GEOG 5810: Web GIS Syllabus

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Textbooks:

- Fu, P. and Sun, J. 2011. Web GIS: Principles and Applications, Redlands: Esri Press.
- DuVander, A 2010. Map Scripting 101: An Example-Driven Guide to Building Interactive Maps with Bing, Yahoo!, and Google Maps. Available as an eBook (free) through UCONN Libraries.
- Peng, Z.R. and Tsou, M.H. 2003. Internet GIS: distributed geographic information services for the Internet and wireless networks. New York: John Wiley and Sons, Inc.
- Peterson, M. 2014. Mapping in the Cloud. The Guilford Press.
- Muehlenhaus, I. 2013. Web Cartography: Map Design for Interactive and Mobile Devices. CRC Press.

Course Description:

This course is designed as an introduction to Internet GIS. This course focuses on the basics of Internet GIS system architecture, geospatial web services, and mashups. This course also introduces the key elements of mobile GIS solutions, the functionality of geoportals and web 2.0 technologies, web mapping interoperability in terms of utilizing universal data standards such as OGC (Open Geospatial Consortium) web services, and the current state of e-business and e-government web mapping interests. In addition, this course also introduces new concepts in CyberGIS such as Geospatial Semantic Web, Cloud Computing. In general, students will gain an understanding of the basic concepts of Internet GIS in this course. While focuses on providing instructions for customizing web-based mapping applications using ESRI's ArcGIS Server and Java Script, this course also introduces the knowledge of open source Internet GIS software and solutions. The course concludes with an overview of and the hottest new research frontiers and future trends in Internet GIS.

By completing the course, the student will:

- understand for which GIS applications it is suitable to use the Internet.
- have the basic knowledge of techniques to distribute, process and display geographical data via the Internet.
- learn basic programming skills including HTML and Java Script to construct and implement high quality web mapping applications.
- gain an understanding of the basic concepts of programming web GIS applications, including integrating different types of spatial information into web-enabled GIS maps.

- gain hands-on experience on developing webpage and building Internet GIS sites from the ground up.
- learn new CyberGIS concepts and technologies.

Course Format:

Classes will be split into lecture and lab sessions each week. The lectures will focus on the theories and principles behind the Internet mapping and distributed GIS services. Lab exercises focus on the training of Internet Mapping skills by using HTML, Java script, Microsoft Expression Web software, and ArcGIS server package. Students will learn how to design and set up an ArcGIS Server and to publish their web maps on the server. During lab time students will work through problems, doing computer work or exercise. If you cannot finish your assignment during lab time, you need to find your own time to finish it.

You are expected to participate in all of these activities. Failure to participate in these activities may affect your final class grade. You are strongly encouraged to ask questions during class. The more questions you ask, the more you will get out of the course.

Course Website:

There is a course website that is accessible through HuskyCT [https://learn.uconn.edu/]. Materials for this course including syllabus, lecture PPT, lab exercises, and other information of interest will be put on the course website.

Tests and assignments:

(40%) **Course project**: Students will plan, create or propose a specific Internet GIS application. The project will offer an opportunity to refine and apply skills learned. The instructor will provide the example data and application at the start of class. The six exercise assignments will help student to develop the final project. Students can also gather and integrate other data within the application to support the intended capabilities, and implementing it on the Web. It is expected that students will consult with the instructor about the project. The project will contain both a written report and a 15 minutes presentation.
(50%) **Five exercise assignments**: All assignments are due at the specific time assigned. The scores for late submitted assignments will be deducted by 5% per day except in extraordinary circumstances. The six exercises will help to create the final course project.
(10%) **One Exam**: The exam format is open book short answers. The exams cover the lectures, and assigned reading. A make-up exam will be scheduled only in the event of personal illness or extraordinary circumstances. Anyone who will miss an exam must notify the instructor in advance of the exam date.

Your instructor and the university have a responsibility to promote academic honesty and integrity. You, as a student, are (1) responsible for the honest completion and representation of your work, (2) expected to respect the academic endeavours of others.

STUDENTS WITH SPECIAL NEEDS SHOULD INFORM THE INSTRUCTOR AS EARLY AS POSSIBLE.

To success in this course, students need to:

1) attend both lecture and lab sessions;
2) finish assignments and projects on time;
3) read the related materials and tutorials before class; and
4) practice the related techniques actively.

Grading:

Students' final course grade will be based on course project, 5 exercise assignments, and one exam:

a. Course project	400 points	40%
b. 5 exercises	500 points	50%
c. Mid exam	100 points	10%
Total:	1000 points	100%

Course final grades are based on a linear, percentage based system. That is, the final course score equals to the total points students earned divided by the total points available.

The following cutoffs will be used as a guide for assigning letter grades:

A:	93% - 100%
A-:	90% - 92%
B+:	87% - 89%
B:	83% - 86%
B-:	80% - 82%
C+:	77% - 79%
C:	73% - 76%
C-:	70% - 72%
D+:	67% - 69%
D:	63% - 66%
D-:	60% - 62%
E:	below 60%

Tentative Course Outline (Subject to Change)

Date	**Topic**	**Reading**	**Lab Exercises**
Week 1 (Aug. 25 - 29)	Introduction	Fu & Sun Chapter 1, Notes	Tutorials: HTML Intro; HTML5
Week 2 (Sept. 1 - 5)	Lab day (No class)		
Week 3 (Sept. 8 - 12)	Web Page Basics	Duvander A, Notes	Exercise 1

Week 4 (Sept. 15 - 19)	Web Mapping Basics	Fu & Sun Chapter 2	Due Exercise 1 Exercise 2: JavaScript Intro
Week 5 (Sept. 22 - 26)	Software Architecture	Peng & Tzou, Chapter 3,4	Due Exercise 2 Tutorials: Microsoft Expression Web
Week 6 (Sept. 29 – Oct. 3)	Geospatial Web Services	Fu & Sun Chapter 3, Notes	Exercise 3: Design your homepage using Microsoft Expression Web
Week 7 (Oct. 6 - 10)	(**Mid Exam**) Introduction to ArcGIS Server	Notes	
Week 8 (Oct. 13 - 20)	Mobile GIS	Fu &Sun Chapter 5, Peng & Tzou, Chapter 8 Notes	Due Exercise 3 Tutorials: Learning ArcGIS Server
Week 9 (Oct. 20 - 24)	Distributed Component Technologies and Geoportals	Fu & Sun Chapter 6,7, Peng & Tzou, Chapter 6, Notes	Exercise 4: Learning ArcGIS Server
Week 10 (Oct. 27- 31)	Geospatial Mashups and Geospatial Semantic Web	Fu & Sun Chapter 4, Duvander A Chapter 10, Notes	Due Exercise 4 Exercise 5: Creating web applications by Mashup Google Map with ArcGIS Server
Week 11 (Nov. 3 - 7)	Volunteered Geographic Information (VGI), Cloud Computing, and Internet GIS applications	Fu & Sun Chapter 8,9, Articles, Notes	Due Exercise 5 **Final Project**: Customize ArcGIS Server with JavaScript
Week 12 (Nov. 10 - 14)	The future of Internet GIS (CyberGIS Gateway, Toolkit, and GISolve Middleware)	Fu & Sun Chapter 10, Articles, Notes	Project
Week 13 (Nov. 17 - 21)	Project		Project
Week (Nov. 24 - 28)	**Thanksgiving (No class)**		
Week 14 (Dec. 1 - 5)	Project (Final Project presentation on Dec. 1 Monday)		Project report due online at midnight on Dec. 7 Sunday
Week 15 (Dec. 8 - 12)	**No final exam.**		