

## GEOG657 Web Programming Spring 2019

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Lecture: Mondays 5:30 - 8:00pm  
Online & On-campus LeFrak 1166  
Lecture & Lab: Tuesdays 5:30-7:30 pm  
Online & On-campus LeFrak 1166  
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### Description

The growing capability and use of the Internet have created a demand for GIS application on the Web. This course is designed to teach fundamental techniques required in developing both client-side and server-side web applications for not only GIS but also non-GIS applications. This course covers web design and development using HTML5 and CSS3, JavaScript.

The format of this course will consist of lectures, lab assignments, readings, and a final program. The lectures will be presented online via the Live Classroom on the Adobe Connect. All lectures involve the interaction between students and instructor in real-time. Lectures will be archived into videos which will be made available on the Enterprise Learning Management System (ELMS). Please note that video archives 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 on ELMS.

### Learning Outcomes

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

- Have an understanding of 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 HTML5 and CSS3
- Can develop client-side processing on web pages using JavaScript
- Can build web GIS application with JavaScript and Google Map APIs
- Can develop web pages using JavaScript and AJAX

### Prerequisites

GEOG676 Programming for GIS is pre-requisite, or you should have a minimum of programming experience with Python or other programming languages. Web programming using HTML, XHTML, CSS, etc. will be helpful, but not required.

### References (No Textbook Required)

**W3:** W3Schools online web tutorial, <http://www.w3schools.com/>  
MDN Web technology for developers <https://developer.mozilla.org/en-US/docs/Web>

**GM:** Google Maps API <https://developers.google.com/maps/>  
 ArcGIS Resource Center Web API, <https://developers.arcgis.com/javascript/>

### Course Requirements and 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 issue posted by the instructor. Lab assignments will be given on a weekly basis to help students gain practical experience in developing websites. Students need to complete final projects to design and implement a web application using HTML5, CSS, JavaScript. Final grades will be determined by the following items:

- |                                     |      |
|-------------------------------------|------|
| • Weekly discussions, participation | 5 %  |
| • Weekly review quizzes             | 5 %  |
| • Lab assignments                   | 65 % |
| • Final project                     | 25 % |

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 = 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

### Software Requirements for Web Programming

- Text editor (aka IDE) such as Visual Studio Code (<https://code.visualstudio.com/Download>)
- FTP software: we recommend WinSCP (Secure FTP) for PC and Fetch for Mac. Both of these are free downloads from <http://terpware.umd.edu/>

All students must have a UMD TerpConnect (used to be Glue) account to obtain permissions to upload HTML, CSS, and JavaScript files to your personal account in <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 web server will be provided in the class and posted in the Announcements.

### Communication

#### *Email*

Both the TA and the instructor will always be available by email. Use the email link in the sidebar to send us an email at any time. We will try to answer within 24 hours and usually sooner.

*Online / Chatroom Office Hours*

If needed, I can provide online office hours if you are unable to meet on campus. To do so, simply send me an e-mail to request a time to meet online.

*Offline / On-campus Office Hours*

I will be available to meet on campus for face-to-face office hours at specified times. You can also email either the TA or the instructor to set up individual office hours by appointment.

*Discussion Board*

The discussion board is a place on the ELMS site for you to visit your classmates. This is an open forum for discussion about course material and for casual conversation. We encourage any general questions about the course material or lab assignments to be posted here so that students can help learn from each other. We will try to help answer any course-related questions that are posted here. In addition, there will be study rooms set up for you to form study groups. We will not be monitoring these rooms. Remember that the University Code of Academic Integrity specifies that you are free to work together and to discuss the assignments, but that you must produce your own original and independent work.

**Class Attendance and Environment**

You are strongly recommended to attend every lecture in real time at the online site or on campus at the physical classroom. We will meet online at the announced time for a live audio/video lecture. During this time you can follow along with the lecture and ask any questions that you may have. The lecture will be archived for anyone who absolutely must miss a class, but I encourage you to join the class online at the appointed time so that you can ask questions and keep up with the course schedule.

In this class, students will meet in a virtual space online which will be treated as a classroom. Our class will meet within the Enterprise Learning Management System (ELMS), the university's online learning system. Go to <http://elms.umd.edu> to access the course. After login, the course will be listed in the right column under "My Courses".

It is important to recognize that the classroom is an environment that requires respect for all participants. Therefore, students are expected to conduct themselves in a considerate manner.

**Make-up Policy**

Assignments must be turned in by 11:59PM at which they are due. Late assignments will result in penalties unless prior arrangements are made with the instructor. If you have a documented disability and wish to discuss academic accommodations, please contact the instructor immediately. Students should not expect 'Incomplete' grade as they will be only given under extraordinary circumstances.

**Academic Integrity**

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. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

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 own computer. Any discussion or problem solution must be his or her alone, without assistance from any other person.

### Disabilities and Religion

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.

### Sustainability

In an effort to promote greater understanding of sustainability among students, faculty, and staff at the University of Maryland, this course has been adapted to include discussion about larger sustainability issues, such as global climate change, food security, and systems modeling. Visit the University of Maryland's office of sustainability at: <http://www.sustainability.umd.edu/>.

### Course Schedule

This is a tentative schedule and may be adjusted to suit our class. Changes will be announced and posted on Blackboard.

Week	Dates	Contents	Reading	Assignment
1	Feb 25 Feb 27	Overview of the Internet and the World Wide Web Basic HTML/XHTML Basic CSS (Cascading Stylesheet)	W3: HTML & CSS	Lab 1 Out
2	Mar 4 Mar 5	HTML5 CSS	W3: HTML & CSS	Lab 1 Due Lab 2 Out
3	Mar 11 Mar 12	Introduction to JavaScript JavaScript DOM HTML5 Video, Audio, Media	W3: HTML5 JavaScript	Lab 2 Due Lab 3 Out
	Mar 18-22	Spring Break		
4	Mar 25 Mar 26	JavaScript HTML SVG, Canvas	W3: HTML5 JavaScript	Lab 3 Due Lab 4 Out
5	Apr 1 Apr 2	JavaScript HTML Form	W3: HTML5 JavaScript	Lab 4 Due Lab 5 Out
6	Apr 8 Apr 9	JavaScript HTML5 Geolocation	W3: HTML5 JavaScript	Lab 5 Due Lab 6 Out

		Google Map API		Final Project Proposal Out
7	Apr 15 Apr 16	JavaScript JSON AJAX, JQuery	W3:JavaScript JSON AJAX	Lab 6 Due Lab 7 Out
8	Apr 22 Apr 23	HTML5 WebStorage More on JQuery, AJAX JavaScript Offline Handling	IS 16 MM Ch 8, 19, 20	Lab7 Due Final Project Proposal Due
9	Apr 29 Apr 30	HTML5 SSE ECMAScript 6 Features	W3: AJAX, jQuery	
10	May 6 May 7	Responsive Web Design Web Application Examples		
11	May 13 May 14	Independent Study for Final Project		May 17 Final Project

**\* Lab sessions will be held on-campus and online at the same time. Lectures will be broadcast online interactively but no on-campus support.**