# **GEOG 250 – Introduction to Computer Mapping and GIS Fort Lewis College – Fall Semester 2009**

### **Course Information**

#### Time & Location: Lecture: 11:15 a.m. - 12:10 p.m. M W F, Berndt 234; Lab: 2:30 - 5:30 p.m. W *or* F, Berndt 570

Instructor: Scott White, Ph.D; office: Berndt 300; office hours: M T W H F 1:00 – 2:15 p.m. (or by appointment)

 contact: *white\_s@fortlewis.edu* or 247-7475

 class web page: http://faculty.fortlewis.edu/white\_s/classes/geog250.html

##### Required Texttbook Information

*Map Use: Reading and Analysis*, by A. Jon Kimerling, *et al*., 6th edition, ©2009 ESRI Press (ISBN 978-1-58948-190-9)

Textbook Student Resources: http://tinyurl.com/mapuse6

##### Course Description

In this class, you will be introduced to the study and design of maps, primarily through the application of a specialized computer mapping software program known as a **Geographic Information System (GIS)**. GIS is a map-based computer decision support system that allows for the investigation of geographic data relationships. People that are trained in GIS are in high demand today, both in government and private industry. The lecture sessions in this class will focus primarily on GIS-based mapmaking techniques, including map design, symbology, map coordinates and georeferencing systems. We will cover many important aspects of mapmaking, including map data collection and processing, field methods and GPS, cartographic communication, topographic map reading and analysis, and qualitative and quantitative mapping techniques. “Laboratory” exercises will deal primarily with the design and creation of maps using GIS software. In the lab sections, you will use ArcGIS (ArcInfo) 9.3.1, the latest version of the world’s most widely-used professional GIS program. Many of the lecture topics and lab assignments will examine the use of GIS in the natural and physical sciences.

There are no prerequisites for this course, however I do expect basic high school-level competency in geometry and algebra. Also, a good understanding of Windows-based computers is *strongly* recommended for success and happiness with GIS.

##### Grades and Assignments

Grading follows the typical A, B, C, D, and F scheme, with + and – counting towards your final course grade:

A = 93-100 B+ = 87-89 C+ = 77-79 D+ = 67-69 F = < 60

A- = 90-92 B = 83-86 C = 73-76 D = 63-66

 B- = 80-82 C- = 70-72 D- = 60-62

Your course grade will be based on the following…

1. Exams – three lecture exams consisting of a mix of multiple choice and short answer/essay questions. Each exam will count towards **10%** of your final course grade (**30%** total). See the schedule on page 3 for exam dates.
2. GIS Lab Exercises – a total of 12 GIS and related mapping lab exercises will be assigned during the semester.
A composite lab score will be scaled to 100 and will count towards **45%** of your final course grade. For more information on labs, see the Lab Policies on page 2 and the schedule on page 3.
3. Other Assignments – approximately 4 homework or in-class assignments will count towards **5%** of your final course grade.
4. Final Map Project – the GIS lab exercises will culminate with the Final Map Project. This assignment will count towards **20%** of your final course grade, and will consist of a large, poster-sized map consisting of several related maps, images, and text. The final map project topic will be announced later in the semester. Your complete Final Map Project is due on Monday, December 14, at 5:00 p.m.

**GEOG 250 and Fort Lewis College** – **Information and Policies**

* Make-up exams/quizzes will only be permitted if you have a valid excuse – I determine the validity. Please note that vacations, hunting trips, and other personal journeys for fun or profit *do not* constitute excused absences. Make-up exams may be different from those given to the other students, and may consist totally of short answer and/or essay questions.
* Individual exam grades *are not curved*, but final course grades may be adjusted at the end of the semester.
* Exam #3 during finals week is *not* comprehensive.
* No extra credit assignments will be offered, although extra credit points may appear on some exams.
* If English is not your primary language, you may use a dictionary during the exams – you *must* let me know in advance.
* GIS labs run from 2:30-5:30 p.m. on Wednesday or Friday. I expect you to be in attendance and working on your weekly lab assignment from 2:30-4:30. After 4:30, you may choose to either stay until 5:30 (or later), or move on to some new endeavor. I will be available for help and assistance during the entire three-hour period.
* I will *not* allow students to switch lab days after Census Date (September 15). This policy is non-negotiable.
If you are going to have problems committing to your assigned lab day, then you should take a different course.
* Lab assignments are due at the start of the next lab period, unless otherwise indicated by your instructor. Unless prior arrangements have been made, late lab assignments will *not* be accepted.
* Much of the lab work can be finished during the three-hour time period; however, some lab exercises will require you to spend time with GIS outside of the normal lab hours. Berndt 570 hours are posted outside of the room.
* You are responsible for all materials presented during class and lab. I will not regularly record your attendance, but it is definitely in your best interests to come to each class since the exam questions will come primarily from the lecture notes. The last day to drop this class without a recorded grade is Tuesday, September 15 (Census Date). After that date, withdrawals will only be allowed if you have a documented medical or family condition that keeps you from completing this course. It is your responsibility as a student to ensure that you are properly enrolled in this course. It is not possible to add courses after the Census Date. Login to WEBOPUS to verify your enrollment status.
* Students with disabilities have equal access and equal opportunity in this course. If you require reasonable accommodations to fully participate in course activities or meet course requirements, you must register with Disability Services, Noble 280, 247-7459. If you qualify for services, bring your letter of accommodation to me as soon as possible.
* Cheating and plagiarism will *not* be tolerated, and may result in a zero score on the assignment in question, a final course grade of F, and/or referral to the Vice President for Student Affairs. I expect that all students will abide by the FLC Student Conduct Code.

Finally, please turn off your cell phone before entering the classroom or lab. Be considerate of your fellow students and your professor. If you can’t bear to be without your phone, perhaps you should stay at home.



##### GEOG 250 Lecture and Lab Schedule

(subject to change)

[ Textbook Key: *MU* = *Map Use* ]

### Week of…Lectureand ***Lab*** Topics **Text Chapter**

8/31 Introduction to Maps (old and new); History of Cartography *MU* Introduction

 ***Lab 1: Exploring Maps and Imagery*** [non-GIS]

9/7 Introduction to GIS\*; Applications of GIS\*; Digital Map Data *MU* Appx. A

 ***Lab 2: Geodata Exploration with ArcMap and ArcCatalog***

9/14 Map Design Basics\*; Color and Typography\*

 ***Lab 3: Map Design and Layout***

9/21 The Earth and Earth Coordinates; Map Scale *MU* 1, 2

 ***Lab 4: Working with Digital Vector and Raster Data Sets***

9/28 **EXAM #1** (Monday, 9/28); Map Projections; Grid Coordinate Systems *MU* 3, 4

 ***Lab 5: Exploring Map Projections and Coordinate Systems in ArcGIS***

10/5 Land Partitioning; Navigation with GPS and Geocaching *MU* 13, 14

 ***Lab 6: Navigation with GPS***

10/12 Map Accuracy, Uncertainty, and Metadata *MU* 10

 ***Lab 7: Mapping with GPS and GIS***

10/19 The U.S. Geological Survey (USGS) and Topographic Mapping *MU* 6

 ***Lab 8: Map Analysis Using USGS Topographic Maps*** [non-GIS]

10/26 Relief Portrayal and USGS Digital Map Data *MU* 16

 ***Lab 9: 2-D and 3-D Terrain and Image Mapping***

11/2 **Exam #2** (Monday, Nov. 2); Qualitative Thematic Maps *MU* 7

 ***Lab 10: Mapping and Symbolizing Qualitative Thematic Data***

11/9 Quantitative Thematic Maps *MU* 8

 ***Lab 11: Quantitative Thematic Mapping Techniques***

11/16 Remote Sensing and Image Maps *MU* 9

 ***Lab 12: Working with Aerial and Satellite Imagery***

11/23 ☺☺☺☺☺☺☺☺☺ THANKSGIVING BREAK ☺☺☺☺☺☺☺☺☺

11/30 The Business of GIS\*

 ***Work on Final Map Project***

12/7 Neogeography: The Geoweb, Mashups, Virtual Globes, and the Future of GIS\* ***Work on Final Map Project***

12/17 **EXAM #3** (Thursday, December 17, 7:30-9:30 a.m.)

Topics marked with an \* symbol above are not covered in detail in your *Map Use* textbook.
Additional readings may be provided.