GEOG 381 Computerized Map Design (Fall 2009)

Web site \rightarrow <u>http://geography.sdsu.edu/People/Pages/tsou/geog381/</u>

Lectures: Tue. / Thur. 8:00am - 8:50am	Location: Storm Hall 248
Labs: Tue. / Thur. 9:00am - 10:20am	Lab room: Storm Hall 338 (SAL)

Instructor:	Dr. Ming-Hsiang (Ming) Tsou	TA:	Diana Smith
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Office Hour:	Monday 4:00pm- 5:00pm		(619) 5940404
	Tuesday 4:00pm- 5:00pm		
	or by appt. (619) 594-0205		

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, B. D., Torguson, J. S., and Hodler, T. W. (2009), *Cartography: Thematic Map Design*, 6th ed., New York, McGraw-Hill.

Tsou, M. 2008, Lecture notes for GEOG381: Computerized Map Design (Maps and Graphic Methods)

Additional readings are available on the digital archive of Y:(Twister_g381)/readings folder. (in SAL lab) and the On-line ECR (Electronic Reserves & Reserves Pages).

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 ArcGIS software 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 date. 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 **5pm, December 15, 2009** to receive a passing grade (D- or above) regardless of how many points have been docked.

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

WEE	K	LECTURE	READING	LAB EXERCISE	
1	1 Sep 3	Introduction - Cartographic Process	Ch. 1	No lab on first week	
2	8 Sep 10	Map Functions and Types Map Design: Abstraction/Constraints	Ch. 2	Freehand tutorial Electronic Atlas Map	
3	15 Sep 17	Map Projections GPS and Remote sensing	Ch. 3	Electronic Atlas Map	
4	22 Sep 24	Generalization Controls and Elements Scale Effects on Map Data	Imhoff	Projections for Map Design	
5	29 Sep 1 Oct	Typography Map Composition and Visual Variables	Ch.13 Ch. 4	Scanning and Layout	
6	6 Oct 8	Thematic Map Symbols	Ch. 4	Type Placement	
7	13 Oct 15	Line and Area Symbols		Visual Balance	
8	20 Oct 22	(Review Exam) Mid-term Exam (20)		ArcGIS Color Map (continue lab session after the mid-term exam)	
9	27 Oct 29	Use of Color (Distribute Exam quest.)	Ch.14	ArcGIS Color Map	
10	3 Nov 5	Graphing	Ch. 17	ArcGIS Color Map	
11	10 Nov 12	Data Classing Mapping Enumerated Data	Ch. 5	Choropleth Mapping ONE	
12	17 Nov 19	Choropleth mapping Dasymetric mapping	Fisher, Evans Ch. 6	Chorpleth Mapping TWO	
13	24 Nov 26	(Furlough Day: NO class) Thanksgiving Day: NO class		NO LAB	
14	1 Dec 3	Mapping Uncertainty Introduction to GIS	Buttenfield	Choropleth Mapping THREE	
15	8 Dec 10	Internet Mapping and Multimedia Map Use and Misuse	Ch. 16	Choroplethic Mapping THREE	
	15 Dec	Final Exam (25) Time: 8:00-9:10am		LAB open	
	15 Dec All Missed Labs Due Date (by 5pm to the Instructor's mailbox TSOU)				

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

(Electronic version is also available in the SAL lab network drive Y:/Readings/ folder)

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.

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.

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.