

EES 300 BASICS OF GEOGRAPHIC INFORMATION SYSTEMS

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Environmental Earth Science

Introduction

GIS is a computer system designed to analyze spatial problems. This is a multidisciplinary introductory course in GIS. You will learn how GIS helps researchers analyze problems in areas such as environmental management, business, and history. No prior GIS experience is required although you should be familiar with basic computer operation. The course is self-directed and requires the student to be motivated and able to devote a minimum of eight to ten hours each week to the course. If you cannot do this, you should not attempt it. You cannot wait until the day before assignments are due to begin working. This results in poor quality work and low grades. Set a regular weekly schedule and stick to it!

Objectives

1. Examine how digital resources are collected, stored, analyzed, and displayed.
2. Gain experience in using spatial analysis software.
3. Develop a logical approach to solving multi-disciplinary problems.

Required Text

ESRI. Getting to Know ArcGIS GIS. 2nd edition. ESRI Press. 2004. ISBN 1-58948-083-X.

Available in the university bookstore and various online sites (e.g. Amazon). Make sure you buy Getting to Know ArcGIS and not Getting to Know ArcView GIS. **Do not buy used copies!** The text includes the ArcView 9.0 software on the CD with a 180 day license. Even if the CD is still with the text the license has probably expired. You must have the software to complete the course.

Optional Text

Davis, Bruce E. GIS: A Visual Approach. Onward Press. 2001. ISBN 0-7668-2764-X.

This text is not required but will help you to understand the lecture topics and to access additional GIS material. I highly recommend that you obtain this text and read the applicable sections as you complete the course. Available in the university bookstore and various online sites (e.g. Amazon).

Course Components

1. Lectures – The lectures cover facts and concepts relevant to each topic. You should listen to the lectures carefully and take notes. Access the lectures by clicking on the appropriate file in each topic folder on the course content page.
2. Study Questions – There is a set of 12-15 study questions for each topic. These are the facts and concepts you should learn from the lectures. The answers should be single-spaced and written in complete sentences. Most answers are from 1-3 sentences. Access the study questions by clicking on the appropriate file in each topic folder on the course content page.
3. Exercise Instructions – The exercises teach you the computer skills needed to use GIS. Access the exercise instructions by clicking on the appropriate file in each topic folder on the course contents page.
4. Assignment Submissions – Submit the assignments to the instructor by Monday midnight of each week. **LATE ASSIGNMENTS WILL NOT BE ACCEPTED. THIS MEANS THAT ANY MATERIAL SUBMITTED AFTER THE DUE DATE WILL RECEIVE A ZERO.** Access the exercise instructions by clicking on the appropriate file in each topic folder on the course contents page.

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What You Should Do Each Week

1. Read the appropriate material in the textbooks.
2. Listen to the lecture and take notes.
3. Answer the study questions.
4. Complete the exercises. Print the screen showing the final view, chart, or table. Answer the exercise questions.
5. Submit the assignment before or on the due dates listed.

Course Grading

Study Questions – 40%

Exercises – 60%

Questions

The fastest way to get questions answered is by e-mail. Use the e-mail tool to send questions and to attach assignments.

Syllabus

<u>Week</u>	<u>Topic</u>	<u>Reading</u>	<u>Due Date</u>
		Davis (Optional)	
1	Lecture 1. Introduction to GIS Lecture 1 Slides Lecture 1 Study Questions Ex 1 – Introducing GIS Ex 2 – Introducing GIS Desktop Ex 3 – Exploring ArcMap	Ch.1	
	Lecture 2. Data Structures I Lecture 2 Slides Lecture 2 Study Questions Ex 4 – Exploring ArcCatalog Ex 5 – Symbolizing Features and Rasters Ex 6 – Classifying Features and Rasters	Ch.3	
2	Lecture 3. Data Structures II Lecture 3 Slides Lecture 3 Study Questions Ex 7 – Labeling Features Ex 8 – Querying Data Ex 9 – Joining and Relating Tables	Ch.4 Ch.3	

Lecture 4. Maps and Map Analysis Ch. 11, Ch.5 131-144

Lecture 4 Slides

Lecture 4 Study Questions

Ex 10 – Selecting Features by Location

Ex 11 – Preparing Data for Analysis

Ex 12 – Analyzing Spatial Data

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Lecture 5. GIS Data Ch.2,5

Lecture 5 Slides

Lecture 5 Study Questions

Ex 13 – Projecting Data in ArcMap Ch. 7-11

Ex 14 – Building Geodatabases

Ex 15 – Creating Features

Lecture 6. Data Quality Ch.6

Lecture 6 Slides

Lecture 6 Study Questions

Ex 16 – Editing Features and Attributes

Ex 18 – Making Maps from Templates

Ex 19 – Maps for Presentation