ cc fees)

**Date:** Friday 01/24/25

**Register:** opens 12/09/24  
capped at 35 people  
~lunch is provided~



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