

Intro to Programming Using Python – Spring 2018

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Class schedule: Thursdays (A Term). Sec 1: 10:15-12:15 in Uris 142. Sec 2: 4:00-6:00 in Warren 209.

Office hours: Upon request.

Course description

This course is an introduction to programming with Python for total beginners. Python is a really popular language used by companies like Google, Facebook, Dropbox, Instagram, and Reddit. Python is used for all sorts of things like building websites, web scraping, data analysis, machine learning, and natural language processing. The language is designed to be easy to read, while still being very powerful, which makes it a great language for beginners to learn.

In this course, we'll be learning the basics of programming – variables, strings, lists, functions, and all that stuff – but we'll be doing it with a focus on business use cases. You'll learn how to write scripts that automate tedious tasks, read other people's code, parse and interpret data, interact with APIs, and build web scrapers. This might be one of the most useful classes you ever take.

Textbook

There is no required textbook for this course. We'll be doing coding exercises in and outside of class, as well as referring to free online resources. All you'll need is your laptop.

Prerequisites / Connections to the Core

This course assumes no previous knowledge of programming or code. I will, however, assume that you're fairly comfortable using a computer and can navigate the internet using a web browser (please don't use Internet Explorer 8).

Students will need a laptop that they can bring to class. Both Macs and PCs (or even Linux!) are fine, as long as your operating system is relatively up to date (at least Windows 7 and Mac OS 10.8).

Course deliverables

Apart from class participation (30% of the total grade), the other course deliverables consist of a set of homework assignments (40%) and a take-home final project (30%).

- Class participation: I will ask that you prepare problems or questions prior to coming to class that we will use in our class discussions. Your contribution will contribute to the corresponding part of your grade.
- There will be four homework assignments that will be completed with a partner.

- There is a take-home final project that will cover many topics in the course. The take-home final is a paired assignment that will include both a partner-based and an individual component.

Detailed syllabus

Classes 1 - 3

Python Bootcamp

Overview of the course. Setting up your development environment. Python 2 vs 3; Command Line basics; errors and debugging; printing; comments; numbers and math; variables and names; strings and text; capturing user input.

Functions; if statements; logic in Python; lists; loops; dictionaries.

Class 4

APIs

Accessing APIs; Reading Documentation; import.

Class 5

Web Scraping

HTML and CSS; Web Scraping; Exporting Data to CSV.

Web Apps

Web app development with Flask.

Class 6

Data Analysis

Pandas; Jupyter Notebook; Matplotlib and Seaborn; linear regressions.