McGill initiative in Computational Medicine

Intro to Python

Material adapted from previous workshops by
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November 13, 2025

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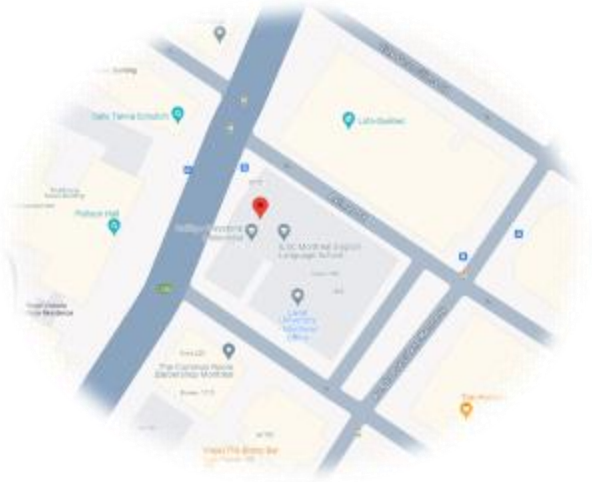
QLS-MiCM mission statement: deliver quality workshops designed to help biomedical researchers develop the skills they need to succeed.



Location: 550 Sherbrooke Street, Montreal, Quebec

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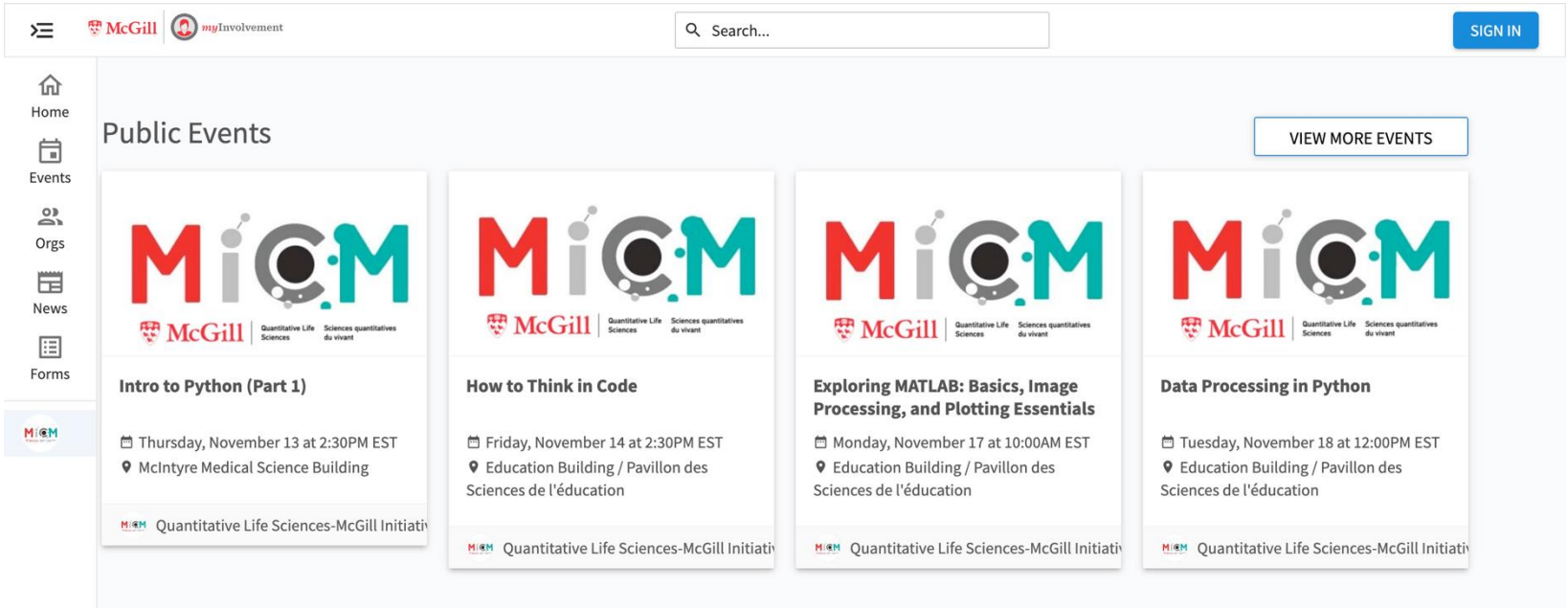
Workshop Series



https://www.mcgill.ca/micm/training/workshops-series

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Learning Outcomes

Summary

In this 4-hour workshop, participants will be introduced to the basics of programming in Python. Students will journey from the beginnings of creating variables and performing simple mathematical operations to writing code that can perform fundamental tasks and wrapping this code into functions. Participants will learn how to write the important building blocks that make up complex programs.

Learning Objectives

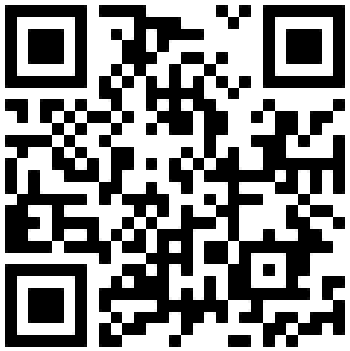
1. Store data in variables and collections.
2. Perform basic operations on these data.
3. Use control flow and loops to write powerful code.
4. Define functions to create repeatable units of behaviour.

Outline

1. **Module 1 – Python Basics (1 hour)**
    a. Hello, World!
    b. Variables
    c. Numbers and Comparisons
    d. Intro to strings
    e. Exercise
2. **Module 2 – Collections (1 hour)**
    a. Lists and List Methods
    b. Tuples
    c. Dictionaries
    d. Exercise
3. **Module 3 - Intro to Control Flow and Loops (40 minutes)**
    a. Control Flow: the if statement
    b. Loops
    c. Exercise
4. **Module 4 – Introduction to Functions (30 minutes)**
    a. Function Overview
    b. Writing Custom Functions
    c. Documenting Functions
    d. Exercise
5. **Module 5 – Where to go from here (10 minutes)**

Interactive Workshop!

- That's pretty much all that will be in the slides… For the rest, we'll go to a Jupyter Notebook:



To the repository!

To summarize

- ✓ Data can be stored in **variables** of several types, including **strings**, **integers**, **floating point numbers** and **Booleans.**
- ✓ **Collection types**, such as **tuples**, **lists** and **dictionaries** can be used to store **multiple** data points.
- ✓ **Control flow** and **loops** help decide which lines to run and allow lines to be repeated.
- ✓ **Functions** help package up behaviour into units that you can easily reuse.

Now you are ready to:

- Store data in variables and collections.
- Perform basic operations on these data.
- Use control flow and loops to write powerful code.
- Write functions to repeat complicated tasks.

Acknowledgements

- Thank you to QLS-MiCM for giving me this opportunity and for helping me along the way.
- Thank you to Najia Bouaddouch for her workshop material.
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- Thank you to Professor Mathieu Blanchette, whose COMP 204 course helped introduce me to Python (back in Fall 2018).
- Thank you to the Python community!