

**Spring Semester, 2009**

(as of January 20, 2009)

## **INTRODUCTION TO URBAN GEOGRAPHIC INFORMATION SYSTEMS**

Urban Planning 945-791/591

Day/Time:      Lecture: Mondays, 1:30 – 4:10  
                  Lab:      Mondays, 5:30 – 8:10

Professor:      **William E. Huxhold**, GISP  
                  Office:    AUP Room 334  
                                414.229.6954  
                  Hours:    By appointment  
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Teaching Assistant:   **Jeff Arp**  
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  Hours:    by appointment  
  Email:    [jtarp@uwm.edu](mailto:jtarp@uwm.edu)

Textbooks: **TEXT 1:** *An Introduction to Urban Geographic Information Systems* (Huxhold, W.E., Oxford University Press, 1991).  
**TEXT 2:** *ArcGIS and the Digital City* (Huxhold and Fowler., ESRI Press, 2004).

## **Course Outline**

Week 1  
(Jan 26)

### **WHY GEOGRAPHIC INFORMATION SYSTEMS?**

Topics: Course overview  
          Overview of GIS at UWM  
          Introduction to Geographic Information Systems  
Video: GIS: Government's Information Solution  
**Assignment for next week:**  
          **Read TEXT 1, Chapter 3 (Applications)**

Week 2  
(Feb 02)

### **GIS 'KILLER APPS'**

Topics: Freeway Corridor Analysis  
          Light Rail Planning  
          Neighborhood Redevelopment  
          Public Information: Map Milwaukee Demo  
          Criminal Justice  
Video: San Diego's Regional Information System  
**Assignment for next week:**  
          **Read TEXT 1, Chapter 2 (GIS Defined)**

Week 3  
(Feb 09)

## WHAT IS A GEOGRAPHIC INFORMATION SYSTEM?

Topics: Components of GIS Technology:

- Automated Mapping Technology
- Data Base Management Systems
- Land Records Information
- Topological Data Structures
- Spatial Analysis

The Digital Map:

Map Features (points, lines, polygons)

Attributes of Map Features

Identifiers

**Assignment for next week: Homework Assignment #1**  
**Read TEXT 1, Chapter 4 (Topology)**  
**Read Handouts**

Week 4  
(Feb 16)

## GIS DATA STRUCTURES

Topics:

Spatial Data vs. Attribute Data

Raster Data vs. Vector Data

Vector Data Structures:

Automated Mapping

Attribute Linkages

Topology

**DUE: Homework Assignment #1**  
**Assignment for next week:**  
**Read TEXT 1, Chapter 5 (Geographic Base Files)**

Week 5  
(Feb 23)

## TOPOLOGY AND GEOGRAPHIC BASE FILES (GBF)

Topics:

Topology (again!)

Census and Street Segment Geography

U.S. Census Bureau GBFs:

DIME Files

TIGER Files

Other GBFs:

Locally-created

Commercially Available

Uses of GBFs:

Mapping

Geocoding

Address Matching

Interpolation

Spatial Geocoding

Dynamic Segmentation

**Assignment for next week: TBA**

Week 6  
(Mar 02)

## SPATIAL ANALYSIS

Topics: Geocoding

Buffering

Reclassification, Dissolving, and Merging

Polygon Processing

Network Analysis

Guest Speaker on Spatial Analysis

**Assignment for next week:**  
**Homework #2**  
**Read Text 1, Chapter 6 (Land Records)**

Week 7  
(Mar 09)

## **LAND RECORDS**

Topics: Land Parcels and the Cadastre:  
Cadastral Maps  
Public Land Survey System  
Cadastral Records  
Geoids, Datums, Projections, and Coordinates  
Map Accuracy:  
Accuracy and Scale  
Accuracy vs. Precision  
Survey Control:  
Local Survey Networks  
Geodetic Control Network  
Planimetric Maps:  
Relief and Tilt  
Orthophotos  
Digital Orthophotos (DOP)  
Global Positioning System (GPS)

**Due: Homework #2**

Week 8  
(Mar 16)

## **SPRING BREAK!**

Week 9  
(Mar 23)

## **MIDCOURSE REVIEW**

Week 10  
(Mar 30)

## **MIDTERM EXAM**

Week 11  
(Apr 06)

## **GIS DATA AT UWM – MEET AT THE LIBRARY, Third Floor**

Guest Speaker: Tom Brittnacher, Digital Spatial Librarian  
American Geographical Society (AGS) Collection

Third Floor, Golda Meir Library

Week 12  
(Apr 13)

## **EXAM REVIEW, FINAL PROJECT, and GIS ACTIVITIES IN WISCONSIN**

Topics: Questions/Answers on the Midterm Exam Results  
Introduction to the Final Project  
GIS Activities in Wisconsin  
The Wisconsin Land Information System Program  
The Milwaukee County Automated Mapping and  
Land Information System  
GIS at the City of Milwaukee

Week 13  
(Apr 20)

**THE GIS CAREER**

Topic:

Career Discussion by a Panel of GIS Professionals

Week 14  
(Apr 27)

**No Lecture**

Week 15  
(May 04)

**No Lecture**

Week 16  
(May 11)

**ORAL PRESENTATIONS ON PROJECTS** – GRADUATE STUDENTS ONLY

**FINAL PAPER DUE: Monday, May 11**

**COURSE GRADING:**

**Exercises (Credit)**

**Homework Assignments (10%)**

**Midterm Exam (10%)**

**Laboratory Work (50%)**

**Final Paper (30%)**