

**APPLIED PROJECTS IN URBAN GEOGRAPHIC INFORMATION
SYSTEMS**
Urban Planning 793

Objectives of the Course

1. Experience the **PROCESS** of completing a complex GIS project for a real client.
 - Conceptual Model
 - Project Scope
 - Data Model
 - Implementation Workplan

2. Experience the use of **REAL DATA** from local government for use in GIS.
 - Attribute Data from various sources
 - Parcel/Segment Maps
 - Digital Orthophotos
 - Other Related Data/Maps (as appropriate)

3. Gain additional exposure to the **TECHNOLOGY** needed to complete a GIS project.
 - ESRI Products
 - Windows NT
 - Spreadsheet, Database, etc.
 - Others as required

URBAN PLANNING 793
APPLIED PROJECTS IN URBAN GEOGRAPHIC INFORMATION SYSTEMS

This course is offered as a "keystone" course in a four-course series of GIS courses. The objective of this course is to immerse the student in GIS software and real geographic data in order to solve a problem or address an issue that is needed by a local organization. It therefore allows the students to apply their understanding of GIS technology to a real problem with authentic data from local government. In addition, it provides them with a structured approach to a GIS project, introducing them to GIS management techniques that are necessary to manage a project from its conception through final completion.

It uses ESRI GIS software products (which have been introduced to the students in the previous courses in the series), authentic parcel map and attribute data from local government that contains information about all parcels of land in the city and the buildings on those parcels, and a client - a local organization that requires GIS services to solve a problem.

Students, working in teams of three to five, are required to interview people and research the client agency and its problems; prepare a Strategic Plan Document describing the problem and how it will be solved; develop an Implementation Work Plan defining the necessary tasks, timing of those tasks, and personnel task assignments; report progress and problems on a weekly basis; and then produce a final product (defined by the client), including documentation of the work and a final presentation to the client.

Below is a summary of past accomplishments of student projects in the course:

In the Fall 1996 course, the students were published in *GIS: Our Common Language, ESRI Map Book - Volume Twelve* (Environmental Systems Research Institute, Inc., Redlands, CA, 1997, p. 106) for the project, "**GIS Assists Neighborhood Strategic Planning in Milwaukee**".

In the Fall 1995 course, the students also entered their work in a national GIS competition at the Annual Conference of the Urban and Regional Information Systems Association (URISA '95) in Salt Lake City and won an award for "Best Map" in the conference *Project Showcase* for the project, "**GIS Role in the Neighborhood Strategic Planning Process**".

In the Fall 1993 course, the students received a "**Best View**" award at the 1993 International ESRI User Conference in Palm Springs, California, for the project, "**Marketing Milwaukee's Northwest Industrial Corridor**".

After completing their Fall 2004 project, entitled, "**Creating Developable, Contiguous Parcels**", students Ahmed Abubaker, Sutapa Chatterjee, Marc Gelenian, and Diana Hu found themselves winning one award after another in local, state, and international competitions in geographic information systems projects:

In February, 2005, the project won **Best Student Award** in the Map Gallery Competition at the annual conference of the Wisconsin Land Information Association (WLIA) in Green Bay. (Prize: a blue ribbon)

Then, in May, 2005, the project won **First Place** in the Student GIS Project Competition awarded by the UWM GIS Council (see: <http://www.uwm.edu/Dept/GIS/competition2005.html>)(Prize: \$300.)

Finally, in July, 2005, they scored a **Third Place** in an international student competition, Best Practices in Science Modeling Challenge, sponsored by the Environmental Systems Research Institute (ESRI). This competition attracted entries from universities all over the world and independent judges from the academic community reviewed them based on innovation, usability, and functionality. (Prize: \$500).

Other past projects include:

- "**Homelessness Prevention**" for an area in Milwaukee about to experience gentrification.
- "**Housing Survey and Analysis**" for Milwaukee's Metcalfe Park Residents Association.
- "**Breast Cancer Awareness**" for the City of Milwaukee Health Department.
- "**An Evaluation of the African-American Immersion Program**" for two Milwaukee central city schools.
- "**An Analysis of the Impact on Property Values Surrounding Proposed Light Rail System Stops**" in Milwaukee.
- "**Commuter Information System**" for the City of Milwaukee employees.
- "**Milwaukee's CDBG Target Area: An Analysis of Housing Indicators**" for the City of Milwaukee Block Grant Administration.
- "**Milwaukee Community Development Block Grant Assessment**", evaluating the effect of public and private investment on neighborhood housing quality in Milwaukee.
- "**City of Cudahy Geographical Information Needs Analysis**"
- "**A Geographical Information System Needs Assessment for the City of Oak Creek, Wisconsin**"
- "**Using GIS in Park Planning for the Town of Cedarburg**"
- "**Development of a GIS for the Mid-Town Neighborhood Association**"
- "**Village of Elm Grove GIS Needs Analysis**"
- "**City of Greenfield GIS Needs Analysis**"
- "**The Lindsay Heights Internet GIS Model**"
- "**Federal Rental Assistance in the City of Milwaukee**"
- "**GIS Implementation for the Community Partners Program**", an enhancement of the collection, analysis, and distribution techniques of data collected by the Community Partners organization.
- "**City of South Milwaukee GIS Needs Analysis**"
- "**The Wehr Nature Center GIS**"
- "**Statistical Profiles of Milwaukee Aldermanic Districts**", a web site displaying statistical data about crime in Milwaukee Aldermanic Districts.
- "**GIS Database and Preliminary Analysis for Green Infrastructure Planning: Fond du Lac and North Neighborhood**", identifying underutilized properties in a Milwaukee neighborhood for potential locations of parks and other green space.
- "**GIS Database Development for Milwaukee's Urban Ecology Center**", a basemap and databases of scientific data for Milwaukee's Riverside Park for land stewardship planning, research, and educational opportunities.
- "**Safe Routes to School Bicycle Crash Mapping and Routing**", bicycle routing analysis in a neighborhood school attendance area to identify street segments having the safest record of crashes, traffic volume, speed limit, crime incidents, etc. to encourage students to exercise by riding their bicycles to school.
- "**Groundwork Milwaukee's Potential Greenspace Opportunities for Neighborhoods**" – the identification of all underutilized parcels in Milwaukee that are not within ¼ mile of an existing park and "bundling" those that are adjacent for the purpose of suggesting locations for new green space in Milwaukee.
- "**Creating Developable Contiguous Parcels for the City of Milwaukee**" – the identification of all underutilized land parcels in the city that can be used by the City's Department of City Development to bundle together so that it can better market them for economic development purposes.
- "**Milwaukee River Revitalization: A Geospatial Perspective to Environmental Protection and Public Access Improvement**" – development of a viewshed analysis along the Milwaukee River to protect views from the river from encroaching development and also identify locations for public access.
- "**Lead poisoning on Milwaukee's South Side: A Geographic Strategy for Maximizing Referrals in the 16th Street Community Health Center's Lead Outreach Program**" – the development of walking routes for door-to-door canvassing by identifying hot spot neighborhoods/census tracts and individual properties that meet criteria for high potential for lead poisoning.

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Individual Homework Assignments

(10%)

1. Homework #1 – Data Model
2. Homework #2 – Strategic Plan

Team Products Produced

(20%)

1. Homework #3 - Strategic Plan:
 - Project Scope:
 - Project Name
 - Client Identification & Mission
 - Vision Statement
 - Project Scope & Objectives
 - Conceptual Model:
 - Entities & Activities of Client
 - Data Model:
 - Spatial Entities
 - Feature Attributes
2. Homework #4 - Implementation Plan:
 - Tasks/Assignments
 - Schedule
 - Products

Products Expected by the End of the Semester

(70%)

1. Project Report:
 - Project Title
 - Project Scope
 - User Analysis
 - Map Usage Matrix (if appropriate)
 - Data Model
 - Data Dictionary (Metadata)
 - GIS Applications
 - Recommendations
 - Map Samples
2. Presentation of Results to the Client:
 - PowerPoint Presentation or Live Demonstration
 - Hardcopy Handouts (Maps & Data)
 - Training (if appropriate)

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Day/Time: Thursdays, 1:30 – 4:10 PM
Location: SARUP Rooms 191/194
Professor: William E. Huxhold
Office: AUP 334
229-6954
Tuesdays, 2 – 4, or by appointment
Home: 1- 262-742-3833
email: hux@uwm.edu
Textbook: *Managing GIS Projects* (Huxhold), Oxford University Press, 1995
(ISBN 0-19-507869-1)

Course Outline

INTRODUCTORY MATERIAL:

01/24/08: Preview of the course
Review of Obstacles to and Maxims for Success
Presentation of work from previous years

Assignment for next week: Read Chapters 1 and 2

01/31/08: Management Perspective on GIS
Systems Development Methodology
Development of the Conceptual Model of the Organization

**Assignment for next week: Homework #1 (Data Model)
Read Chapter 3**

02/07/08: Strategic Planning for GIS
- Vision
- Comprehensive Approach
- Formal Plan
- Management Framework

**DUE: Homework #1 - Data Model
Assignment for next week: TBA**

02/14/08: Introduction to the projects
Client Presentations

**Assignment for next week: Homework #2 (Strategic Plan)
Read Chapter 4**

PROJECT PLANNING:

02/21/08: Planning for Implementation
- Situational Analysis
- Project Scope
Form Project Teams

DUE: Homework #2 - Strategic Plan
Assignment for next week: Homework #3 (Project Strategic Plan)
Read Chapter 5

02/28/08: **NO CLASS – WLIA Annual Conference in Lake Geneva**

03/06/08: System Design
- Needs Analysis
- Data Model

DUE: Homework #3 - Project Strategic Plan
Assignment for next week: Read Chapter 6

03/13/08: Project Workplan

Assignment for next week: Homework # 4 (Project Implementation Plan)
Read Chapter 7

03/20/08: ***SPRING BREAK***

03/27/08: Implementation Management
DUE: Homework #4 - Project Implementation Plan

PROJECT IMPLEMENTATION:

04/03/08 **Work on Project**

04/10/08 “

04/17/08 “

04/24/08 “

05/01/08 “

05/08/08 **Complete Project**

05/15/08 **Presentation of Project**