

## **GEOG 583 Internet Mapping and Distributed GIServices**

Web site → <http://map.sdsu.edu/geog583> (Spring 2009)

Blackboard URL: <https://blackboard.sdsu.edu/>

Lectures: Thur. (I) 12:30pm - 1:40pm, (II) 2:00pm-2:50pm

Location: Storm Hall 248(I), 338(II)

Labs: Thur. 3:00pm - 4:40pm

Lab room: Storm Hall 338

Instructor: Dr. Ming-Hsiang Tsou  
Storm Hall 326  
[mtsou@mail.sdsu.edu](mailto:mtsou@mail.sdsu.edu)

Office Hours: Monday 4:00pm- 5:00pm  
Tuesday 4:00pm- 5:00pm  
or by appt. (619) 594-0205

**Overview:** This course introduces current development of Internet mapping and advanced cartographic skills in Web-based maps. By using Web-authoring tools (Microsoft SharePointDesigner), Virtual Globes (Google Earth and ArcGIS Explorer), and Internet Map servers (ESRI ArcIMS, ArcGIS Server, Google Map API), students can learn both the techniques of Internet mapping and the principles of Web-based cartography, including multimedia, animation, 3D visualization, and user interface design. The lectures will focus on the theories and principles behind the Internet mapping, including distributed component technologies, graphic designs, and network communications. The lab exercises will focus on the practical applications and Web design skills for Internet mapping services. Students will learn how to design and set up Internet mapping services and to publish their Web maps.

**Prerequisites:** GEO 380 or GEO381 or GEO484 or Web design experiences.

### **Textbook (required):**

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. <http://map.sdsu.edu/gisbook>

**Lectures:** The lectures will focus on the theories and principles behind the Internet mapping and distributed GIServices. There are two sessions for the lecture part. The first session (I) will focus on the theories and principles of Internet Mapping and distributed GIServices. The second session (II) will focus on the actual web authoring skills and software configuration with Internet connection.

**Lab Exercises:** The lab exercises will focus on the practical installation and web design training for Internet mapping services. Students must attend each lab session. Lab exercises focus on the training of Internet Mapping skills by using Web authoring software, and Web mapping packages.

**Grading:** Midterm exam 25%, Lab exercises 35%, Group project and Web design 30%,  
Class participation (On-line discussion) 10%.

Graduate students will have an additional assignment (literature review in their specialty areas with the Internet application). Additional 10% The literature review will ask the students to gather the following information:

1. Find out TWO web sites which focus on your own special areas (hydrology, urban geography, etc.), and write a 300 words paragraphs to introduce EACH web site in HTML format. (Publish the writing on the personal Web page).
2. Write an essay about the impact of Internet on your own specialty group and identify the potential connections of the Internet applications with your own study area. (1000 words and publish the essay on the personal Web page).

(Graduate student assignment due day is **May 7** – one week before the final presentation).

### **Additional Readings: (electronic copies in the Z:/data/readings/ drive)**

Butler, Declan (2006). The web-wide world. *Nature*, 439(16). February 2006, pp. 776-778.

Bush, V. (1945). As We May Think. *The Atlantic Monthly*, vol. July. Pp.101-108. URL:

<http://www.cs.sfu.ca/CC/365/mark/material/notes/Chap1/VBushArticle/>

Limp, F. W. (2001). User needs drive web mapping product selection. *GEOWorld* Februry 2001. pp. 8-16. (Hand-out)

MacEachren, A. M. & Kraak, M. (2001). Research Challenges in Geovisualization, *Cartography and Geographic Information Science*, Vol.28, No.1, 2001. URL: <http://www.geovista.psu.edu/icavis/publications.html>

Open GIS Consortium, Inc. (OGC) (2000). *Open GIS Web Map Server Interface Implementation Specification (Revision 1.0.0)*. Wayland, Massachusetts: Open GIS Consortium, Inc.  
<http://www.opengis.org/techno/specs.htm#implementation>

Putz, Steve. (1994). Interactive Information Services Using World Wide Web Hypertext. In *Proceedings of the First International Conference on the World-Wide Web*, Geneva, Switzerland. URL:  
<http://www94.web.cern.ch/WWW94/PrelimProcs.html>

Tsou, M.H. (2004). Integrating Web-based GIS and On-line Remote Sensing Facilities for Environmental Monitoring and Management. In special issue on the potential of web-based GIS, *the Journal of Geographical Systems*, No. 6: 155-174. <http://map.sdsu.edu/publications/Tsou-J-Geosystem.pdf>

WEEK		LECTURE	READING	LAB EXERCISE
1	22 Jan	Introduction	Butler.	<b>No Lab this week</b>
2	29 Jan	History of Internet and Web Mapping	Putz, Book: Ch. 1,2	HTML Intro
3	5 Feb	Cartography and User Interface Design	MacEachren	Frontpage Tutorial
4	12 Feb	Software Architecture	Tsou (2004) Book: Ch.3, 4	Animated Pictures
5	19 Feb	Multimedia and Hypermedia	Bush	Frontpage II
6	26 Feb	Software Solution Key Technologies <b>(Introduction to Group Project)</b>	Gosling Book: Ch.5	KML and Software comparison.
7	5 Mar	Visualization/ HCI \ <b>Group Project Proposal Presentation)</b>	Book: Ch.6	Group project Intro and Feature services.
8	12 Mar	Distributed component technology <b>(Exam Review)</b>		Internet Map Viewers
9	19 Mar	<b>Midterm EXAM (25)</b> (exam: 12:30-1:40). Class meet at 2:00pm-4:40pm – Virtual Reality and 3D Cartography	OpenGIS, Book: Ch. 8	Virtual Reality and VRML, <b>group proj.</b>
10	26 Mar	<b>AAG Meeting (No Class)</b>		<b>No Lab</b>
11	2 Apr	<b>Spring Break (No class)</b>		<b>NO Lab</b>
12	9 Apr	Mobile GIS and Wireless communication		Web Log Analysis <b>Group Project</b>
13	16 Apr	User Profile and Web site Evaluation	Limp	<b>Group project</b>
14	23 Apr	New Media (Virtual Globes) and New Technology (AJAX)	Ch. 10	NO Lab (Lab open for use)
15	30 Apr	Intelligent GIServices and Semantic Web		<b>Group Project</b>
16	7 May	Future Direction of Internet GIS (Graduate Student Additional paper due)	Book: Ch. 14	<b>Group Project</b>
17	12 May	<b>Group Project Presentations (338) - as the Final Exam (2:00pm-5:00pm)</b>		
	19 May	<b>Submit the Final Report by Noon</b> Office hour 1pm-3pm.		

### **Group Project:**

Two or three students will form an "Internet Mapping project team". Each group will submit one page proposal on **March 5, 2009** and choose a possible project topic. Each team will select a team coordinator, who will coordinate the work progress of your project. The proposal will list the following items in a single page:

- The title of your project,
- Members' names,
- Coordinator's name,
- One paragraph to explain your project (200-300 words), and
- Weekly schedules and individual assignments.

**Each team will spend five minutes to introduce their project to the class on March 5.**

**Each team will give a brief group project progress report (two minutes) at the beginning of lecture each week (after March 8).**

At the end of semester, each team has to submit an "Internet Mapping project final report" in paper format and publish the result to group project web pages. The whole team members will present your project in front of the class as the final exam. **The final report presentation will be hold in May 12 from 2:00pm - 5:00pm in SAL lab (SH338).** Each team has 15 minutes for presentation and 5 minutes for questions. (If you need to use the Powerpoint slide, save the slide in a floppy disk or send it to [mtsou@mail.sdsu.edu](mailto:mtsou@mail.sdsu.edu) before your presentation.) The contents of your presentation should follow your group report. (Everyone are required to attend the presentation classes and sign-up your name). **The final report (paper format) is due on the May 19 at noon in the instructor's mailbox (TSOU).**

The Final report should include:

**Group report** (10-15 pages, double space, submit by each group) should include the following items:

- Team members
- Problem statement (why are you doing this project? why Internet mapping?)
- Literature review (other similar projects or fundamental theories – scientific journals or on-line resources)
- Database management and ArcIMS setup (where do your data sets come from? Where do you put them on the Web and which version of ArcIMS do you use?)
- Results (introduce your web design and published data)
- Discussion

**Individual report** (3-5 pages, double space, submit by individuals):

- The major accomplishment of your group project.
- Your own contribution to the project
- What do you learn from this project?
- Your suggestions for the project (If you can re-do this project, which part of the project would you improve?)

### **Grading:**

Final presentation 15%, Web Design 25%, Group project report 40%, Individual report 20%.