

# Intro to Python

Material adapted from previous workshops by  
Benjamin Z. Rudski and Najia Bouaddouch

Benjamin Z. Rudski  
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**Intro to Python (Part 1)**  
 Thursday, November 13 at 2:30PM EST  
 McIntyre Medical Science Building  
 Quantitative Life Sciences-McGill Initiative

  
  
**How to Think in Code**  
 Friday, November 14 at 2:30PM EST  
 Education Building / Pavillon des Sciences de l'éducation  
 Quantitative Life Sciences-McGill Initiative

  
  
**Exploring MATLAB: Basics, Image Processing, and Plotting Essentials**  
 Monday, November 17 at 10:00AM EST  
 Education Building / Pavillon des Sciences de l'éducation  
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**Data Processing in Python**  
 Tuesday, November 18 at 12:00PM EST  
 Education Building / Pavillon des Sciences de l'éducation  
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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.



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# 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**



# Outline

- 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. To script, or not to script?
  - e. 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!**



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# 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.
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