GEOG 381- Computerized Map Design   (Fall 2017)
Web site → **http://map.sdsu.edu/geog381/**
Blackboard (for email and lecture notes only): https://blackboard.sdsu.edu/
Facebook: https://www.facebook.com/SDSUgeospatial

Lectures: Tue. / Thur. 8:00am - 8:50am   Location: Storm Hall- 316
Lab Section: Tue. / Thur. 9:00am - 10:20am (TA: Melanie)   Lab room: Storm Hall-324 (SAL lab)

Instructor: Dr. Ming-Hsiang (Ming) Tsou   **TA:**
Storm Hall Room 313C   Melanie Lopez (M.S. student)
mtsou@mail.sdsu.edu   **mmlopez2@sdsu.edu**

Office Hour: Tuesday 10:30am- 12:00pm
or by appt. (619) 594-0205 or email (preferred).

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 (ArcGIS and ArcGIS Online) 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.

Textbooks:
- (Optional) Dent, B. D., Torguson, J. S., and Hodler, T. W. (2009), *Cartography: Thematic Map Design*, **6th ed**., New York, McGraw-Hill.
- **(Required) Tsou, M. 2012, GEOG.381. Lecture notes: Computerized Map Design (Maps and Graphic Methods)** (available at SDSU Book Store and Blackboard).

Additional readings are available on the Black Board.

Lectures:
Lectures focus on the introduction of principles of cartographic design, including map construction, projection, visualization, generalization, and uncertainty. **In-lecture Quizzes and Exercises (10% total grade) will be given randomly during the lectures. Students cannot re-take or make up the quizzes or exercises after the lectures except for personal health reasons or advanced notices by emails (at least one week before the lecture).**

Lab Exercises:
Students must attend and **sign-in** for each lab session, meeting twice every week. If you cannot attend the lab sessions or lecture sessions, you need to **email both the TA and the Instructor (Tsou) before the session** and explain the reason you cannot attend the sessions. Lab exercises focus on the training of cartographic skills by using the ESRI ArcGIS software package. Students are required to attend full lab periods to receive a passing grade. To encourage good attendance, **TWO points (total grade) 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 lab assignments by **5pm, December 18, 2017** to receive a passing grade (D- or above) regardless of how many points have been docked.

Grading: **Class participation (lectures): 5%;**   **In-lecture Quizzes and Exercises: 15%**
                               Lab exercises: 25%; Individual Mapping Project: 15%;
                               Midterm Exam: 20%; Final Exam: 20%

WEEK		LECTURE	READING	LAB EXERCISE
1	29 Aug 31	Introduction - Cartographic Process (library reference assignment)	Ch. 1	**No lab on first week** (Create ESRI accounts + Activate Training access)
2	05 Sep 07	Map Functions and Types Map Design: Abstraction/Constraints	Ch. 2	Bring your headphones! Getting Started with GIS (4 hours)
3	12 Sep 14	Map Projections	Ch. 3	Basics of Map Projections
4	19 Sep 21	Generalization Controls and Elements Remote sensing and GPS	Ch. 4	ESRI Story Map
5	26 Sep 28	Generalization Methods Map Scale and Typography **Introducing Individual Mapping Project**	Imhoff	ESRI ArcGIS Online (Plan Routes for Food Inspectors)
6	03 Oct 05	Map Composition and Visual Variables Thematic Map Symbols/ Point symbols	Ch. 6, 7, 8	Learning ArcGIS Desktop-1 (5)
7	10 Oct 12	Line and Area Symbols Color *(Oct 10 - Distribute Exam questions.)* (Review Exam)	Ch.14	Learning ArcGIS Desktop-2 (6)
8	**17 Oct** **19 Oct**	**Mid-term Exam: Oct. 17 (20 points)** **7:50AM – 9:00AM (SH-316)** Graphing		Learning ArcGIS Desktop-3 (7)
9	24 Oct 26	Data Processing	Ch. 5 Fisher	Learning ArcGIS Desktop-4 (8)
10	31 Oct 02 Nov	Choropleth mapping	Ch. 5, 6 Evans	Planning a Cartography Project (9) **(Individual Mapping Project: One Web Map and One Paper Map)**
11	07 Nov 09	Dasymetric mapping		Intro to CartoDB and MapBox
12	14 Nov 16	Mapping Uncertainty and GIS	Butterfield	Intro to Leaflet and JavaScript Programming
13	**21 Nov** **23**	**Thanksgiving Week** **(NO Lectures, NO Labs)**		**NO LABS (SAL open on Tuesday, but no TA).**
14	28 Nov 30 Dec	Internet Mapping and Multimedia		Creating Map Products
15	05 Dec 07	Map Use and Misuse (Dec 07: Distribute Final Exam questions)	Ch. 16 Tsou	(Individual Mapping Project)
16	**12 Dec**	Future of Mapping **Individual Mapping Project Presentation** **(Dec 12), 9AM – 10:20am. (SAL lab)**		
	14 Dec	**Final Exam Dec 14 (20 points) 7:50AM – 9:00AM Location:** SH-316 (no lab session on Dec 14).		
	18 Dec	**All Missed Labs Due Date (by 5pm in the Instructor's mailbox -- TSOU)** **Final Individual Mapping Project Submission (in Blackboard) by 5pm.**		

Additional Readings: (located in *Y:(Vortex_geog381)/readings folder in SAL lab*)

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.

Tsou, M. H. (2011). Revisiting Web Cartography in the United States: the Rise of User Centered Design. Cartography and Geographic Information Science, 38 (3), 249- 256.

Tsou, M. H. (2015). Research challenges and opportunities in mapping social media and Big Data. Cartography and Geographic Information Science, 42:sup1, 70-74. doi: 10.1080/15230406.2015.1059251.

Note: If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that I cannot provide accommodations based upon disability until I have received an accommodation letter from Student Disability Services. Your cooperation is appreciated.

Individual Mapping Project: 15% (Presentation 7%, Final Submission 8%)

After taking the two web courses (Planning a Cartography Project and Creating Map Products), you will select one topic you like and start to design one web map (in ArcGIS Online, Web App, or ESRI Story Map) and one paper map (in a PDF file). Each student will make a **Mapping Project Presentation (4 mins per person) on Dec 12 during the Lab session at 9AM (10%) and submit the final version (both the PDF and online map link) on Blackboard by Dec 18 at 5PM.**

Additional GIS Learning resources:
- **San Diego GIS Data: SANDAG: http://www.sandag.org/index.asp?classid=21&fuseaction=home.classhome**
- **ArcGIS Story Map Gallery: https://storymaps.arcgis.com/en/gallery/#s=0**
- **https://learn.arcgis.com/en/**
- **http://edcommunity.esri.com/Resources/collections---higher-education**