IOWA STATE UNIVERSITY

Department of Landscape Architecture

LA/CRP 458/558: INTRODUCTION TO WEB MAPPING

3 CREDITS • Spring 2018

Lectures: Course is taught as a Lecture/Lab course entirely online.
Content available on course Website. https://webmapping18.weebly.com/

Assignments: Completed using lab/personal computer and provided ESRI or open-source software.

Instructor: Professor Christopher J. Seeger, GISP, PLA
Office: Rm. 280, College of Design
Phone # and voice mail: 515-509-0651
Office hours by appointment – also available online.

COURSE DESCRIPTION

This course introduces students to the use and development of online mapping and GIS tools to support participatory design, Volunteered Geographic Information, information sharing, geodesign and decision-making. The Lecture/Lab emphasizes practical applications and uses of Web GIS through Web scripting/coding geoprocess modeling, and user interface design using a wide variety of cutting-edge applications and application programming interfaces (API). The course includes three primary components:

- Online GIS/Web Mapping: Overview of off-the-shelf tools pros/cons vs. a customized ArcGIS Server
  - Case studies and review of existing tools and applications, history of Web Mapping
- Application Programming Interfaces (API): Leaflet, Carto, Mapbox, OpenStreetMap & others
  - Scripting/coding of Web based interfaces (HTML, CSS, JavaScript, jQuery)
  - Interface Design (layout, navigation, browser/device limitations) includes desktop and mobile device support
  - Working under the hood, database setup and management
- Map interactivity and the use of static and dynamic data from various sources
  - Network mapping, geocoding, exposing complex GIS models to the Web
  - Geoprocessing and data modeling for Web GIS

Prerequisites: HTML and/or GIS experience.

There will be a dual emphasis throughout the course, one involving hands-on use of the computer/software and the other dealing with Web Mapping in a more conceptual/theoretical manner (lecture/readings). Assignments and exercises are designed to expose students to various operations, while at the same time providing hands-on opportunities. The students are assumed to have a basic understanding of the Windows or Mac operating system environment and a working knowledge of web browsing, word processing, and presentation graphics operations. Students should have some experience with basic Web Design, HTML coding and Geoprocessing. Knowledge of JavaScript is not required - it will be taught within the course.

Students taking the course as a 558 may apply the credit to the Graduate GIS Certificate. 458 students may use the course as an elective in the COD's Digital Media Minor.

STUDENT LEARNING OUTCOMES

At the end of the course, 458 and 558 students will be able to:

- Identify suitable Web Mapping methods to use for various project types
- Prepare data for use in Web interface and connect data to GIS/Web server
- Design, develop and deploy interactive mapping tools-code basic Websites from HTML & JavaScript
    - Understand Objects, Arrays, and Functions
- Evaluate interface usability and identify limitations of desktop and mobile devices
- Create geoprocessing tasks using existing classes and various open source plugins
- Identify limitations of user generated data in analytical applications
- Format and develop new JSON data sets

Additionally, graduate students in 558 will be able to:

- Develop skills required to research and critically evaluate new technologies
- Develop criteria and methodology for creating and executing am open-source mapping project

TEXT AND READING MATERIALS

Students will be required to use several web-based resources and Lynda.com videos. Several portions of free/in development/low cost (typically under $5) web adaptations of books from Lean Pub will be used. These include:

Interactive Data Visualization for the Web
Web version: http://alignedleft.com/tutorials/d3/ (free)

Leaflet Tips and Tricks
Home page: https://leanpub.com/leaflet-tips-and-tricks ($1.67)
Web version: https://leanpub.com/leaflet-tips-and-tricks (free)

D3 Tips and Tricks v3.x
Home page v3: https://leanpub.com/D3-Tips-and-Tricks ($1.67)
Web version v3: https://leanpub.com/D3-Tips-and-Tricks/read (free)
Home page v4: https://leanpub.com/d3-t-and-t-v4 ($1.67)
Web version v4: https://leanpub.com/d3-t-and-t-v4/read (free)

Additional optional texts (for purchase or via ISU online library) do exist for HTML, JavaScript, Leaflet and other course technologies, these will be discussed during the course.,

COURSE STRUCTURE

Lectures and assignments will be made during each class meeting and will be posted to the course website. While this course is an online course and there is no official meeting time during the week, the class will follow a Tuesday/Thursday structure and new material for that day will be posted by 3:00 PM. The website for the course is https://webmapping17.weebly.com/ - some parts of the site may be password protected. You will be emailed this password when necessary.

A calendar of lecture topics and links to course materials is available on the Website. The calendar will be updated after the first week of class once an assessment has been made in regards to the entering skill level of the class. Deadlines for turning in quizzes, tutorials and assignment exercises are generous **therefore late work will NOT be accepted and you will lose the attributed points if you miss it.** During the first weeks of the course, information on how to organize and host the completed exercises as Web pages will be provided.

All students are required to complete and present a Web Mapping project as the final component of the course. 558 students may select a project of their design that could support Thesis or other work. 458 students will be provided several projects to choose from for their final project or may develop a project of their own.

In addition to the course work that both 458 and 558 students complete, 558 students are required to select from a list of tech topics an item of interest and present the topic as a 15 min (ppt lecture) to the rest of the class. 558 students will also demonstrate their knowledge of the JSON syntax by building from scratch a data set for use by all students to use in another course exercise.

Professor Seeger will frequently use the updates (aka announcements) button on the front page of the course so make a habit of checking this link often. All postings will start with the date.

Students should develop mapping code on their local machine and then when necessary save to a web server. This webserver will most likely be on a GitHub server and shared via GitHub pages. Keep a master copy of all code on your local device!

GRADING

The final grade is based on overall performance measured by points assigned to quizzes, assignments, exercises, tutorials, final project and final exam (if one is given). Below are the percentages in relation to the final grade. Knowing that there is likely a significant difference in skill levels, an individual student's evaluation on learning exercises will be based on their own growth – eg. Students new to HTML will not have their work compared to a professional web designers output – but they should be inspired by the work!

A (95-100);	B+ (87-90)	C+ (77-80)	D+ (67-70)	F (below 60)
A- (90-95);	B (83-87)	C (73-77)	D (63-67)	
	B- (80-83)	C- (70-73)	D (60-63)	

The breakdown below is tentative and will be finalized by the first day of class as I am considering a modification to the Gallery Project.

- Assignments 30%
- 2 Quizzes 20% (the best score from either quiz is used - the other is tossed out)
- Web Tech report (LA 558 10% for developing, LA 458 10% for reviewing submissions)
- Mini Project 8% (You will be getting this mid semester)
- Gallery Project 12% (the collection of all of your assignments in a portfolio looking website)
- Final Project 20% (You will have nearly 4 weeks to do this - it is due before the first day of Finals Week)
- Once Final Projects are posted - each of you are required to look at the projects during finals week and provide feedback to the student developer

*Note: It is your responsibility to keep at least **one backup copy** of your work files in a safe place just in case the original is damaged or lost! Save backup to either CyFiles or a USB drive is good practice.*

Academic Dishonesty
The class will follow Iowa State University's policy on academic dishonesty. Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.
http://www.dso.iastate.edu/ja/academic/misconduct.html

It is permissible to use code shared by other students, found on tutorial websites or shared from the instructor - but all code not written by the student must be attributed! This can be done by simply including a comment line with the attribution. It is not permissible to completely copy another student's work and submit it as your own.

Disability Accommodation
Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact (instructor name) to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with (instructor name), you will need to obtain a SAAR form with recommendations for accommodations from the Disability Resources Office, located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email disabilityresources@iastate.edu . Retroactive requests for accommodations will not be honored.

Dead Week
This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook http://www.provost.iastate.edu/resources/faculty-handbook .

Harassment and Discrimination
Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, Student Assistance at 515-294-1020 or email dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Religious Accommodation
If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and your instructor or supervisor will review the request. You or your instructor may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

Contact Information
If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.