

50-371/571: CARTOGRAPHY

Spring 2008

Lectures: Tuesday & Thursday (8:00 – 9:30AM) in Halsey 367

Labs: Wednesday (10:20 AM – 12:30 PM or 1:50 – 4:00 PM) in Halsey 304

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Office Hours: Monday (1:50-2:50PM); Tuesday & Thursday (9:40-11:10AM); other hours by appointment.

Readings: Kimerling, Muehrcke & Muehrcke. *Map Use: Reading, Analysis, Interpretation*. 5th ed. JP Publications, 2005.
Selected internet sources (details provided in class)
Handouts and/or reserve materials (details provided in class)

COURSE GOALS AND OBJECTIVES

Geography 371 will focus on the study of maps as basic tools in geography and other social and natural sciences. Cartography is both an art and science of communicating spatial information with maps. The principal goals of this course are to acquaint students with basic concepts of cartography as graphical means of communication; develop skills in map design, reading, analysis and interpretation; and promote the principles of cartographic ethics and use acquired knowledge and skills adequately and responsibly in private, professional, and public life. In other words, it is expected that students, after completing this course, will acquire a certain amount of **knowledge** about cartography as one of several geographic techniques; gain significant **skills** in computer graphics and map design and production; and develop a great **appreciation** for maps as communication, reference and research tools.

COURSE STRUCTURE AND CLASS ACTIVITIES

Cartography is a four-credit course, and it consists of two closely related components: lectures and labs. The lectures (three hours a week) are designed to present information on the theory and practice of cartography, and labs (two hours a week) will focus on practical applications of cartographic theory in the design and production of maps using computer graphics software. Major topics covered in this class include: an overview of cartography; map reading, analysis and interpretation; cartographic design, new technologies (computers) and cartography, and cartography and the society.

The lectures on the first topic (overview of cartography) will focus on the definition of cartography and maps, major map components, and different types of maps. The second unit devoted to map reading, analysis and interpretation, will cover the scientific and mathematical fundamentals of mapping, including the shape and size of the earth, map scale, several types of spatial reference systems, map projections (basic characteristics and their suitability for map making), and topographic map reading. In lectures devoted to cartographic design, information about the design process and techniques, including data classification, map generalization and symbolization will be provided. Color theory and models (the nature of color and color vision, color dimensions, and color modeling systems), typography and lettering, and the modern map production process will also be covered in this section. The impact of new technologies on cartography, including GIS, computer cartography, and the internet will be discussed next. Finally, under the topic of cartography and society, cartographic misinformation (map misuse), history of cartography, and selected maps and atlases produced in the U.S. and other countries will be discussed.

Lab activities will focus on practical applications of cartographic theory in the design and production of maps using computer graphics and mapping software (Adobe Illustrator and MapViewer). During the first two lab sessions, students will learn the basics of the Adobe Illustrator graphics software by experimenting with various drawing tools and object management techniques and preparing a simple (hypothetical or real) map with this software package. Another exercise will require tracing a scanned map and preparing a new map (somewhat different from the original scan) with the same

software. The next lab sessions will be devoted to the production of several types of graphs with Adobe Illustrator using statistical information collected by the student. A project on map projections will require generating several maps of the same area in different projections. The next several labs will focus on production of various thematic (quantitative) maps, including a choropleth, proportional symbol, pie chart, bar graph, flow, surface, and contour maps. Two lab sessions will be devoted to designing a cartographic poster (putting together most of your previously generated maps and graphs). During the last lab meeting students will display and briefly discuss their poster projects.

COURSE OUTLINE

Lectures (Tuesday & Thursday)			
Date	Major Topic	Specific Topic	Readings (Textbook)
February 5 (T)	Overview of Cartography	Introduction to the Course	
February 7 (R)		Introduction to Cartography	Introduction
February 12 (T)	Map Reading	Earth Coordinates	Chapter 1
February 14 (R)		Map Scale	Chapter 2
February 19 (T)		Map Projections	Chapter 3
February 21 (R)		Map Projections	Chapter 3
February 26 (T)		Spatial Reference Systems	Chapter 4
February 28 (R)		Land Partitioning Systems	Chapter 5
March 4 (T)		Relief Portrayal and Contour Interpretation	Chapter 8
March 6 (R)	EXAM 1		
March 11 (T)	Cartographic Design	Cartographic Communication and Map Making	D2L materials
March 13 (R)		Color Theory	D2L materials
March 18 (T)		Cartographic and Thematic Data	Chapters 6-7
March 20 (R)		Map Generalization and Classification	D2L materials
April 1 (T)		Map Generalization and Classification	D2L materials
April 3 (R)		Map Symbolization and Typography	D2L materials
April 8 (T)		Map Layout and Visual Hierarchies	D2L materials
April 10 (R)	Cartographic Poster Design	D2L materials	
April 15 (T)	EXAM 2		
April 17 (R)	New Technologies and Cartography	Maps and Internet	D2L materials
April 22 (T)		Maps and Internet	D2L materials
April 24 (R)		Maps and Internet	D2L materials
April 29 (T)		Computer Cartography	Chapter 19
May 1 (R)		Geographic Information Science	Chapter 19
May 6 (T)	Cartography and Society	History of Cartography	D2L materials
May 8 (R)		Maps and Reality	Chapter 25
May 13 (T)		Selected Maps and Atlases	D2L materials
May 15 (R)	EXAM 3		

Labs (Wednesday)

Date	Topic	Projects
February 6	Introduction to Adobe Illustrator	
February 13	Drawing a Simple Map in Adobe Illustrator	Simple map drawing
February 20	Tracing a Scanned Map	
February 27	Tracing a Scanned Map	Scanned map drawing
March 5	Graphing in Adobe Illustrator	
March 12	Graphing in Adobe Illustrator	Statistical graphs
March 19	Introduction to MapViewer	
April 2	Introduction to MapViewer	Map projections
April 9	Choropleth and Proportional Symbol Maps	
April 16	Bar Graph and Pie Chart Maps	Thematic maps
April 23	Contour and Flow Maps	
April 30	Surface Maps and Cartograms	Thematic maps
May 7	Cartographic Poster Design	
May 14	Poster Project Presentation	Class presentation

ATTENDANCE POLICY

Students are expected to be present for each scheduled class session. The instructor may monitor attendance at some class sessions. In this course, reading assignments and lectures are intended to complement, not duplicate, one another. Therefore, it is very important that the student maintain a good attendance record. In all cases of absence, the student is responsible for completing missed work. Attendance may be taken, as a matter of record keeping, to provide insights into the problems experienced in exams and projects. Attendance will not count as a grading factor per se, but experience indicates that students missing lectures do not perform as well as those who are present. Students may only attend courses/sections for which they are registered. It is the responsibility of the student to know the attendance policy of the instructor.

STUDENT REQUIREMENTS

Regular attendance and timely completion of assignments are essential to successful performance in this course. Reading assignments must be read before the lecture on each topic. Without adequate preparation on the part of the student, some parts of the lecture may be unclear.

Computers are widely used to prepare professional graphics, including maps. We will be using Windows XP machines in the GIS Lab, the **Adobe Illustrator** (graphics) and **MapViewer** (mapping) software packages. Students who are uneasy working with computers should regard this course as an opportunity to overcome their discomfort with machinery they will inevitably encounter in the workplace. It is essential that students who are unfamiliar with computers take extra time (beyond scheduled lab hours) in the first few weeks of the course to familiarize themselves with the equipment and software.

Computer files may be lost for a variety of reasons such as system crashes or accidental deletions. Losing a file is not an acceptable reason for submitting an assignment late. Saving your working files on a regular basis (every 10-15 minutes, if not more often) onto your personal disk space on hard drive and onto a ZIP/CD/memory stick at the end of a work session prevents you from unpleasant surprises. Students are responsible for purchasing an external storage device (ZIP/CD/memory stick) to store and back-up their lab assignments.

Each student will also have to prepare six (6) lab **projects**. Handouts and additional information for each project will be given in class, and most of each lab session will be reserved for working on the assignment. However, most assignments

may require additional time for completion, and students can use the GIS or Cartography labs for that purpose at any time convenient for them (if the labs are not used by other classes, of course). Each student will also have to give a brief **class presentation** on a topic selected by the student and approved by the instructor. The presentation will explain the design, production, and content of several thematic maps prepared by the student. It is expected that most maps and graphs (preferably, all of them) will be generated by the student as previous lab assignments.

EXAMS, PROJECTS AND GRADING POLICY

The final grade in the course will be determined on the basis of the student's performance on three exams, ten lab projects and the poster project. The significance of each activity in assigning the final grade is as follows:

Activity	Maximum number of points for each activity	Total maximum number of points for each activity
Examinations (3)	50	150
Lab projects (6)	25	150
Poster presentation	50	50
TOTAL	-	350

Three equally weighted **exams** are scheduled in this course. The exams are non-comprehensive and will cover material in the proceeding unit of study. The exams will be based on material presented in lecture, lab assignments, and assigned readings. The examinations will consist of multiple-choice, fill in the blank, short answer, identification, and matching questions. The number of questions in particular categories may vary on each exam.

If the student has a valid excuse for missing exam then taking a makeup is permitted. However, the student must notify the instructor no later than the next day to explain his/her absence and schedule a make-up exam. Failure to promptly and adequately explain the student's absence will result in receiving zero points from a missed exam. Students must bring their student I.D. cards with them to all exams.

The following scale will be used in determining the final grade:

Grade	Points	Percentage
A	329-350	94-100
AB	308-328	88-94
B	287-307	82-88
BC	266-288	76-82
C	245-265	70-76
CD	224-244	64-70
D	203-223	58-64
F	0-202	0-58