# Syllabus for GEOG677

**Instructor**

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(Additional office hours can be scheduled by appointment via email or phone.)

**Teaching Assistant**

*Name:* TBD
*Email:* TBD
*Office Hours:* TBD

**About the Course**

*Time:* 5:30pm – 8:00pm, Wednesdays (lectures) & Thursdays (lab sections)
*Location:* Classrooom: Lefrak 1171; Online (http://elms.umd.edu/ )

***Description***

This course is designed to: (1) introduce the concepts and theories that are related to an increasingly important technology – Internet/Web GIS; (2) introduce various technologies or techniques for creating, analyzing, and disseminating GIS data and services via the Internet. The topics covered include the hardware/software structure of the Internet (e.g. server-client model, TCP/IP protocol), the evolution of Web GIS, and most importantly, different technology options. Students will be required to practice almost all of the Web GIS tools including Google Map API, ArcGIS Server, JavaScript API, Flex API, and Silverlight. Students will also be exposed to the experience of working with the cloud environment such as AWS EC2 and ArcGIS Online.

***Textbooks*** (optional)

1. Zhong-Ren Peng, Ming-Hsiang Tsou, Internet GIS: Distributed Geographic Information Services for the Internet and Wireless Networks, ISBN: 978-0-471-35923-4. This book can be purchased from the UMD bookstore or Amazon (http://www.amazon.com/gp/product/0471359238). It has also been reserved in the UMCP McKeldin Library.
2. Fu, *Web GIS: Principles and Applications*, ESRI Press 2010, ISBN: 9781589482456

***Course Communication***

We will frequently use email for communication in the class and we will **only** use UMD email addresses. Be sure that the email address on TESTUDO is your UMD account. Each student will also need permissions to the OpenLab. Instructions for getting these accounts will be given at orientation and on the first day of class.

Assignments, announcements, data sets, etc. will be made available to registered students via Canvas: http://ng.elms.umd.edu/ . You are strongly recommended to log in Canvas and check the announcements regularly (at least once a day). You also need to check your UMD email account often so that you will get all the information sent to the class.

***Assignments***

There are totally seven (7) lab assignments to be completed. Each of these lab assignments will count 10% of the final grade. Late submission of lab reports will result in a reduction of the grade for that assignment of 10 points (out of 100 in total) per day. However, in some rare situations (e.g. medical or family emergency), if you need extra time, you will have to contact the instructor before the due date so that the deadline may be extended.

***Final Project***

A final project is required to complete this course. In this project, students will need to integrate the concepts and techniques covered in the course to design an Internet GIS application. This application will be published and remain active on web to be graded. The project is preferably relevant to the student's academic field or professional work.

In addition, a written proposal of the final project (>=2 pages; single line space) must be submitted by the date specified in the Course Schedule. The proposal should: (1) clarify research topic; (2) provide background information; (3) explain why it is important; (4) identify the targeted audience or users; (5) describe data to be used and how to collect them; and (6) list the expected functions of the to-be-completed Internet GIS tool. Students are encouraged to contact the instructor early during the semester to discuss potential topics and scope. This proposal accounts for 5% of the final grade.

The grading of the final project depends on the functionality, creativity, complexity, robustness, and the user-friendliness of the Internet GIS website, which accounts for 22% of the final grade.

The project must be carried out individually or in a group of two members. This project should be limited in scope and designed for completion during the semester.

***Grading***

The distributions of grade among lab assignments, participation, and final project are:

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|---|---|
| Lab Assignments = | 70% |
| Final Project = | 27% |
| Participation = | 3% |

The plus/minus grading system will be used to assign student grades which will be determined as follows:

97-100 = A+
93-96.99 = A
90-92.99 = A-
87-89.99 = B+
83-86.99 = B
80-82.99 = B-
77-79.99 = C+
73-76.99 = C
70-72.99 = C-
67-69.99 = D+
63-66.99 = D
60-62.99 = D-
<60 = F

Minor adjustments to this scale might be made based on the performance of the class as a whole.

***Course Schedule***

This is a tentative schedule and may be adjusted to suit our class.

| Week | Date | Lecture Topics | Readings | Assignments |
|---|---|---|---|---|
| **1** | Dec 4 | Course Overview<br>Introduction to Internet GIS<br>- What is Internet GIS?<br>- Why do we need Internet GIS?<br>- Demonstrations and Examples | Chapter 1 | Exercise 1 |
| **2** | Dec 11 | The Internet<br>- Network Environments<br>- Network Communication Models<br>- Protocols<br><br>Web Design | Chapter 2 | Lab 1 out |
| **3** | Dec 18 | Client/Server Model<br>Peer-to-Peer Model<br>Distributed-Systems Architecture<br>Web Client/Server Architecture<br><br>Google Earth<br>KML | Chapter 3<br>Chapter 5 | Lab 1 due<br><br>Lab 2 out |
| **4** | Jan 8 | Overview of Web Mapping<br><br>Major Web Mapping Programs<br>- ArcIMS<br>- ArcGIS Server<br>- Manifold<br>- GeoMedia<br>- MapExtreme<br>- MapGuide<br><br>Google Maps API | Chapter 8 | Lab 2 due<br><br>Lab 3 out |
| **5** | Jan 15 | Introduction to ArcGIS Server<br>- What is ArcGIS Server?<br>- ArcGIS Server Architecture<br>- Service Types<br>- Creating Map Services<br>- Creating Web Applications | Assigned Reading | Lab 3 due<br><br>Lab 4 out |
| **6** | Jan 22 | GIS in Cloud<br>- AWS EC2<br>- ArcGIS Online<br><br>Markup Languages<br>- HTML | Assigned Reading | Lab 4 due<br>Lab 5 out |

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|---|---|---|---|---|
| | | - XHTML<br>- XML<br>- GML | | |
| **7** | Jan 29 | Guest Lecture - Web GIS Services at UMD (Taylor Keen, Campus GIS Coordinator, UMD) | Chapter 7 | Lab 5 due<br><br>Lab 6 out |
| **8** | Feb 5 | Flex APIs<br>- Overview<br>- ArcGIS API for Flex<br>- ArcGIS Viewer for Flex<br>- ArcGIS Viewer for Flex Application Builder | Assigned Reading | Lab 6 due<br>Lab 7 out<br><br>Final project proposal due on Feb 5 |
| **9** | Feb 12 | Silverlight APIs<br>- Overview<br>- ArcGIS API for Silverlight<br>- ArcGIS Viewer for Silverlight<br><br>Mobile GIS | Chapter 6<br>Chapter 9 | Lab 7 due<br>Exercise 2 |
| **10** | Feb 19 | HTML5<br><br>Other Advanced Topics | | Final project due on Feb 19 |

## Rules & Policies

***Lab Access***

Students have access to the GIS labs through their UMD ID cards as well as an account to use the PCs in the GIS lab. Students are responsible for keeping their account in good standing. This includes keeping the total amount of storage space on the network drive to a reasonable amount that is required to complete the current lab assignments. No materials unrelated to the GIS courses are allowed. Storage space allocations will be checked periodically to determine if any students exceed the reasonable amount of storage. Failure to comply with this policy may result in suspension of GIS lab use privileges.

***Class Environment***

In this class, students will meet in a virtual space online which will be treated as a classroom. 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. Disruptive behavior of any kind will not be tolerated. Students who are unable to show civility with one another, the teaching assistants, or myself will be subject to being referred to the Office of Student Conduct or to Campus Police. You are expected to adhere to the Code of Student Conduct.

***Medical Excuses***

Campus Senate policy requires students who are absent due to illness/injury to furnish documentary support to the instructor. I require students to contact me by email or by phone prior

to class time in which you indicate that you have an illness or an injury. You must provide written documentation verifying your illness/injury immediately upon your return to class. You will not be allowed to turn in missed assignments or make up quizzes, tests, papers, etc. if you have not provided this documentation. Documentation not presented to me in a timely manner will not be accepted. In addition, if it is found that you have falsified the documentation provided, I will refer you to the University's Student Conduct Office.

***Religious Preference Absence***

Please refer to the Online Undergraduate Catalog Policy on Religious Observance.

***Academic Dishonesty***

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.