XSAVI-780: Introduction to Interactive Web Mapping, Programming and Design

Pratt Institute, Brooklyn Campus, ISC building, Room 006
Mondays & Wednesdays | 6:30pm – 9:30pm
January 23 - March 20, 2019
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Course Overview

This course will introduce students to the basic elements of programming needed to to build interactive maps online. We will cover basic HTML, CSS, and Javascript as well as popular libraries and frameworks that are currently used in constructing online maps. We will briefly cover Geographic Information Systems (GIS), geospatial data formats, and general modern web design principles. By the end of this course, students will be able to build a working interactive map from scratch with data they create or discover.

Class Format

We will spend roughly half of class with a lecture and the remainder of class with hands-on activities, which are interspersed with segments of the lecture. The lab portion will typically be dedicated to completing an in-class assignment, but later in the class will be used for time for students for work on their final projects.

Equipment and Software

Students should bring to class the computer they intend on using for web development. Mac, Windows, and Linux machines are all welcome. We will install any other necessary desktop software, libraries, or frameworks as needed.

Assignments

Throughout the course, there will be assignments roughly once per week. Many of these assignments will require the output and code to be hosted on the web, and the instructor will provide options for where to host these assignments, and instruction on how to do so. Assignments are due before start of the next class session after the session they were assigned.

Final Project

Students will submit and present a final interactive web mapping project on a topic of their choosing during the final class session. This project should be hosted online publicly, include an interactive map, use good design and user interface practices, and have well-commented, well-written code. Students will use the final class to present their project and their code in detail. A brief (less than one page) write-up of the project idea and execution will be included with the final project. We will use the final projects and write-ups to create a public online portfolio for the course similar to this one.

Grading

Students will be assessed for the quality of their assignments (50%) and final project (40%), and for class attendance (10%). While final grades are subject to interpretation by the instructor, grades will generally be assigned in the following manner:

- **A:** Completion of all assignments and final project at a high level of quality. Full attendance.
- **B:** Completion of all assignments and final project at a moderate level of quality. Full attendance.

- **C:** Completion of more than 75% of assignments and the final project at a passing level of quality. Near full attendance.

Failing grades, while rare, are possible in the course. They will be given for 1) unexcused absences from more than 2 classes, 2) completing fewer than 75% of the in-class assignments, or 3) failure to complete the final project.

Attendance
Barring illness or an emergency, students are required to attend all classes. If you will not be able to attend class for any reason, please let the instructor know as soon as possible. Unexcused absences will adversely impact your grade in this course.

Email
Please email the instructor at the email address above directly for any personal matters such as absences.

Please join the [Google Group for this course](#) and email the group ([savi780-spring2019@googlegroups.com](#)) with technical questions, clarifying questions about assignments, and other discussions related to the course.

Detailed Course Schedule
Please note that the following course schedule is subject to change given the needs and advancement of the students. The outline below is a projection of the topics the instructor believes the class will cover over the duration of the class, but topics may be added or removed as necessary. Assignments will be created over the course of the semester.

Class 1: Introduction to HTML
January 23
- Introductions
- Course introduction and syllabus
- Introduction to HTML and the Document Object Model (DOM)
- Browser development tools

Class 2: Introduction to CSS
January 28
- Introduction to CSS
- Introduction to Javascript
- Code Separation

Class 3: Javascript
January 30
Introduction to coding fundamentals through Javascript
- Variables
- Data Types
- Functions
- Loops

Class 4: Introduction to Leaflet
February 4

- Introduction to Javascript libraries and their uses
- Creating basic maps with Leaflet
- Basic map controls
- Basic map interactions

Class 5: Leaflet
February 6
- Adding datasets to Leaflet maps
- Custom map interactions
- Other topics

Class 6: Leaflet continued
February 11

Class 7: Interactive Map Design, Examples, and Tools, and Geospatial Data Revisited – Finding Quality Data
February 13

Class 8: GIS for Developers
February 18
- GIS concepts that developers find useful including:
  - Understanding data and data formats
  - Layers
  - Attributes/attribute tables
  - Map projections/datums
  - Geocoding and geocoding tools
  - Data creation
  - Data export for the web
  - Other topics

Class 9: Leaflet Plugins and Data APIs
February 20

Class 10: Mapbox
February 25

Class 11: Modern Web Development Tools
February 27
- Introduction to web hosting and version control
  - Hosting
  - Git/GitHub

Class 12: Special Topic #1
March 4

Class 13: Special Topic #2
March 6

No class March 11th or 13th--spring break

Class 14: Final Project Work Session
March 18

Class 15: Final Project Presentations
March 20
- Students will present their final projects and code to the class.