

## **GEOG 4520 - Intermediate GIS**

Spring, 2012. Monday 6:00 - 8:50 PM, ENV 110

**(This syllabus is for undergraduates only. See GEOG 5520 for graduate syllabus)**

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ENV 310B

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### **Prerequisites**

GEOG 3500: Introduction to GIS (or consent of department)

### **Objectives**

This course is built on GEOG 4500 "Introduction to GIS". Some intermediate GIS topics will be introduced through a combination of lectures, hands-on exercises, and individual projects. The course objectives are the following:

- (1) Learn about vector and raster data models and conversions;
- (2) Develop skills for raster data manipulation in ArcGIS;
- (3) Learn about surface analysis, 3-D rendering, and relevant applications;
- (4) Understand network analysis and applications.

### **Textbooks**

- (1) Jill McCoy and Kevin Johnston, *Using ArcGIS Spatial Analyst*. ISBN: 1-58948-105-4, 233 pages, ESRI (**Note:** A PDF version is available for use in CSAM labs. Please do not print the book).
- (2) Michael J. de Smith, Michael F. Goodchild, and Paul A. Longley, *Geospatial Analysis* (free web version: <http://www.spatialanalysisonline.com/output/>).

### **Homework**

Six individual homework assignments (9% each) will be submitted online (instructions will be provided in class). Late homework will be marked down 10% for every day late.

### **Course Project**

The instructor will provide one course project after Spring Break. With instructor's consent, you can also design your own course project. Project reports (Word documents) should be submitted before May 9.

## Grading Structure

Six Homework Assignments (9% each)	54%
Midterm Exam	15%
Final Exam	15%
One Course Project (for undergraduates)	16%
<b>Total</b>	<b>100%</b>
90-100: A; 80-89: B; 70-79: C; 60-69: D; 0-59: F. A minimum grade of "B" is required for the GIS Certificate.	

## Schedule

Each class has an instruction session followed by an in-class exercise session.

<b>Week</b>	<b>Date</b>	<b>Topic</b>	<b>Homework</b>
2	Jan 23	(1) Course Introduction (2) Brief Review: Introduction to GIS (3) Vector and Raster Data Models <i>Exercise: Raster Display and Query, Vector/Raster Conversion</i>	Read Chapter 4 (pp. 73-90)
3	Jan 30	Grids and Images <i>Exercise: Grid/Image Conversion and Grid Projection</i>	<b>Homework 1 (due Feb 14)</b>
4	Feb 6	Distance and Local Operations <i>Exercise: Local Statistics</i>	Read handouts
5	Feb 13	Focal Operations and Applications <i>Exercise: Filtering and Focal Statistics</i>	<b>Homework 2 (due Feb 28)</b>
6	Feb 20	Zonal Operations and Applications <i>Exercise: Zonal Geometry and Zonal Statistics</i>	Read textbooks
7	Feb 27	No class (AAG Annual Meeting)	Read textbooks
8	Mar 5	Map Algebra and Raster Calculator <i>Exercise: Map Algebra Expression and Raster Calculator</i>	<b>Homework 3 (due Mar 27)</b>
9	Mar 12	Midterm Exam (6 - 8 pm)	
10	Mar 19	Spring Break (No class)	
11	Mar 26	Spatial Interpolation <i>Exercise: Generate statistical surfaces from point data</i>	<b>Homework 4 (due Apr 10)</b>
12	Apr 2	Surface Analysis <i>Exercise: DEM, TIN and Terrain Models</i>	Read textbooks Work on projects
13	Apr 9	Hydrologic Modeling <i>Exercise: Hydrologic Modeling in the Upper Trinity River, North Texas</i>	<b>Homework 5 (due Apr 24)</b> Work on projects
14	Apr 16	Three-Dimensional Rendering <i>Exercise: Constructing 3-D Models Using LIDAR Data</i>	Work on projects
15	Apr 23	(1) Network Analysis (2) Course Review <i>Exercise: Drive time Analysis for the DFW and Bush Airports</i>	<b>Homework 6 (due May 8)</b>
16	Apr 30	(Pre-final week): No class	Work on projects; Prepare for final exam.
17	May 7	Final Exam (6 - 8 pm)	<b>Course project due May 9</b>

## Extra Credit

The Department of Geography does not allow extra credit assignments (work not specified on a course syllabus).

## **Academic Dishonesty**

Students caught cheating or plagiarizing will receive a "0" for that particular assignment or exam. Additionally, the incident will be reported to the Office of Student Rights and Responsibilities for further penalty. According to the UNT catalog, the term "cheating" includes, but is not limited to:

- a. Use of any unauthorized assistance in taking quizzes, tests, or examinations;
- b. Dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;
- c. The acquisition, without permission, of tests or other academic material belonging to a faculty or staff member of the university;
- d. Dual submission of a paper or project, or resubmission of a paper or project to a different class without express permission from the instructor(s); or
- e. Any other act designed to give a student an unfair advantage.

The term "plagiarism" includes, but is not limited to:

- a. The knowing or negligent use by paraphrase or direct quotation of the published or unpublished work of another person without full and clear acknowledgment; and
- b. The knowing or negligent unacknowledged use of materials prepared by another person or agency engaged in the selling of term papers or other academic materials.

## **Accommodations**

The Department of Geography, in cooperation with the Office of Disability Accommodation, complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. Please present your written accommodation request before the 12th class day.

## **Classroom Courtesy**

Please follow these guidelines to avoid disrupting the class:

- (1) Turn off cell phones before arriving.
- (2) Do not arrive late or leave early (except for a bathroom break or emergency).
- (3) Do not sleep or eat during class.
- (4) Do not work on other assignments during class.
- (5) Do not talk when the instructor is lecturing, unless prompted for feedback by the instructor.

## **Student Evaluation of Teaching Effectiveness (SETE)**

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class. At the end of the semester, please visit <https://sete.unt.edu> and login using your EUID and password to complete the short survey.