GEY 430/430L/630/630L – Geographic Information Systems (GIS) – Theory and Application - Spring 2004
Room LFG 105 – TR 11:30 am – 12:45 pm

Instructor: Dr. Catherine Snelson
Office Hours: TR 9:00 – 10:00 am or by appointment
Office: LFG 204
Office Phone: 895 - 2916
Email: csnelson@unlv.nevada.edu
Text: GIS Fundamentals: A First Text on Geographic Information Systems by P. Bolstad and Handout that will be distributed in class
Additional Optional Text: Getting to Know ArcGIS Desktop by Ormsby et al
Lab Instructors: Jonathan Zybala, Sam Hudson, and Eric Fossett

Purpose of the class
This class is designed as an introduction to the theory and application of geographic information systems. This course will focus on spatial data development and manipulation in the context of science. Topics that will be covered include, but are not limited to, creating maps, projections, various data types and related parameters, spatial datasets and analysis, and presentation. The lecture focuses on the theory of GIS while the lab focuses on the application of GIS using various computer programs on both Windows and UNIX platforms.

Course Objectives
Upon completion of this course, you will have hopefully acquired an introductory, but comprehensive understanding of the following topics:

1. ArcGIS, GMT, and ENVI software applications
2. Data sources and models
3. Map making skills including projections
4. Data entry and editing
5. Remote Sensing data
6. Databases and manipulation
7. Spatial analysis
8. Presentation

Grading

Homework Assignments	10%
Extended Quizzes	20%
Labs	40%
Final Project	30%

5 extended quizzes will be given during the semester to test the students knowledge of both lecture and lab material. Lab exercises will cover material from the lecture and applied using various software packages. Labs are typically due at the beginning of the next lab period; late assignments will not be accepted. Homework assignments will be given in lecture and are typically due the following week at the beginning of the lecture period. Graduate students should expect more lengthy assignments for homework. The final project will consist of a dataset

that is defined in class. Graduate studies will also be required to present their final project to the class during the last week of classes in a poster format. The final project is due at the end of the final exam period, May 11th at 12:10 pm.

Final grades are assigned on a percentage basis:
A = 100-90%, B = 89-80%, C = 79-70%, D = 69-60%, F = 59% or lower. A plus/minus system will also be utilized. Grades will not be curved. This means that you can study together to get great grades.

Labs
Labs will focus on the application of GIS using various software packages. The student will learn to apply the theory presented in lecture using these software packages. In addition to acquiring the expertise in GIS, the student will also learn how to present their results in a professional manner.

Succeeding!
To do well in this class you should study and work with the material daily. At the end of each day, read your notes and make sure that you understand what you wrote. Better yet, re-write your notes in a second notebook using complete sentences: if something isn't clear in your own mind it will be readily apparent to you. You should do this no later than 24 hours after class. Even though they are not assigned, write out answers to the questions at the end of each chapter. If you develop a study group, you will learn more and the experience will be more enjoyable. Keep up with reading assignments, labs, and lecture material. It is harder to come from behind than to stay engaged daily. If you get confused or have questions that have not been resolved in lecture or laboratory, then do not hesitate to contact me. If you cannot make any of the office hours, call or email for an appointment.

Logistics and Policies

1. Participation:
MAT 127 or 128 is required and some computer experience is necessary. This course is for both undergraduates and graduate student so I expect that students will come to this class with very different backgrounds and levels of educational training. As a result, you may find some material difficult, feel that you are already familiar with some of the concepts, or have personal experiences that can inform us all. Whatever your situation, please share your position with us through class participation. Most importantly, however, if you are confused about a concept, **please ask questions** in class for clarification and further explanation. You will not be alone in your confusion. There are many ways to present this material, and I will attempt to find one that works for you. If you do not feel comfortable asking questions in class, please write the questions down and drop them on the front desk as you enter the room and I will address them during class.

2. Attendance
It is important that you attend class daily because we cover a lot of material, and I will provide guidance for reading assignments and exam questions regularly. You are responsible for all material covered in lectures whether or not your absence is excused. If you miss a lecture, get the notes from a classmate. **Neither make-up lectures nor make-up exams will be given** except as specified below. Topics covered may vary from the schedule somewhat, but the exam dates remain fixed. If you are absent from either a scheduled lecture or a lab exam without a written medical or university excuse, you will receive a zero for the exam. Excused absences are evaluated on the average of the exams actually taken. All exams will focus primarily on the most recently covered materials presented in lecture, the laboratory, and reading

assignments. **Concurrent enrollment in a lab section is required.** You must enroll for a section of GEY 430L for zero credit hours or for graduate students GEY 630L.

3. Cheating, Plagiarism, and Academic Dishonesty

You are required to be familiar with university policies and procedures in the current UNLV Undergraduate Catalog. Importantly, we follow the policies on Cheating, Plagiarism, and Academic Dishonesty that are stated in the most recent UNLV Undergraduate Catalog. In the hopes of deterring incidents of cheating and/or plagiarism this class employs a **"zero tolerance"** policy meaning that if a student commits cheating or plagiarism they receive a grade of F for the class.

3. Copyright Issues

The university requires all members of the University Community to familiarize themselves and to follow copyright and fair use requirements. You are individually and solely responsible for violations of copyright and fair use laws. The University will neither protect you nor defend you nor assume responsibility for employee or student violations and fair use laws. Violations of copyright laws could subject you to federal and state civil penalties and criminal liability as well as disciplinary action under University policies. To help familiarize yourself with copyright and fair use policies, the University encourages you to visit its copyright web page at http://www.unlv.edu/committees/copyright.

4. Disability Services (DS)

If you have a **documented** disability that may require assistance, you will need to contact the Disability Services (DS) for coordination in your academic accommodations. Disability Services is located within Learning Enhancement Services (LES), in the Reynolds Student Services Complex, room 137. The DS phone number is 895-0866 or TTD 895-0652. You may visit their website at www.unlv.edu/studentlife/les. If you have a special need/disability, please let me know outside of class sometime during the first week of the course. This helps me to adjust or alter plans so that problems can be minimized and your learning experience can be maximized.

5. Writing Center

Students are welcome to use the UNLV Writing Center free of charge. Consultants can assist students at all stages of the writing process. Students may make appointments by calling the center (895-3908) or in person at FDH-240. The center can be particularly helpful when you are writing or rewriting your lab field reports.

6. Religious Holidays

A student missing a class or laboratory assignment because of observance of a religious holiday shall have the opportunity to make up missed work. You must notify me by the last day of late registration, January 26, to be assured of this opportunity. If this pertains to you, a clear deadline will be set for completion of work.

7. Nondiscrimination

The University of Nevada Las Vegas does not discriminate on the basis of race, color, creed, religion, national or ethnic origin, gender, age, sexual orientation, disability, or veteran status.

9. Official Extracurricular Activity

All students who represent UNLV at an official extracurricular activity shall have the opportunity to make up assignments, but you must provide official written notification to me prior to the missed class(es).

10. Learning Environment

The classroom is intended to be a place of learning. As such and as specified in the UNLV Undergraduate and Graduate Catalogs, no pagers, cell phones, or other potentially disruptive devices are allowed in either lecture or the laboratory.

CLASS SCHEDULE

Wk	Date	Lecture Topic	Assignment	Lab Topic
1	Jan 19	Introduction to GIS	Ch 1; HW 1	Lab Overview; Introduction to ArcGIS
2	Jan 26	Data Models	Ch 2	Practice with ArcGIS
3	Feb 2	Geodesy, Datums, and Projections **Quiz 1**	Ch 3	Introduction to GMT and Digitizing in ArcGIS
4	Feb 9	Data Sources and Data Entry	Ch 4; HW 2	GMT and Projections
5	Feb 16	GPS and accuracy	Ch 5 & 14	Map Transformations
6	Feb 23	Aerial and Satellite Images **Quiz 2**	Ch 6; Handout	Introduction to ENVI
7	March 1	Digital Data	Ch 7	DEMs, data formats
8	March 8	Attribute Data and Tables	Ch 8	Tables
9	March 15	Basic Spatial Analysis **Quiz 3**	Ch 9; HW 3	Vector Analysis
10	March 22	Topics in Raster and Terrain Analysis	Ch 10 & 11	Raster Analysis
11	March 29	Spatial Models and Modeling	Ch 12	Spatial Analysis I
12	**April 5**	**Spring Break**	**No Class**	**No Lab**
13	April 12	Spatial Interpolation **Quiz 4**	Ch 13	Spatial Analysis II
14	April 19	Environmental Applications in GIS	Handouts	Project Design
15	April 26	New Developments in GIS	Ch 15; HW 4	Final Project
16	May 3	Class Presentations		Final Project
17	**May 11**	**Final Exam Day** **Quiz 5**		**Final Project Due at 12:10 pm**