GEOGRAPHIC INFORMATION SCIENCE AND TECHNOLOGY

GIST 4312/5312: INTERNET MAPPING

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Office Hours: MW 2:00 - 3:00 p.m. or by appointment.

Lecture: MW 3:00 - 3:50 p.m.
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Course Objective: Internet mapping is widely used to share and distribute geographic information over the Internet. In this course we will learn how to compose maps for the web environment, how to develop Internet mapping applications, and how to customize mapping interface and tools. While Internet mapping is widely used in government and private industry, in a university environment the technology is more often used to share data and maps that are tied to research. At the graduate level, this course will emphasize the development of research web-mapping applications. To develop these applications we will use ArcGIS server, and commonly used programming tools.

Prerequisites: Working knowledge of the Microsoft Windows environment and ArcGIS. These requirements can be fulfilled with GIST 3300/5300 or an equivalent course with department approval.

Learning Outcomes: After completing this course, students will be able to:

1) explain what Internet mapping is, how it works, and what it can do,

2) understand and apply the basic principles of web page development,

3) work with simple Google and Esri products to share spatial data and maps,

4) understand how to use and work with ArcGIS Server to create map services,

5) understand and explain the difference between JavaScript, HTML5 and Flex applications,

6) design, build and deploy a web-mapping application in your field of study - and document the process,

7) critically assess and critique web-mapping applications in their field of study.

Assessment: This course is offered as a piggybacked undergraduate and graduate course. Graduate students are expected to complete all of the undergraduate requirements – plus additional readings and graduate level requirements related to learning outcomes 6.

There are two exams in this course (a midterm and a final), lab assignments, and a final project (that includes a written report). The exams will be used to assess your understanding of the basic concepts introduced in the course, learning outcome 1. You are required to complete each of the lab assignments, but they will not be individually graded. Selected lab assignments will be integrated into a web portfolio that will be graded at the end of the semester. Your ability to work through these assignments and develop a web portfolio will be used to assess your application development skills, learning outcomes 2-5. The successful development of a final project and report will be used to assess learning outcomes 6 and 7.

Grading: The midterm and final exams are each worth 100 points. The web portfolio is worth 100 points, the final project is worth 100 points and the documentation is worth 50 points. Your final grade is therefore based on a possible total of 450 points. To ensure a grade in this course you must meet the following minimum requirements: A - 90%, B - 80%, C - 70%, D - 60%.

Required Lab: You are required to enroll in lab for GIST 4312/5312.

Optional Textbooks: Fu, P and Sun, J, et al, 2011. *Web GIS: Principles and Applications*, Redlands: Esri.

Required USB Flash Drive: To save your homework, lab assignments and projects, you will need a USB flash drive. Given that GIS data can take up a lot of space, a minimum 8 GB flash drive is recommended.

Lab Assignments: You are expected to complete each of the lab assignments during the scheduled lab class time. Certain labs will be combined to build your web portfolio.

Exam Format: The midterm and final exams will be based upon the material covered in lecture, labs, and the assigned reading. The exams will consist of a combination of multiple choice and short answer questions covering the lecture material and several short essay questions based on the reading assignments. There will also be a lab component to the exam covering the technical aspects of application development.

Make-Up Exams: You are required to take the exams at the scheduled times. Exceptions will be made in the case of a university approved excused absence.

Required Attendance: Attendance is required in both lecture and lab. An excused absence does not relieve you of meeting all of the course requirements. If you have any problems during the semester, please let me know.

Withdrawing: You are responsible for dropping the class. The last day to drop is Wednesday, March 25, 2015.

Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act (OP 10.08)

Any student who, because of a disability, might require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make necessary arrangements either at the beginning of the semester or upon diagnosis of disability. Students must present appropriate verification from Student Disability Services during the instructor's office hours. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services office in 335 West Hall or call 806-742-2405.

Student Absence for Observance of Religious Holy Day (OP 34.19)

1. "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20.

2. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.

3. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

Academic Honesty & Integrity (OP 34.12)

From OP 34.12: "It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

"Scholastic dishonesty" includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act."

TENTATIVE CLASS SCHEDULE

		LECTURE	**LAB**	**TOPIC**
JAN	14	Introduction (course logistics and topics)	1	**No Lab**
	21	The Internet, WWW and GIS	2	ArcGIS Online
	26	Technical Basics- Server/Client, GIS Servers and Webpages	3	Profile Page
	28	Geospatial Web Services	4	Profile page with map
FEB	02	Web service standards and geospatial mashups	5	Publish a web service
	04	Publishing Web services	6	Working with Web map services
				Assignment 1
	09	Introduction to Geospatial Mashups	7	Identify with Basemap selector Sample (three Layers)
	11	Geospatial Mashups with external Sources	8	Final map with layout
	16	Geospatial Mashups with tools.	9	Create a mashup
	18	Geospatial Mashups with tools contd.	10	Continue Mashup Exercise
	23	Geospatial mashup Layout and Design	11	Continue Mashup Exercise
	25	Geospatial mashup Layout and Design contd.	12	Finalize Mashup Exercise
MAR	02	Review		**Assignment 2**
	04	**EXAM 1**		
	09	Creating Web Mapping Apps (Adobe Flex API)	13	Flex APIs, Building a Mapping Application
	11	Final Project Discussions	14	Continue Building Application
		Spring Break – no class		
	23	Creating Web Mapping Apps (Adobe Flex API)	15	Working with GIS tools
	25	Creating Web Mapping Apps (Other Available APIs)	16	Incorporation Other Services
	30	Creating Web Mapping Apps (Other Available APIs)	17	Wrapper for Applications
APR	01	Creating Web Mapping Apps (Other Available APIs)	18	Finalize the Application
				Assignment 3
	06	Finalize Web Mapping Applications – Other Available APIs		
	08	Geoportals	19	Review of other APIs
	13	Introduction to Mobile Mapping Applications	20	Creating a Mobile Application
	15	Mobile Mapping Applications contd.	21	Creating a Mobile Application
	20	**Student Holiday - no class**	22	Work on Final Project
	22	Future of Internet Web Mapping and GIS	23	Work on Final Project
				Assignment 4
	27	Final Project Discussion	24	Work on Final Project
	29	Final Review	25	Work on Final Project
MAY	04	Final Project Presentations	26	Final Project Presentations
	06	**Individual Study Day – no class**		
	10	**EXAM 2 – May 08th, 4:30 p.m. to 7:00 p.m.**		