

**URP 6276**  
**Internet Geographic Information Systems**  
**Fall 2014**

**Instructor:**

Zhong-Ren Peng, Ph.D. (Architecture building, Room 462, phone 352-291-1491, e-mail: [zpeng@dcp.ufl.edu](mailto:zpeng@dcp.ufl.edu))

Teaching Assistant: Xinyu Fu ([xinyufu@ufl.edu](mailto:xinyufu@ufl.edu))

Prerequisite: URP 6270 or by consent with Instructor

**Required Textbook:** Zhong-Ren Peng and Ming-Hsiang Tsou, 2003, *Internet GIS: Distributed Geographic Information Services for the Internet and Wireless Networks*, New York: John Wiley & Sons.

**Course Overview**

This course focuses on the advanced topic in geographic information systems (GIS): Internet GIS. Internet GIS is a network-centric GIS technology that uses the Internet and the World Wide Web as a primary means of providing access to the functionality (i.e., analysis tools, mapping capability) of GIS and to the spatial data and other data needed for various GIS applications. It provides users capability to work interactively with maps and conduct spatial analysis on the Web. It has many applications in urban planning, e-government and e-business.

There are two goals of the course. The first one is to offer you theoretic background so that you will have a better understanding of the concepts of Internet GIS, such as how Internet GIS works, the different architecture models, and the state of art of the Internet GIS technology. The second goal is to offer you hands-on experience to use Internet GIS programs so that you can gain necessary skills to work with Internet GIS programs.

The course will start with an introduction to networking basics and the evolution of software architecture, specifically the client/server model. It will cover the basics of the Internet and the Web, followed by an introduction to Internet GIS, and the different architecture models of Internet GIS, from Web mapping to distributed geographic services. The course will also cover the most recent development in Internet GIS, the geography markup language (GML) and Map Mashups, as well as their applications in GIS data encoding, transport and interoperability.

The course will provide hands-on training in web design and the use of Internet GIS software. Specifically, we will cover the basic techniques in HTML, Dynamic HTML, and ArcGIS Server.

The cornerstone product of this course is the final project. In addition to the final project report, the students are required to design an Internet GIS application in a professional Web site that incorporates the concepts and techniques covered in this course. The Web site should include at least the following elements: static HTML, dynamic HTML, interactive map interface, dynamic elements using Active Server Pages, and a use of one of the Internet GIS programs such as ArcGIS Server. Group projects are allowed with permission from the instructor, but no more than two students in one group. Group projects will be judged at a higher standard than an individual project.

The final grade will be consisted of the following:

- 15 percent from assignments, and active class participations.
- 35 percent from the midterm exam, and
- 50 percent from the final project, including a functional Internet GIS website and final report.

The grading of the final project depends on the functionality, originality, complexity, and the user-friendliness of the Internet GIS Web site, the quality of writing and presentation.

#### **Students with Disabilities**

Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

#### **Academic Honesty**

Students in the Department of Urban and Regional Planning are expected to adhere to all University of Florida academic honesty policies. Failure to do so will result in lowered grades and/or referral to the Dean of the Students Office at the University. The following are some examples that are considered to be academic dishonesty:

- copying graphics or texts from any sources for your report without crediting the original source,
- representing someone else's work as your own,
- allowing someone else to represent your work as his/her own,
- Multiple submissions of the same or similar work without prior approval,
- Falsifying information such as changing or leaving out data; manipulating or misreporting statistics for a research project; altering work after it has been submitted; hiding reference materials, etc.

**URP-6276 Internet Geographic Information Systems  
Fall 2014**

**General Course Outline**

<b>Week</b>	<b>Contents</b>	<b>Readings</b>
1	<p><b>Course Overview and Introduction</b></p> <ol style="list-style-type: none"> <li>1. Evolution of GIS technology</li> <li>2. What is Internet GIS?</li> <li>3. Introduction to Internet GIS and Mobile GIS</li> <li>4. Introduction to Google Earth and Bing Maps</li> <li>5. Lab: Web Design and HTML</li> <li>6. Assignment #1 hand out</li> </ol>	Chapter 1
2	<p><b>Networking Fundamentals of Internet GIS</b></p> <ol style="list-style-type: none"> <li>1. How does the computer networking work</li> <li>2. Open Systems Interconnection (OSI) reference model</li> <li>3. Physical communication mechanisms</li> <li>4. Local area networks</li> <li>5. Wide area networks</li> </ol> <p>Lab: Web Design and Advanced HTML Assignment #1 Due Assignment #2 hand out</p>	Chapter 2
3	<p><b>Client/Server Computing and Distributed Component Frameworks</b></p> <ol style="list-style-type: none"> <li>1. Client/server Concepts</li> <li>2. Client/Server Architecture Models</li> <li>3. Distributed Component Frameworks</li> <li>4. A Dynamic Architecture for Distributed GIServices</li> </ol> <p>Lab: Introduction to ArcGIS Server Assignment #2 Due Assignment #3 hand out</p>	Chapter 3
4	<p><b>ArcGIS Server</b></p> <ol style="list-style-type: none"> <li>1. Introduction to ArcGIS Server</li> <li>2. ArcGIS Server architecture</li> </ol> <p><b>Lab: ArcGIS Server</b> Assignment #3 Due Assignment #4 hand out</p>	Chapter 8.1-8.2
5	<p><b>Distributed GIS</b></p> <ol style="list-style-type: none"> <li>1. Architecture Models of Distributed GIS</li> <li>2. Components and function Requirements for A Single-site Distributed GIS</li> <li>3. Enterprise Distributed GIS</li> <li>4. LEGO-like Dynamic GIServices Architecture</li> <li>5. System Implementation of Distributed GIS</li> </ol> <p>Lab: ArcGIS Server Assignment #4 Due</p>	Chapter 5

	Assignment #5 hand out	
6	<b>XML and GML Applications</b> 1. What is metadata? 2. What is XML? 3. XML Applications 4. Geography Markup Language Lab: ArcXML Assignment #5 Due Assignment #6 hand out	Chapter 7
7	<b>Google Map API</b> <b>1. What is API?</b> <b>2. What is Google Map API</b> Lab: Google Map API Assignment #6 Due Assignment #7 hand out	
8	<b>Mobile GIS</b> 1. The Business Case of Mobile GIS 2. General System Architecture of Mobile GIS 3. Samples of Mobile GIS Software Packages 4. Applications of Mobile GIS 5. The Future of Mobile GIS on WAP and PDA Assignment #7 due Final Project Due	Chapter 9