Introduction to Python

ICPSR Summer Program 2020
Location: Online Video format
Dates: July 6 - July 17
Time: 5:30 PM - 7:30 PM

Instructor
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Office Hours
Office hours will be offered on Tuesday, Thursday, and Friday for two hours.
Exact time TBD

Course Description
Python is one of the most general-purpose programming languages. It can be used for building web applications, statistics, visualizations, and more. Python’s flexibility to handle virtually any kind of data combined with the truly astounding range of analytical techniques makes it especially valuable to academics. Despite this fact, it is rarely if ever taught to people in the social and behavioral sciences or public policy. Most courses and textbooks that do teach Python at an introductory level are designed by people with computer science backgrounds who tend to hide the value Python provides for the social sciences.

In this 10-day introductory workshop, the first week will cover the basics of Python. In the second week, we will highlight some of the Python tools that are particularly useful to social scientists. This will include topics like loading data from files, manipulating the data, and creating visualizations. Note that this is not the standard list of libraries that one would learn in an introductory workshop on Python. We will devote a lecture to reading and using different Python libraries in our programs/projects. However, the course will place more emphasis on libraries that can be of interest to the typical ICPSR
audience. The course in general will be less focused on most of the computer science-oriented libraries.

This workshop cannot make you an expert in Python. It can and will give you a sense of some of the tools Python makes available and how to learn more about them.

You will be given copies of all Python scripts, expected output, and data to follow along.

Below is a preliminary list of topics to be covered each day. **This list is subject to change depending on how quickly we go through the material.**

**Preliminary Syllabus**

**Day 1 - Monday**
- Overview of the course
- Basics of Python and Anaconda
- Installing Python 3 and the Anaconda Build
- Writing our first python program
- Introduction to Variables and Datatypes

**Day 2 - Tuesday**
- Continuing with Variables and Datatypes
- Arithmetic Operations

**Day 3 - Wednesday**
- Conditionals
- Functions

**Day 4 - Thursday**
- Using functions from imported modules
- Iterations

**Day 5 - Friday**
- Lists and List Operations
- String and String Operations
- More complex data structures in Python - arrays in Numpy module

**Day 6 - Monday**
- Continuing with Numpy module
The basics of Jupyter notebooks for Python

Day 7 - Tuesday
- Exploring visualizations with the Matplotlib module

Day 8 - Wednesday
- Pandas module and CSV Files

Day 9 - Thursday
- Scikit-Learn - Bringing it all together

Day 10 - Friday
- Office Hours / Discussions