

# PYTHON PROGRAMMING

Presented by ISAW @ UWaterloo  
Winter 2023

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## Description:

This course is presented by [Iranian Students' Association of Waterloo \(ISAW\)](#) and will cover basic python programming concepts as well as more advanced materials. No experience with python or programming is required at all for registration. The timeline consists of 12 weeks (Jan 9 - Apr 10) including two 90-minute sessions per week, for a total of 36 hours in the term.

## Registration Options:

There will be two separate sessions for registration. The first option will be available for approximately 40 students to register and the second option will be held with at most 5 students with the following additional benefits:

- Better opportunity for exclusive and more intense **one-on-one** interactions
- A **Piazza** forum to be connected to the course every day
- Working on an advanced python **project** considering the group's interests
- More space to shift the attention of the class to more **advanced topics** such as an introduction to Machine Learning and Data Science with python

## Tentative Course Outline:

- Setup
  - Installation
  - Environments
  - Jupyter Notebooks
- Data Types
  - Numbers, Booleans, Strings
  - Lists, Dictionaries, Tuples, Sets
  - Files
- Conditional Statements
  - if, elif, else
- Loops
  - for, while, range
  - List comprehensions
- Functions

- Lambda functions
  - \*args, \*\*kwargs
- Object Oriented Programming (OOP)
  - Class attributes, methods
  - Inheritance
- Exceptions
  - try, except, finally
- Decorators
- Generators
- Modules
  - Create, Install
- Bult-in Modules, Functions
  - map, reduce, filter, zip, enumerate
  - Collections
  - OS
  - Datetime
  - Math, Random
  - Debugger
  - Regex
- Git

Based on our time limitation and class interests, some of the following topics may be selected and covered:

- Intro to Data Science packages
  - Numpy
  - Pandas
  - Matplotlib
- Intro to Threading, Multiprocessing
- PyTest
- Intro to web scraping
- Working with images, PDFs, CSVs, Emails

#### **Main References:**

- [Python Docs](#)
- [Udemy](#)
- [W3Schools](#)
- [PyTopia](#)
- [Medium](#)