

**GIS Capstone Course
UST 486 Fall 2004**

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or by appointment

Objectives:

The goal of the GIS capstone course is to integrate the GIS knowledge and skills learned from the first portion of this course as well as accumulated from the prerequisite courses and apply to each student’s individual GIS project. The student will use the GIS functionality found within MapInfo or ESRI ArcGIS software as a tool to complete their project. Homework exercises will be completed using ArcGIS software.

Prerequisites:

The prerequisites for this class are the successful completion of UST 401 (Computer Applications for Urban Research), UST 403 (Cartography & Graphics), and UST 434 (Introduction to GIS). A prerequisite will only be waved if the student has completed a similar course at another university or where a student has tested out of a prerequisite course.

Readings:

Text: **Getting Started with ArcGIS** published by ESRI Press

Assignments and Grading:

- 1. *Homework—exercises using ArcGIS software*.....(30%)
- 2. *GIS Project-written*.....(60%)
- 3. *GIS Project- oral presentation*.....(10%)

Grading Scale: A	92.51 to 100	C+	77.51 to 79.50
A-	89.51 to 92.50	C	72.51 to 79.50
B+	87.51 to 89.50	C-	69.51 to 72.50
B	82.51 to 87.50	D	60 to 69.50
B-	79.51 to 82.50	F	< 60

ArcGIS Exercises:

- 01 Exercise.doc Map documents and data properties
- 02 Exercise.doc Move and translate data into ArcGIS from various formats: MapInfo, dBase, and interchange files (.e00) using Universal Translator; Define & change map projections.

- 03 Exercise.doc Create a thematic map
- 04 Exercise.doc Geocode data: linking attribute data to map locations
- 05 Exercise.doc Attribute SQL: relational join & select by attribute; calculate attribute values
- 06 Exercise.doc Spatial SQL: select by location with or without a buffer; setting selectable layers; saving a selection (data export); find by address
- 07 Exercise.doc Creating presentation quality maps using a layout
- 08 Exercise.doc Overlay data layers to clip, dissolve, or intersect
- 09 Exercise.doc Clean objects; link photos/pictures to spatial objects
- 10 Exercise.doc Editing spatial objects

GIS Project:

Each student will explore and determine the topic for their GIS project. Project goals and procedures will be developed by each student. The project will be worked on INDIVIDUALLY. An outline of the project must be submitted to instructor by **October 18, 2004**. The project GIS functionality can be completed in MapInfo or ArcGIS. Oral Project Presentations using Power Point will be on the last of class **December 6, 2004**. The written project report will be due on **December 13, 2004**.

Use your textbook from Chapter 4 through Chapter 8 as a guide.

Project Outline (due **October 18, 2004**):

State objective(s) of project.

Data layers required with description of spatial and attribute components.

Create a diagram that shows analysis methodology (ie pg. 75)

List GIS functions needed to complete the analysis to reach objectives. The minimum required functions are listed in project requirements- See GIS functions below.

Project Requirements:

Project can be done in MapInfo or ArcGIS.

Must acquire data layers from a minimum of 3 sources (NODIS, websites, etc.).

Place data in a project folder.

GIS Functions:

Geocode an attribute database table or create points using x,y coordinates.

Minimum of 3 Attribute SQLs (must include a relational join).

Update a column or calculate values for an attribute field.

Overlay 2 data layers to show at least 1 of following: clip, merge, or dissolve.

Minimum of 3 spatial SQLs (select by location).

Create a buffer, then perform a spatial SQL to determine if other data layer objects are within, partly within, intersect, or outside the buffer (only 1 needed).

Create presentation quality maps- layouts, save all map documents or workspaces.

Export map from ArcGIS or save window as from MapInfo to create .emf files.

Create a Power Point slide presentation- import .emf files.

Oral Presentation (due **December 6, 2004**):

Show Power Point presentation. Be sure to add bulleted main points of each slide.

Slides can be maps, tables, graphs, photographs, and/ or text.

Presentation must 10 to 15 minutes long.

Questions from classmates & instructor to follow each presentation.

Submit Power Point files, .emf files, project folder files to instructor (Burn CD).

Written Project Report (due to instructor by **December 13, 2004**):

Must include introduction: state objectives, similar studies or subject matter, data integral for analysis & cite sources, GIS functions/procedures, results, recommendations & conclusion.

Metadata should be included in an appendix (can be abbreviated as in Intro to GIS project).

Report should be 7 to 10 pages of TEXT (not including maps, graphs, metadata)– double spaced font size 12, and 1 inch margins.

Students with Special Needs:

Anyone requiring special assistance to take exams or complete assignments must identify themselves to the instructor by the end of the second week of classes. These include accommodations for physical handicaps and learning disabilities.