URPL-GP-4650
Interactive Web Mapping
Spring 2023
Updated 22 March 2023

Class Information
Thursdays 6:45-8:25pm
GCASL Room 274

Instructor
Chris Whong
Email: cmw487@nyu.edu
Office Hours: By appointment

Course Description
In this course you will learn the fundamentals of web development with HTML, CSS, and Javascript/JQuery, and learn code management and publishing using github. Using modern tools, you will learn to bring your maps to life on the web as interactive experiences using your creativity and the popular mapboxGL mapping library. The final project will be an interactive web map around an urban topic of your choosing.

This course will involve programming. Some experience is preferred but not required. **This course will require a significant amount of time outside of class periods to work on assignments and the final project, depending on the student's technical skill level.** Personal Laptops are required.

Course Objectives
1 - Understand the structure, styling, and scripting of basic web pages using HTML, CSS, and Javascript/JQuery
2 - Set up a modern web development environment on your computer, manage code and publish project via github
3 - Understand different spatial data formats & coordinate reference systems
4 - Be able to perform basic data transformations to prepare spatial data for use in web map projects
5 - Understand the components of modern web maps, including mapboxGL programming, vector data, basemaps, map styling/design, and interactivity
6 - Be able to combine all of these skills into the creation of a custom built web project with an interactive mapping component

Class Format
This class will be highly technical and hands-on. Most classes will include an hour of live demonstrations of core concepts, with the remainder of the time available for students to try out techniques, ask questions, and begin working on the assignment. Students should plan to arrive early and attend every class.

Google Doc - The instructor and students will collaborate using a shared Google Sheet during each session to keep track of notes, links, code snippets and other resources for students to reference. Students are encouraged to participate in the note-taking for the benefit of themselves and the entire class.

<u>Slack</u> - The instructor will create a class slack organization and will share code snippets, examples, and other resources. Students are strongly encouraged to participate in slack for the duration of the course: ask questions, share work, and help each other if possible.

Schedule

1 (23 March) Building the web: HTML, CSS, and Javascript
Using jsfiddle, dive into the world of web development. Learn how to build the structure and content of a web page with HTML, apply styling rules with CSS, and automate and script the page with javascript/jquery.

2 (30 March) Setting up a Modern Web Development Environment | Javascript & JQuery Programming
Set up a file structure for your websites, edit files with a text editor, manage code using git and github, host your site on the web using *github pages*. Learn javascript basics: strings, numbers, arrays, objects,, functions, loops, etc.

3 (6 April) Mapping with Mapbox GL JS 1
Use the mapboxGL library to add a map element to a website. Add basemaps, markers, and controls to your map.

4 (13 April) Spatial Data for the Web
Understand how data is stored, moved and organized for integration into a web map. Explore data sources and techniques for transforming/preparing data for use in web maps. Add vector data to a mapboxGL map

5 (20 April) Mapping with Mapbox GL JS 2
Explore more techniques and features of mapboxGL, including choropleth mapping/dynamic styling, plugins, events, etc.

6 (27 April) Mapping with Mapbox GL JS 3
Explore advanced techniques, storytelling/scroller maps, custom styles with Mapbox Studio, camera controls, etc.

7 (4 May) Web and Map Design
Review web design and map examples, explore Bootstrap for simple web layouts, components, and styles.

Integrity & Attribution
Assignments and the final project will incorporate code snippets from examples and tutorials, combined with code written from scratch. Students should give clear attribution in the code and/or on the finished website when using resources and techniques created by others.

Assignments
Classes 1-4 will include an assignment, due prior to the start of the next class. Assignments will all be published on the web, and submitted to the instructor as a link.

Learning Assessment Table

Graded Assignment	Course Objective Covered
Assignment 1	Objective 1
Assignment 2	Objective 2
Assignment 3	Objective 3 & 4
Assignment 4	Objective 5

Final Project	Objective 6

Final Project

The final project will be a finished interactive website that incorporates web mapping techniques covered in class. The subject matter can be any urban-themed subject, and have a clear and concise user experience. The idea for the final project must be submitted before class 4 for approval by the instructor.

Grading Breakdown

- 4 assignments: 50%
- Final Project 50%

Final project due date: TBD

Course Materials
Software
- VSCode Editor
- Quantum GIS
- Google Chrome
- Github Desktop

Hardware
- Laptop Computer (Students must have a modern laptop that they can install software on. The instructor will demonstrate on a Mac. Windows and Linux computers will work but may have slightly different methods for some tasks in the course. Macs are recommended)