GTECH 380/722
Analytical and Computer Cartography
Hunter College, CUNY
Department of Geography

Fall 2011
Mondays 5:35PM to 9:15PM

Instructor: Doug Williamson, PhD
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Text (REQUIRED):

- ✓ Krygier, John and Denis Wood, 2011, *Making Maps: A Visual Guide to Map Design for GIS (2nd edition),* The Guilford Press
- ✓ Additional Readings to be provided in class and electronically.

Supplemental Readings (NOT required):
Selected readings from the following texts may be used, but it is not necessary to purchase these.

- ✓ Brewer, Cynthia. 2005 *Designing Better Maps,* ESRI Press, Redlands Ca.
- ✓ Brewer, Cynthia. 2007 *Designed Maps,* ESRI Press, Redlands Ca.
- ✓ Ormsby, 2008 *Getting to Know ArcGIS (second edition)*, ESRI Press, Redlands Ca.
  Comes with a 120-day trial version of ArcView 9.3, which will be useful for class assignments. If you have a PC running Windows 2000, NT, or XP, you should install the software on your own computer. If not, the GIS lab will be available for you to do your assignments.

Relevant Books (NOT required):

- ✓ Clarke, Keith C. 1995 *Analytical and Computer Cartography*. 2nd ed. Englewood Cliffs, NJ: Prentice Hall.
- ✓ Dent, Borden D. 1999. *Cartography: Thematic Map Design*. 5th ed. McGraw Hill: Boston.
- ✓ Peterson, Michael P. 1995. *Interactive and Animated Cartography*. Englewood Cliffs, NJ: Prentice Hall.
- ✓ Slocum, Terry A. 1999. *Thematic Cartography and Visualization*. Upper Saddle River, NJ: Prentice Hall

Course Overview:
GTECH 380/722 is designed as an introduction to modern cartographic theory and conventions, but also provides significant introductory hands-on experience in map design using computer software, specifically ESRI's ArcView GIS. The majority of topics covered in the course are divided into a lecture and laboratory section. Students are presented with fundamental design theories and principles associated with particular types of maps or related graphic materials in lectures, and then challenged to implement these principles in self guided hands-on exercises utilizing the software. The course is intended to cover the basic principles of cartography as well as modern techniques which influence map design, presentation, and interpretation processes. Students will develop a series of hard copy maps, charts, and graphics as well as design materials for presentation through digital media. With the exception of the instructor's lectures, the class will consist primarily of class discussion. All students are encouraged to participate and add to class discussions using knowledge from their own experiences, class readings, and/or additional readings.

A note about technology… while a familiarity with computer technology is important and we will be spending a considerable amount of time using specific software, this is not the focus of the class. As we all know, technology by definition is always changing. However, the principles that lead to good map design remain the constant. **This class will emphasize design principles that transcend technology.**

Course Objective:
This course is designed to introduce you to maps and digital mapmaking. You will learn the fundamentals of compiling, designing, and using maps and mapped data. You will also learn the concepts and theory related to cartographic design and digital methods of production. The goal of this class is to teach you how to recognize, appreciate, and incorporate cartographic principles to make effective and esthetically pleasing maps.

Selected Lecture Topics:

- A Brief History of Cartography
- Cartographic Design Fundamentals
- Map Symbology
- Map Typography
- Map Projections, Coordinate Systems, and Scale
- Thematic Map Types
- Color-Use Guidelines
- Mapping Three Dimensional Data
- Digital Graphics
- Geographic Visualization

Policies:

Attendance

- Attendance is crucial, as I will be covering information in class that is not in the text.
- As with most math and science courses, you will need to understand material learned in earlier labs in order to complete later labs. If you get behind in this course, it is very difficult to catch up.

Academic Integrity

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

Special Accommodations

If you need special accommodations, I encourage you to see me during my office hours or by appointment.

Lab Policies

Read and follow the lab rules. They are located here: http://geography.hunter.cuny.edu/techsupport/rules.html

Grading: Evaluation of your performance in this course will be based on both lecture and laboratory components. Assignments will be graded on how well they meet the objectives of the specific assignments and the amount of attention paid to the details of map making. In short, YOUR grade is YOUR choice. If you contribute often to class discussions and put in 'a little extra effort' on each assignment you will get an A. If you fail to come to class, miss assignments or turn in substandard work, your grade will suffer. A note on the final project... For this, you will be graded by your peers based on what they have learned throughout the semester as to what Quality in Cartography looks like compared to your final project.

- Map Journal 10%
- Assignments 30%
- Final Project 30%
- Final Exam 10%
- Participation 20%

Assignments:
There are a number of assignments that are due throughout the semester. The assignments and brief descriptions are as follows:

1) **Map Journal.**
Maintain a journal of cartography examples you encounter during the course of he semester. If you come across map images on a website print out a hard copy. Be sure to include the link to the site. If the maps are from newspapers or magazines, be sure to include the bibliographic reference. In addition to the maps themselves, you should annotate the journal with BRIEF critiques of the maps, e.g. things you liked, things you didn't like, elements that worked, elements hat didn't, was the map effective, etc. There must be **at least** 25 entries in your journal by the end of the semester.

2) **ArcGIS Exercises.**
You will be performing several 'hands-on' exercises developed to teach you fundamental cartographic concepts and techniques.

3) **Final Project**
Create a presentation quality map from a variety of data sources using techniques learned in class

4) **Map Critique**
Chose one low quality map and write a formal critique for each, explaining why it fails. Additional details will be provided for this assignment on Blackboard.

5) **Map Redesign**
Redesign a low quality map so that it effectively communicates to the map reader.

Numbers 1-4 apply to ALL students. Number 5 is for grad students only.

A note on map grading: Maps will be based on a scale from 1 to 25. The following sheet will be used in grading map exercises. Each item will be worth one point. Therefore, in order to get a perfect score (25), all of the following must be answered 'Yes'.

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Map Grading Criteria

Name _____

Map _____

General

___ Can you readily understand the overall purpose of the map and how it is to be read?

___ Stand back from the map. Does your eye fall on important elements (or an oversized or overly bright unimportant element)?

___ Are all necessary elements included? Are all unnecessary elements excluded? Are these choices appropriate?

___ Is the map professional in appearance (polished) and worthy of publication?

___ Is there a visual hierarchy? Is there an appropriate use of figure/ground contrast?

Color

___ Do the colors clash or clutter?

___ Are there an appropriate number of colors (or are there too many or too few colors)?

___ Do they add emphasis in appropriate places/ways?

___ Do the colors help the reader in interpreting the map?

___ Are the colors sufficiently distinct (or are any colors too close or not different in hue, value and saturation?

Symbology

___ Is the symbology appropriate to the use of the map?

___ Do the classifications or color values make sense for different feature types?

___ Does the map make appropriate use of conventional or intuitive symbology?

Data

___ Are the data appropriate to the use and/or intended message of the map?

___ Is the scale of the map appropriate to its intended use?

___ Does the data in the map match the scale? In other words, do the features have too little detail (they look blocky) or too much (their boundaries are too convoluted)?

Text

___ Does the layout have an appropriate number of fonts (or are there too many)? Fewer fonts and font styles make for cleaner layouts.

___ Is the choice of font appropriate to the map's use and to the feel of the layout?

___ Are the labels, titles, legend labels, etc. in an appropriate size, location, and/or color?

___ Are all necessary textual elements in the layout?

Layout

___ Are the elements in the layout distributed in a balanced or appropriate way?

___ Are the sizes of the elements appropriate and balanced?

___ Does the layout have enough (or too much) negative space?

Meta Information

___ Does the mapmaker credit appropriate sources, including themselves?

___ Do you have all the information you will need to interpret the map appropriately?

Fall 2011		GTECH 380/722: Computer Cartography SUBJECT TO CHANGE!!!		Doug Williamson
Week	**Date**	**Topic**	**Reading(s)**	**Assignment**
1	29-Aug	Introduction Map Functions and Cartographic Process	*Chapter 1-3*	
2	5-Sep	NO CLASS (Labor Day)		
3	12-Sep	Earth Geometry Map Projections and Distortion Generalization Scale Effects on Map Data	*Chapters 5,6 & 8*	
4	19-Sep	Map Design	*Chapter 7*	Map Critique Due
5	26-Sep	Visual Variables	*Chapters 9*	Draft Exercise 1: Due
6	3-Oct	Thematic Maps and Symbology	*Chapter 10*	Final Exercise 1: Due
7	10-Oct	NO CLASS (Columbus Day)		
8	17-Oct	Typography	*Chapter 11*	Draft Exercise 2: Due
9	24-Oct	Color 1	*Handouts*	Final Exercise 2: Due
10	31-Nov	Color 2	*Handouts*	Draft Exercise 3: Due
11	7-Nov	Mapping Enumerated Data & Tables, Graphs and Charts	*Chapter 12*	Final Exercise 3: Due
12	14-Nov	Mapping Higher Dimensions	*Handouts*	Map Journal Review
13	21-Nov	More Useful Tips and ArcGIS Hacks		Draft Exercise 4: Due
14	28-Nov	History of Cartography ***Guest Lecturer: Matt Knutzen NYPL Map Division***		Final Exercise 4: Due
15	5-Dec	Critique of Final Project Drafts	*Handouts*	**Draft Final Project Due**
16	12-Dec	**Final Project Display**		**Final Project Due**
17	19-Dec	**Final Exam**		