

Computer Cartography

Lecture: Tu 3:00-4:50pm, 2166 LeFrak

Lab: Th 11am–1pm (section 0101), F 9–11am (section 0102), **1138 LeFrak**

Instructor: Najjun Zhou, Dr.

Office hours: Tu 5-6:30pm, or by appointment, 1125 LeFrak, 301-405-4063, njzhou@umd.edu

Teaching Assistant: TBA

Course Website: ELMS (elms.umd.edu)

Course Description

Maps are a visual form of communication. Computer cartography is the art and science to make “good” maps and to understand maps. Being able to make a map that is easy to understand and conveys the information you want will make your geographic analyses easier to be understood by your audience. Besides, making maps is fun!

This course will cover the basic use of the theory, methods and tools in computer cartography, which include appropriate design and placement of map elements; how to appropriately display a variety of information in map form; selecting an appropriate projection; the different types of map media (paper, online, animation). This course consists of two closely related components: lectures and labs. In lectures, the theory and methods of the above topics are examined. Labs are designed to provide hands-on experience in ArcGIS 10. By the end of the class, you should be able to understand how maps are made, and how to make effective and attractive maps.

Recommended Textbooks (can be checked out from McKeldin Library)

- Slocum, T.A., et al. (2009). *Thematic Cartography and Geovisualization*. Upper Saddle River, NJ: Prentice Hall. ISBN 0-13-229834-1. Call number: GA108.7 .S58 2009. Companion website at <http://www.pearsonhighered.com/slocum3e/> with many useful and detailed materials.
- Brewer, C.A. (2005). *Designing Better Maps*. Redlands, CA: ESRI Press. ISBN 1-58948-089-9. Call number: GA105.3 .B74 2005.

Course Requirements

- **EIGHT** labs. Students will finish 7 one-week labs, and 1 two-week lab.
- **ONE** individual course project and project presentation.
- **TWO** closed book exams. The format of will be short essay and multiple choice.
- Attending labs and lectures is required (we have in-class quizzes and lab attendance sheet ☺). Lab and lecture absences, late work and make-up exams are given for University approved excused absences, and students must notify the TA and/or the Instructor and make arrangement at least 24 hours **BEFORE** the due date, and provide valid documents. Otherwise, no late work and make-ups will be accepted.
- **Course materials** including lecture slides, announcements and others will be posted on **ELMS**. Check ELMS frequently.
- The instructor will make every effort to accommodate students who are registered with the Disability Support Services (**DSS**) Office and who provide the instructor with a University of Maryland DSS Accommodation form. This form must be presented to the instructor no later than September 16.
- **E-mail**: for efficient communication with the instructor and the TA, please put the course name (i.e., GEOG475) in your email subject and put your full name in your email body. **Please send emails to the ones given in this syllabus instead of ELMS.**

- **COMMUNICATE!** Feel free and do not hesitate to contact the instructor and the TA if you have any concerns, critiques and suggestions promptly. They are ALWAYS welcome, and the earlier the better.

Course Project, Proposal, Presentation and Report

- **Project Proposal (due midnight October 26 on ELMS)**

A one-page course project proposal is due on ELMS October 26 midnight. This proposal should follow the format of the final project report, read the next sections *Project Requirements* and *Project Submission*.

- **Project Requirements**

Your final project requires you to make an original map product. **I expect high quality work.** The steps of doing this project may include:

- 1) researching and determining the subject and the (expected) purpose of the map.
- 2) obtaining appropriate geographic and statistical data.
- 3) designing and constructing the map with appropriate cartographic elements.
- 4) revising and refining the map if needed.
- 5) writing a course project report.

6) presenting your initial cartographic design during course project presentations (12/2, 12/9)

The product can be a static map, an animated map, a web map, or some other form of cartographic product, either a general reference map or a thematic map.

The course project should be a map that you spend approximately 5 hours researching and 20 hours in designing. The course project must be completed individually unless approved by the instructor. You may discuss your project with others, but the work needs to be completed by yourself.

It is recommended that you put the text GEOG475 Computer Cartography Fall 2014 on your map. I may show your map to other classes, print it as poster, and other uses. **If you do NOT wish to share your map, please indicate it at the end of your project report or if you have any specific concerns.**

- **Project Result and Report (due the midnight December 14 on ELMS)**

- 1) If your project is a traditional thematic map, submit a PDF file. If your project is an animation or other formats that cannot be printed out, submit it in the most appropriate form (web link, movie, etc.) AND make sure the product functions by the end of this semester. Due to limited space allocated by ELMS to this course, please do not submit unnecessary documents. If you have large file(s) (e.g., animation) please contact the TA or the instructor ahead of time by the due time.
- 2) A **THREE page project report** in Word detailing (12 point, 1-inch margins, single spaced, excluding cover page, figures, tables, references, etc.):
 - The subject of the map & why you chose it.
 - The (expected) purpose of the map.
 - The data collected and used.
 - The process for creating the map.
 - Technical specifications, like projection, symbolization, and classification.
 - Conclusion that is made from the map.
 - Problems that occurred in making the product and how they were resolved.

- **Project Presentation**

- 1) The presentations aim to report your work and receive feedbacks.
- 2) During the presentation, you need to at least present the subject of the map, why you choose it, the (expected) purpose of the map, data collection (either the plan or the actually collected data), and the plan of "future" work for the remaining of the time by the due date.
- 3) Complete the majority of your work BEFORE the presentations since it will be graded.

- 4) The presentation will be roughly 5 minutes, including a 4-minute presentation, and 1 minute for questions and answers. Powerpoint slides will be used. Usually, it takes about 1 minute for each slide if you explain the slide in details. So, it would be appropriate to prepare about 5 slides, and may include one or two more if you just show the result quickly.
- 5) Schedule of the presentation: TBA.

• **Project Grading**

Total points=30. Proposal=2 points. Presentation=3 points. Map product=20 points. Report=5 points.

Course Schedule, Readings and Due Dates

Week	Date	Lecture	Reading	Lab and Due Date
1	9/2	Introduction	Slocum: Ch 1, 2	
	9/4, 5			
2	9/9	Projections, Coordinate Systems	Slocum: Ch 7, 8, 9	
	9/11, 12			Lab 1: ArcGIS review, Map frames, Projections
3	9/16	Symbolization, Scale, Generalization	Brewer: Ch 6 Slocum: Ch 5, 6	
	9/18, 19			Lab 1 due on ELMS Lab 2: Scale, Symbolization
4	9/23	Color, Typography	Brewer: Ch 2, 3, 4, 5 Slocum: Ch 10, 11	
	9/25, 26			Lab 2 due on ELMS Lab 3: Color & Typography
5	9/30	Cartographic Design	Brewer: Ch 1, 7 Slocum: Ch 12, 13	
	10/2, 3			Lab 3 due on ELMS Lab 4.1: General Reference Map
6	10/7	Terrain Visualization	Slocum: Ch 20	
	10/9, 10			Lab 4.2: General Reference Map
7	10/14	Exam I: 3:00-4:50pm, 2166 LEF		
	10/16, 17			NO LAB
8	10/21	Internet Mapping		
	10/23, 24			Lab 4 due on ELMS Lab 5: Internet Mapping Project Proposal due: 10/26 midnight
9	10/28	Classification, Choropleth and Dasymetric Mapping	Slocum: Ch 3, 4, 14, 15	
	10/30, 31			Lab 5 due on ELMS Lab 6: Choropleth Mapping
10	11/4	Isarithmic Mapping, Proportional Symbol Mapping, Dot Mapping	Slocum: Ch 16, 17	
	11/6, 7			Lab 6 due on ELMS Lab 7: Proportional Symbol & Dot Density Mapping
11	11/11	Multimedia, Animation, Flow Maps	Slocum: Ch 21, 24, 25	
	11/13, 14			Lab 7 due on ELMS Lab 8: Flow Mapping
12	11/18	Multivariate Mapping, Cartograms	Slocum: Ch 18, 19	
	11/20, 21			Lab 8 due on ELMS NO LAB
13	11/25	Advanced Topics		
	11/27, 28			<i>Thanksgiving</i>
14	12/2	Final Project Presentations		
	12/4, 5			No LAB
15	12/9	Final Project Presentations		
	12/11, 12			No LAB
16	TBD	Exam II		
	12/14	Course project due at midnight on ELMS, 12/14		

Notes:

- 1) Lab exercises and assignments will be distributed at the beginning of lab.
- 2) Date of Exam II will be determined by the University until mid-semester.

Grading

My baseline grade for the course, which assumes that you complete the work in good faith, on time, with serious effort, and with a certain degree of success, is an "B" To do better, you need to give something extra; to do worse, you need to give something less.

The numeric points of student's work will be evaluated as:

Assignment Type	Number of Assignments	Points Per Assignment	Total Points (sum to 100)
Homework: one-week lab (1,2,3,5,6,7,8)	7	5	35
Homework: 2-week lab (4)	1	10	10
Course project: Proposal	1	3	3
Course project: Presentation	1	3	3
Course project: Result and Report	1	26	26
Exams	2	10	20
Lab attendance (taken for every lab)	9	N/A	3

The final letter grade is based on the calculated numeric points in the table, and will be graded as (with variations): A: 85.0-100, B: 75.0-84.9, C: 60.0-74.9, D: 50.0-59.9, F: <50.

Academic Honesty

Within our class, students may work together on assignments, however, each student must turn in their own work, and any work must be theirs alone. The University of Maryland, College Park has a nationally recognized **Code of Academic Integrity**, administered by the Student Honor Council (<http://www.shc.umd.edu>). This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism.