Instructor: Hardeep Johar (hj2203@columbia.edu)
Meeting times: Wednesdays 10:45 to 2pm
Office hours: (TBD)

Course objectives

The goal of this class is to give you a working knowledge of how to build web applications. We’ll review the basics of programming, how to use APIs, briefly cover web scraping libraries in Python, and how to put all this together to build a web application.

Your reward, at the end of the course (assuming you do everything seriously!) will be substantial. You will have a working prototype of a web application that will be deployed on a cloud server (we’ll - most likely - use Amazon Web Services). You’ll understand how computer applications - large scale ones or small scale ones - work and you'll be able to build working prototypes to illustrate and market your own ideas. But, be aware that this is an intensive course that will require a lot of work and a substantial time commitment.

Pre-requisites

1. Programming knowledge: Prior exposure to computer programming is a must. Any language will do because we will -very briefly - review the basics of python at the start of the class. Python is a fairly simple language and you can easily pick it up online at https://www.codecademy.com/learn/python

2. HTML/CSS: HTML and CSS are the language of web pages. They are markup languages (think word processors) rather than programming languages. We won’t cover these in class but please take the Khan Academy introduction (https://www.khanacademy.org/computing/computer-programming/html-css) (shouldn’t take more than a couple of hours) prior to the first class.
**Expectations**

**What you can expect from me.**

That I will treat every student with respect and consideration. That I will answer every question (email, canvas, in class, office hours) in a timely fashion. That I will be there for you to help you take your project work as far as is possible.

**What I expect from you**

That you complete all course work in time. That you arrive in class and be in your seat by the start of the class. That you don't hesitate to ask for help from me or from the Teaching Assistant. That you understand that this is a difficult class and that the demands on your time will likely be more than that in your other classes. That, above all, you remember that the goal is to learn and to enjoy the process of learning.

**What we will cover**

1. Python review
2. Web scraping and APIs
3. Building Web applications

**Evaluation and learning components**

**Mini Quizzes:** We'll have a few, very short, quizzes mainly to test and reinforce programming concepts and also to help you get your hands dirty. All quizzes are open book and you're welcome to check your solutions on your computers.

**Home assignments:** We'll have a few home assignments as well. Like the quizzes, assignments are not meant to be diagnostic but rather to help you practice so they will be very (very!) lightly graded. You can consult with others, ask me questions, use google for help, but do try them on your own first.
**Project:** There is no better way to learn something than to go out and use it so start thinking about a web application that you think you'd like to build. The expectation is that you use the material we'll cover in this class to plan, design, and implement a small web application. Your project grade will depend on how well your work illustrates your understanding of the course material. Final submission will include a design report, Python code, and an in-class "speed-date" presentation and demonstration.

**Participation:** Demonstrate engagement in the course by asking questions. I'll respond to every question, either online or, if the response is of general interest, in the classroom. I’ll also take attendance so please bring your clickers to class.

**Computers and the class**

Computers are a requirement for this course and you are expected to bring one for every class. We'll do a lot of programming - the best way to learn is to see something in action and Python is an especially good language for making things happen. Make sure that your laptops have sufficient charge for the duration of the class!

**Mac vs Windows:** Either is fine but, if you have the choice, then please use a Mac. It is much easier to install needed libraries on a Mac than it is on a Windows machine. In particular, if you have a Mac and are using some sort of Windows emulator then please use Mac OS-X and not the Windows emulator for the work you do in this class. The double redirection will make everything a lot slower. But, either Mac or Windows will work so don't worry if you're a Windows user.

**Python2 vs. Python3.** Unfortunately, there are two versions of Python and they aren't fully compatible. We'll be using Python3 (current version: 3.5.2) mainly because Python2 is slated to go away (though, in the open source world, that doesn't mean a whole lot!) but also because it is a better language. However, the differences are not huge and the choice is yours and I’ll provide adequate guidance if you prefer to use Python 2.
Online resources

Python tutorial at Python.org (https://docs.python.org/3/tutorial/)

Python tutorial at Codeacademy (https://www.codecademy.com/learn/python)

Learn python the hard way (http://learnpythonthehardway.org/book/)

The Django tutorial (https://docs.djangoproject.com/en/1.9/intro/tutorial01/)

HTML/CSS at Khan Academy: (https://www.khanacademy.org/computing/computer-programming/html-css)