

GEOG 381 Computerized Map Design (Maps and Graphic Methods) (Spring 2007)

Web site → <http://geography.sdsu.edu/People/Pages/tsou/geog381/>

Lectures: Tue. / Thur. 8:00am - 8:50am
Labs: Tue. / Thur. 9:00am - 10:20am

Location: Storm Hall 248
Lab room: Storm Hall 338

Instructor: Dr. Ming-Hsiang (Ming) Tsou
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Office Hour: Monday 4:00pm- 5:00pm
Tuesday 4:00pm- 5:00pm
or by appt. (619) 594-0205

Office Hour: TBD

Overview:

Cartography is a synthesis of science, techniques, and art. This course introduces students to cartographic design and principles. The lectures will emphasize the construction of maps with modern methods by using computers and GIS software. The map construction includes scale, projections, generalization, symbols, classification, color scheme, and visualization. The lab exercises will provide hands-on experiences and equip students with the fundamental skills for advanced GIS courses and computer mapping. Besides the basic training in cartographic techniques, the major goals of this class are to:

1. Understand the principles of cartographic design and map construction.
2. Generate maps with appropriate cartographic skills.
3. Encourage students to explore advanced cartographic issues, such as visualization, on-line mapping, and cognitive science.

Required Textbooks:

Dent, Borden D. 1999. *Cartography: Thematic Map Design*, 5th ed., Dubuque, Iowa: W.C. Brown Publishers.

Tsou, M. 2004, Lecture notes for GEOG381: Computerized Map Design (Maps and Graphic Methods)

Additional reading and lecture notes will be available in the Geography Department Reading Room (Storm Hall 319).

Lectures:

Lectures focus on the introduction of principles of cartographic design, including map construction, projection, visualization, generalization, and uncertainty.

Lab Exercises:

Students must attend and **sign-in** for each lab session, meeting twice every week. Lab exercises focus on the training of cartographic skills by using Freehand computer drawing software and the ArcView GIS package. Students are required to attend full lab periods to receive a passing grade. To encourage good attendance, **TWO points will be taken off the whole course final grade for EACH missed lab.** Lab assignments are due at the beginning (8:00am) of the lab due day. Late assignments will be docked 20% per day, and will be effective at the lab on the due date. Students must hand in all assignments by **noon, Friday, May 11, 2007** to receive a passing grade regardless of how many points have been docked.

Grading: **Class participation (lectures): 5%;** **Lab exercises: 50%;**
 Midterm Exam: 20%; **Final Exam: 25%**

WEEK	LECTURE	READING	LAB EXERCISE
1	18 Jan Introduction - Cartographic Process Map Functions and Types	Ch. 1: 2-22	No lab on first week
2	23 Jan 25 Map Design: Abstraction/Constraints Map Projections	Ch 2: 25-46	Freehand tutorial Electronic Atlas Map
3	30 Jan 1 Feb GPS and Remote sensing Generalization Controls and Elements	Ch 3: 47-65	Electronic Atlas Map
4	6 Feb 8 Scale Effects on Map Data, Typography	Imhoff Ch.14:268-287	Projections for Map Design
5	13 Feb 15 Map Composition and Visual Variables Thematic Map Symbols	Ch.13: 236-266	Scanning and Layout
6	20 Feb 22 Line Symbols	Ch. 4: 67-88	Scanning and Layout Type Placement
7	27 Feb 1 Mar Area Symbols Use of Color I	Ch. 11:207-219	Type Placement Visual Balance
8	6 Mar 8 Mar Use of Color II, Graphing	Ch.15: 288-309 Brewer	Visual Balance Color Map Composition
9	13 Mar 15 Measuring Map Pattern	Ch. 18: 358-384	Color Map Composition
10	20 Mar 22 (Review Exam) Midterm EXAM (20)		Google Map (optional) (no lab on March 22)
11	27 Mar SPRING BREAK		NO LAB
12	3 Apr 5 Choropleth mapping	Ch. 5: 97-121	Choroplethic Mapping ONE
13	10 Apr 12 Dasymetric mapping Mapping Enumerated Data	Ch. 7: 138-159	Choroplethic Mapping TWO
14	17 Apr 19 AAG Meetings (No class)		NO LAB
15	24 Apr 26 Data Classing Mapping Uncertainty	Fisher, Evans Buttenfield	Choroplethic Mapping THREE
16	1 May 3 May Introduction to GIS Internet Mapping and Multimedia	Ch. 6: 110-135	Choroplethic Mapping THREE
17	8 May Map Use and Misuse		Choroplethic Mapping THREE (Lab-9 due at noon)
	10 May	Final Exam (25) Storm Hall 248, Time: 8:00-9:10am	
	11 May	All Missed Labs Due Day (Noon)	

Additional Readings: (located in Storm Hall 319 or on-line <http://ecr.sdsu.edu/> → **Electronic Reserves & Reserves Pages -> type "GEOG381" → password: _____)**

Brewer, C. A. 1994 Color Use Guidelines for Mapping and Visualization. In MacEachren, A. M. and Taylor, D.R.F. (eds.) *Visualization in Modern Cartography*. New York: Elsevier: 123-147. (in reading room)

Buttenfield, B. P. 1999 Visualizing Ecological Uncertainty. Chapter 6 in Hunsaker, C., Goodchild, M.F., Friedl, M. and Case, T. (Eds.) *Uncertainty in Spatial Data for Ecological Analyses*. New York: Springer-Verlag. **(Electronic version is in the SAL lab PC: Z: drive → Z:/Readings/babs/babs.htm)**

Evans, I.S. 1977 The Selection of Class Intervals. *Transactions, Institute of British Geographers*, 2: 98-124.

Fisher, W.D. 1958 On Grouping for Maximum Homogeneity. *Journal of the American Statistical Association*, vol. 53(Dec): 789-798.

Imhoff, E. 1975 Positioning Names on Maps. *The American Cartographer*, vol. 2(2): 128-144.