

Introduction to Programming

CSCI-GA.1120

Fall, 2017: [Prof. Joe Versoza](#)

Course description:

This course introduces students to the fundamentals of computer programming as students design, write, and debug computer programs using the programming language Python.

Learning to code can open doors for humanists and social scientists. Just about anything can be (or already has been) converted into data, including literary and non-literary texts, artistic images, maps, governmental documents and records, cultural artifacts, and much, much, more. The entire human record of thought and intellectual achievement, as well as the histories of our struggles to survive, are becoming available in digital form. Learning how to organize, manipulate, visualize, and analyze humanistic, social, and cultural data has become an essential requirement for those who would seek to better understand the human condition.

Python is a popular general-purpose programming language that has been used for a broad range of applications. Google uses it. So do Instagram and Netflix. Dropbox is written in Python. It is the language of choice right now if you want a user-friendly introduction to programming and a useful tool for day-to-day data work. And it's free and open source.

Humanists and social scientists who know how to code can better understand the underlying potential and limitations of software they depend on for their research, whether tools for data visualization or a content management system for building an online archive. The goal in this course is for students to learn how to manage their files, data, and materials in their own ways, to explore original research, and to be equal partners when they collaborate with computer scientists and experts in technology.

No prerequisite.

Homework assignments and sample projects

Sample projects and assignments in this course will include textual analysis and textual manipulations; interpreting and visualizing data; using Python to retrieve web data; working with images and basic image analysis; and an introduction to sound (time-permitting).

Overview:

Students learn how to design algorithms to solve problems and how to translate these algorithms into working computer programs. Students acquire skills and experience as they learn Python through programming assignments with an approach that integrates project-based learning. This course is an introduction to the fundamental concepts of programming for students who lack a formal background in

the field. Topics include algorithm design and program development; data types; control structures; functions and parameter passing; recursion; data structures; searching and sorting; and an introduction to the principles of object-oriented programming. The primary programming language used in the course will be Python.

Format:

The class will meet weekly for 2.5 hours, with a mix of discussions of readings and project-based work".

. There will be an additional weekly "virtual office hour" wherein students and the instructor can share screens as well as an in-person collaborative office hour in which students can work in small groups with the instructor or a qualified teaching assistant present for assistance.

Students will be expected to read and annotate texts before class, and to ask and answer questions of and from other students before class, using an online learning platform. Readings:

Lutz, Mark *Learning Python: 5th Edition* O'Reilly, 2013.

Montfort, Nick *Exploratory Programming for the Arts and Humanities* MIT Press, 2016

Course materials: software

1. Python <https://www.python.org>
2. Python IDE e.g. *Spyder* (from <https://www.continuum.io/downloads>) or other IDE of the instructor's or student's choice