

GEOG657 Syllabus Web Programming

Course Details:

Session: Summer 2023
Format: In-person and remote
Classroom: LEF 1158
Lecture and Lab Times: Mon/Tue 5:30 pm – 8:00 pm

Instructor: Xin Tao (xtao@umd.edu)
Office: LEF 1167
Office hours: By appointment
Teaching assistant: Ushashi Podder (ushaship@umd.edu)
Office: 4600 River Road
Office hours: By appointment

Course Objectives:

The growing capability and use of the Internet have created a demand for GIS applications on the Web. This course is designed to teach fundamental techniques required in developing both client-side and server-side web applications. This course covers responsive web design and generation using HTML, CSS, client-side programming with JavaScript, and dynamic web development using PHP and MySQL. MySQL and Structured Query Language are used to design and handle data for web applications.

The format of this course will consist of lectures, lab assignments, readings, and a final project. The lectures will be presented online via the Live Classroom on the Zoom. All lectures involve the interaction between students and the instructor in real time. Lectures will be archived into videos that will be made available. Please note that video recordings are intended for occasional or backup use in case students have to miss lectures due to personal, business, or medical reasons. Real time, online participation is strongly recommended. The readings and lab assignments will also be posted in a timely manner.

Learning Outcomes

The specific objectives of this course are that students are expected to learn the following:

- Understand the Internet and various Web applications
- Exposed to popular programming languages and techniques used on the Web
- Can design and develop static Web sites using HTML and CSS
- Can develop client-side processing on web pages using JavaScript
- Can build web map application with JavaScript and Map APIs
- Be able to publish interactive and data-driven Web pages using PHP
- Know the use of SQL to handle data from databases with PHP

- Can develop web pages using JavaScript to work together with server-side PHP processing

Prerequisites

GEOG646 is pre-requisite, or you should have a minimum of programming experience with HTML, CSS, and JavaScript.

Course Outline:

The Internet	1 week
HTML.....	1 week
JavaScript	1 week
Document Object Model	1 week
Online Maps.....	2 weeks
Databases	1 week
Server scripting language	1 week
More on JavaScript.....	2 weeks
More on PHP	2 weeks

References

W3Schools online web tutorial, <http://www.w3schools.com/>
 MDN Web technology for developers, <https://developer.mozilla.org/en-US/docs/Web>
 Leaflet JavaScript Library for Interactive Map, <https://leafletjs.com/>
 PHP Documentations, <https://www.php.net/>
 MySQL Documentations, <https://dev.mysql.com/doc/>

Grading:

It is strongly encouraged to attend each lecture and actively participate in the online discussion board as well as in class. Students are required to post a reply on the forums posted by the instructor. Lab assignments will be given weekly to help students gain practical experience in developing websites. Students need to complete final projects to design and implement a web application using HTML, CSS, JavaScript, and a server scripting language.

There will be 7 labs and 1 final project. The lowest lab score will be dropped and the highest six is worth 66% of the final grade. The final project score will be worth 24% of the final grade. 10% will be based on attendance and participation.

Grade Policy:

- Project, online class activities, and labs:

	% of total grade	Due date
Project	24%	8/15
Online class activities	10%	In class

Labs	66% (11% × highest 6 labs)	6/12 (Lab 1), 6/26 (Lab 2), 7/3 (Lab 3), 7/17 (Lab 4), 7/24 (Lab 5), 7/31 (Lab 6), 8/8 (Lab 7)
------	----------------------------	--

Letter Grade Distribution:

The plus/minus grading system will be used to assign student grades. Minor adjustments to this scale might be made based on the performance of the class as a whole.

97-100.0 = A+
94-96.99 = A
90-93.99 = A-
87-89.99 = B+
84-86.99 = B
80-83.99 = B-
77-79.99 = C+
74-76.99 = C
70-73.99 = C-
67-69.99 = D+
64-66.99 = D
60-63.99 = D-
<60 = F

All students must have a UMD TerpConnect (used to be Glue) account to obtain permissions to upload HTML, CSS, and JavaScript files to your account on TerpConnect at <http://terpconnect.umd.edu>. All assignments should be saved in your personal directory in the remote Web server and run on the server. Details about the webserver will be provided in the class.

Academic Honesty: The University of Maryland, College Park, has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student, you are responsible for upholding these standards for this course. You need to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism.

Within our class, students may work together to review class notes and home assignments. However, assignments must be done individually. Each student must turn in his or her own work, from his or her personal computer. Any discussion or problem solution must be his or her alone, without assistance from any other person.

Accessibility Resources: Any student with a disability is encouraged to meet with the instructor privately during the first week of class to discuss accommodations. I will make every effort to accommodate students who are registered with the Disability Support Services (DSS) Office and provide a DSS accommodation form. Please refer to the Online Undergraduate Catalog Policy on Religious Observance.

Email: Both the TA and the instructor will always be available by email. The professor may not always reply to emails after 6pm or on weekends. Normally, an email would be replied within 24 hours. Emails sent over weekend may not be replied until next work day. E-mails should be respectful and professional.

Course schedule

The weekly coverage is subject to change as it depends on the progress of the class. However, you must keep up with the reading assignments.

Week	Date	Topics	Readings	Assignments
1	5/29 5/30	No class (holiday) Internet	W3Schools	
2	6/5 6/6	HTML CSS	W3Schools	*Lab 1 out
3	6/12 6/13	Map scale and map abstraction Map projection	Understanding map projections	Lab 1 due **Lab 2 out
4	6/19 6/20	No class (holiday) JavaScript and Document Object Model	W3Schools	Project Proposal out
5	6/26 6/27	JavaScript and Document Object Model JavaScript library for maps	Maps JavaScript API	Lab 2 due ***Lab 3 out
6	7/3 7/4	JavaScript library for maps No class (holiday)	Maps JavaScript API	Lab 3 due
7	7/10 7/11	Databases Databases	MySQL documentation	Proposal due ****Lab 4 out
8	7/17 7/18	PHP tutorial MySQL with PHP	W3Schools	Lab 4 due *****Lab 5 out
9	7/24 7/25	More on JavaScript More on Maps API	W3Schools	Lab 5 due *****Lab 6 out
10	7/31 8/1	Processing form data using PHP Working with files in PHP		Lab 6 due *****Lab 7 out
11	8/7 8/8	Sending emails with PHP Independent study for final project	W3Schools	Lab 7 due
12	8/14 8/15	Final project presentation Independent study for final project		Final Project due

*Lab 1: Basic web design

**Lab 2: Advanced web design

***Lab 3: Online map design

****Lab 4: Database and Google Map

*****Lab 5: Working with PHP and MySQL

*****Lab 6: Mapping collisions

*****Lab 7: Design and send form with PHP