

## **GEOG 5560 - GIS Programming**

Spring, 2009. Tuesday 6:00 - 8:50 PM, EESAT 336

(This syllabus is for graduates only. See GEOG 4560 for undergraduate syllabus)

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Office Hours: Mon 4 - 6 PM, Tue 4 - 6 PM, or by appointment.

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### **Prerequisites**

GEOG 4500/5500: Introduction to GIS (or consent of department)

### **Objectives**

This course includes lectures and hands-on exercises. It is for those who work with ESRI's ArcGIS on a technical level but may be new to programming with Visual Basic (VB) or Visual Basic for Applications (VBA). Therefore, about half of the classes will concentrate on the fundamentals of VBA (Week 1 to Week 7). Based on the knowledge of VBA, students will learn about ArcObjects architecture and ArcGIS customization using VBA (Week 10 to Week 15). Emphasis will be placed on the ArcMap and Map Layer objects which are inseparable components of GIS applications built with ArcGIS. Graduate students are required to program a specific GIS application using VBA and ArcObjects. It is expected that the students will learn basic skills in ArcGIS programming using VBA after completion of this course.

### **Textbook**

Robert Burke, 2003, Getting to Know ArcObjects - Programming ArcGIS with VBA. ESRI Press. ISBN 158948018X. 422 pages (with CD-ROM).

### **Reference Book**

Julia Case Bradley and Anita C. Millspaugh, 2002, Programming in Visual Basic 6.0 (update edition). McGraw-Hill Irwin, ISBN: 0-07-251381-0.

### **In-Class Exercises and Homework**

In-class exercises should be saved in your folder at R:\CSAM\class\4560\StudentFolders\. The instructor will check your in-class exercises every Wednesday. If you miss a class, you should contact the instructor and finish the in-class exercises by the following Wednesday. In-class exercises count 10% of the final grade.

Six individual homework assignments (8% each) will be turned in and marked. Late homework will be marked down 10% for every day late. Homework files should be saved to R:\CSAM\class\4560\StudentFolders\

## Grading Structure

In-Class Exercises	7%
Six Homework Assignments (8% each)	48%
Midterm Exam (including hands-on programming and closed-book exam)	15%
Final Exam (closed-book exam)	15%
Programming Project	15%
<b>Total</b>	<b>100%</b>
90-100: A; 80-89: B; 70-79: C; 60-69: D; 0-59: F.	

## Schedule

Week	Date	Topic	Lab
1	Jan 20	(1) Build a custom application (2) Data types and variables <i>In-Class Exercises</i>	Exercise 2a Exercise 2b Exercise 2c
2	Jan 27	Dialog boxes, forms, and controls <i>In-Class Exercises &amp; Homework 1 (Due Feb 10)</i>	Exercise 3
3	Feb 3	Properties, events and methods <i>In-Class Exercises</i>	Exercise 4a Exercise 4b
4	Feb 10	Code for making decisions <i>In-Class Exercises &amp; Homework 2 (Due Feb 24)</i>	Exercise 5a Exercise 5b
5	Feb 17	(1) Looping your code (2) Reading text files <i>In-Class Exercises</i>	Exercise 7a Exercise 7b
6	Feb 24	Subroutines and Functions <i>In-Class Exercises &amp; Homework 3 (Due Mar 24)</i>	Exercises 6a, 6b Exercises 6c, 6d
7	Mar 3	(1) Debug tools (2) Review <i>In-Class Exercises</i>	Exercise 8
8	Mar 10	Midterm Exam (6:00 - 8:00 pm)	
9	Mar 17	Spring Vacation (no class)	
10	Mar 24	Classes and Objects <i>In-Class Exercises &amp; Homework 4 (Due Apr 7)</i>	Exercise 9a Exercise 9b
11	Mar 31	COM and ArcObjects Object Model Diagrams <i>In-Class Exercises</i>	Exercise 11a Exercise 11b
12	Apr 7	Programming with interfaces <i>In-Class Exercises &amp; Homework 5 (Due Apr 21)</i>	Exercise 10a Exercise 10b
13	Apr 14	Accessing ArcGIS maps and layers (1) <i>In-Class Exercises</i>	Exercise 12a Exercise 12b Exercise 12c
14	Apr 21	Accessing ArcGIS maps and layers (2) <i>In-Class Exercises &amp; Homework 6 (Due May 5)</i>	Exercise 13 Exercises 14a, 14b
15	Apr 28	(1) Accessing ArcGIS Map Features (2) Review <i>In-Class Exercises</i>	Exercise 17a Exercise 17b
16	May 5	Pre-final week: No class.	
17	May 12	Final Exam (6:00 - 8:00 pm)	

## **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.
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