

Geography 563: Advanced Geographic Information System (Fall 2012)

Class Time and Room: TTH 9:30-10:45am, Callcott 003 (lecture)/005 (lab)
Instructor and Office: Dr. Diansheng Guo, Callcott 305
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Course Description: Advanced Geographic Information Systems (GIS) is a three-credit course that focuses on using GIS for application purposes. This course will teach you how to extract meaningful information from geographic data. It will also give students a basic proficiency in using standard GIS software. It is designed for both undergraduates and graduates. For undergraduate students, GEOG363 is the prerequisite course. For graduate students, prior experience with GIS is preferred but not required. The course assignments and grading policy are different for undergraduate and graduate students, as required by the University of South Carolina.

Textbook: Fundamentals of Geographic Information Systems, 4th Edition, Demers. John Wiley and Sons, 2009

Goals and Learning Outcomes: After successfully completing this course, students should be able to:

- Explain fundamental GIS concepts.
- Use GIS software to produce visual representations of geographic data.
- Use analysis techniques and tools to discover patterns in geographic data.
- Interpret the output of spatial analysis.
- Choose appropriate data and analytical tools to solve application problems.

Software: This class primarily uses ArcGIS 10.1. This software is available on the computers in the class lab (Callcott 005). Callcott 005 is generally not available outside of class, but the same software is available in Callcott 301, which is open most of the day. Several other departments on campus have ArcGIS installed in their own computer labs, but access and availability may vary. Student versions of the software are also available and will be distributed to students. This version is free, but it expires after one year and can only be used for educational purposes.

Blackboard: Students can access all lectures and assignments on Blackboard at the following URL: <http://blackboard.sc.edu>. Please update your email address at <http://blackboard.sc.edu>, following “log in” → “Personal Information” → “Edit Personal Information” → enter your email address → “Submit”. Please set your email address so that you can receive emails from the instructor or classmates.

Assignments: This class will involve approximately one homework or lab assignment every week or so. Assignments will be announced during class. If you miss a class, it is your responsibility to check and see if any assignment was given that day. Generally, you will have

one week to complete an assignment. Assignments turned in after the due date and time will be worth half credit. Late assignments will be NOT be accepted (and thus no credit) after being late for over two weeks. In addition to homework assignments, there may be in-class assignments or quizzes, which are used to assess attendance.

Analysis Project (Graduate Students Only): In addition to the regular assignments, graduate students must complete an independent analysis project. You will be required to come up with a subject (preferably one related to your research or your domain area), find the necessary data, select appropriate analysis techniques, run the analysis, and report your results. There will be a short paper (5 pages) describing what you did and what you found, and a short (5 minute) oral presentation on your results.

Exams: There will be a total of three exams. The first two exams do not overlap (i.e., they cover different materials). The final exam is comprehensive (i.e., covering all materials). The exam will be based on the material that covered in class lectures and material from the textbook. Some material for the exam will be covered in class, but not in the textbook. Other exam questions will be from the textbook even if they are not covered in class lecture. You need to attend class and read the textbook.

Grading: Your grade will be based on your scores on the three exams, homework assignments, attendance (quizzes), and a project (for graduate students). There is no extra credit.

- **No make-up exam will be given** unless a severe and unforeseeable event happened for a student, in which case that student *must* meet with the Office of the Dean of Students.
- **Attendance**, as the university policy requires, will be evaluated through pop quizzes. Absence excuses must have written proof (e.g., a note from a doctor).

	Undergraduate	Graduate Students
Exam 1	10%	10%
Exam 2	15%	15%
Final Exam	25%	20%
Assignments	30%	25%
Quizzes	10%	10%
Project	---	20%

Your final grade will be based on the following scale:

90-100	85-89	80-84	75-79	70-74	65-69	60-64	<60
A	B+	B	C+	C	D+	D	F

Academic Dishonesty: All graded work in this course must be the product of individual effort. Cheating, plagiarism, or other forms of academic dishonesty will not be tolerated. Students should pay special attention to the expectations of academic responsibility as discussed under “Academic Responsibility” in the Carolina Community student handbook. Any student violating the student code of academic honesty will automatically receive a grade of F for this course.

Tentative Schedule

Date	Activities	Chapter
8-23	Introduction	Chapters 1, 2, 3
8-28	Basic Concepts and Map Basics	
8-30	Projection and Coordinate System	
9-4	Geographic Data and Models	Chapters 4, 5
9-6	Data Structure and Basic Data Processing	
9-11		
9-13	GIS Data Input, GIS Data Source	Chapters 6, 7
9-18	Data Storage and Editing	
9-20		
9-25	Exam 1	
9-27	Spatial Databases	Chapters 7, 8
10-2	GIS Queries	
10-4		
10-9	Spatial Analysis	Chapters 9, 10, 11, 12
10-11	Surfaces and Interpolation	
10-16		
<i>10-18</i>	<i>Fall break – no class</i>	
10-23	Remote Sensing	Chapters 6, 10
10-25	Image Processing	
10-30		
11-1	Exam 2	
<i>11-6</i>	<i>General Election Day - no class</i>	
11-8	Spatial Statistics	Chapter 13
11-13	Networks	
11-15		
11-20	Cartography and Visualization	Chapters 14, 15
<i>11-22</i>	<i>Thanksgiving recess - no class</i>	
11-27	GIS on the Web	
11-29	GIS Project Design	Chapter 17
12-4	Graduate Project Presentation	
12-6	Review for Final	
12-10	Final Exam, 9am – 12am	

FALL 2012 USC Calendar

August 19, Sun.	New Student Convocation
August 16, Thurs.	Faculty Reporting Date
August 23, Thurs.	Classes begin
August 29, Wed.	Last day to change a course schedule or drop a course without a grade of "W" being recorded (Session C002)
September 3, Mon.	Labor Day Holiday - no classes
September 13, Thurs.	Last day to apply for December graduation
October 11, Thurs.	Last day to drop a course or withdraw without a grade of "WF" being recorded (Session C002)
	Midpoint in semester
October 18-19, Thurs.- Fri.	Fall break-no classes
November 6, Tues.	General Election Day - no classes
November 21 - 25, Wed.-Sun.	Thanksgiving recess - no classes
December 7, Fri.	Last day of classes
December 8, Sat.	Reading day
December 10 - 17, Mon.-Mon.	Final examinations (includes exams on Sat.)
December 17, Mon.	Commencement Exercises in Columbia

28 TTH class days, 42 MWF class days