

GEOG 475 Computer Cartography
Fall 2017, University of Maryland, College Park

Course Information

Meeting location and times

Lecture: 3:00pm - 3:50pm Mon, Wed 1158 LeFrak Hall
Lab (0101): 11:00am-1:00pm Fri 1138 LeFrak Hall
Lab (0102): 1:00pm – 3:00pm Fri 1138 LeFrak Hall

Instructor: Dr. Kathleen Stewart, Department of Geographical Sciences

Office location: 1125 LeFrak Hall,

Office hours: 10:30am – 12:00pm Tuesday, or by appointment

Email address: stewartk@umd.edu

Teaching assistant: Honglin Zhong

Office hours: 2:00pm-5:00pm Thursday

Email address: hzhong1@umd.edu

Course website: ELMS. All students enrolled in the course have access to course materials (lecture slides, assignments etc.,) through the ELMS website.

Course materials:

Recommended textbook:

Terry Slocum, Robert McMaster, Fritz Kessler, and Hugh Howard,
Thematic Cartography and Geographic Visualization, Hardback
(there is also an International Edition available as paperback),
Prentice Hall, 3rd Edition 2008, ISBN-10: 0132298341.

GIS Cartography: A Guide to Effective Map Design, Second
Edition, Gretchen Peterson, CRC Press (2014)

Additional readings will be handed out as necessary.

Prerequisites: GEOG373 and GEOG306

Method for Communication with Students Outside the Classroom:

Regarding class cancellation, room change, or other timely announcements, the instructor will use ELMS to post these announcements. ELMS will also be used to post grades.

Course description, goals, and expectations

Course description*

This course introduces the basic concepts and techniques that underlie digital map making and the broader field of geographic visualization. Topics include the fundamentals of making maps digitally, for example, map symbolization, scale, and generalization, and also the contribution to geographic visualization from the fields of scientific visualization, information visualization, and cognition. This includes topics such as GIS and virtual environments, and designing user

interfaces for GIS. The course also offers an opportunity to learn about dynamic map design by constructing map animations using Google Earth. Laboratory exercises use GIS software and are designed to familiarize students with visualization techniques in practical applications.

- **Please note that the course description on Testudo is out of date and the topics listed here represent topics that we will actually discuss in class.**

Goals and learning outcomes

- Students are introduced to fundamentals of modern digital cartography and geovisualization, i.e., the basics for representing knowledge on maps in geographic information systems
- Gain familiarity with map symbolization, color theory, and scale
- Understand the contribution to geographic visualization from the fields of cognition, scientific visualization, and information visualization
- Gain an introduction to dynamic mapping and mapping on the web
- Be able to apply cartographic techniques using spatial data

TENTATIVE lecture schedule and class assignment schedule*

Data	Topic	Readings	Lab Assignments
08/28	Course intro, history of cartography Getting map data	Chap 1	
09/04	Labor Day – no class 09/04 Data Classification, Human visual systems	Chap 5	Lab 1 Getting map data
09/11	Color theory, perception Visualization principals	Chap 10	Lab 2 Data classification CAGIS paper
09/18	Map symbolization Map typography	Chap 5	
09/25	Choropleth mapping Color ramps, Proportional symbol	Chap 4, 5, 14, 16, 17	Lab 3 Mapping with color
10/02	Dot maps, Map scale, Types of maps, Generalization	Chap 5, 6	
10/09	Generalization, VGI Review	Chap 6, 10	Lab 4 ArcGIS Layouts
10/16	VGI, visual variables for animation Map Animation,	Chap 21	
10/23	Dynamic maps, flyovers Midterm examination	Chap 21	Lab 5 Map animation
10/30	Discuss good vs. bad maps Color and symbolization		Lab 6 Good/Bad maps
11/06	Data exploration, Information and scientific visualization	Chap 22, Handouts	
11/13	Web mapping Animated maps	Chap 24	Lab 7 KML Animation
11/20	3D interfaces, speech, virtual environments Thanksgiving – no class (11/22)	Chap 26	Lab 8 Using Leaflet
11/27	Future trends Review	Chap 25	Leap Motion
12/04	Presentation of projects		Project presentations
12/11	Last day of classes - Review		
12/13-19	Finals Week - Final examination - TBA		Final exam

* Please note that this tentative schedule **could be subject to change** as the semester progresses. Updates will be announced in class and on ELMS.

Grading procedures and the use of +/-

Plus/minus grades will be given. The general guidelines for letter grades will be as follows: $97 \leq \text{"A+"} \leq 100$, $93 \leq \text{"A"} < 97$, $90 \leq \text{"A-"} < 93$, $87 \leq \text{"B+"} < 90$, $83 \leq \text{"B"} < 87$, $80 \leq \text{"B-"} < 83$, $77 \leq \text{"C+"} < 80$, $73 \leq \text{"C"} < 77$, $70 \leq \text{"C-"} < 73$, $67 \leq \text{"D+"} < 70$, $63 \leq \text{"D"} < 67$, $60 \leq \text{"D-"} < 63$, $60 < \text{"F"}$. Minor adjustments may be introduced to the general scheme to allow for students' grade distribution.

A+ grades are given only in extraordinary situations

Assignments and percentage of final grade

Laboratory Exercises	40%
Individual Project & class participation	15%

Grades will be based on a judgment of overall performance. Lab exercises, a midterm, a final exam, and an individual project will contribute to your grade. Lab exercises will be assigned to complement the lectures and familiarize you with database and information system design. The labs will be graded on content, completeness, grammar, tidiness, and promptness (i.e., should be handed in on due date).

NB. Graduate students may be required to complete additional or different tasks on lab assignments and exams, or to complete additional assignments (e.g., a paper).

A Note on Collaboration While you may choose to interact with other students while working on your assignments and project, all submitted work is expected to be your own, i.e., all writeups and discussion statements etc., should be your own individual thoughts, and maps and cartography should be unique to you (unless the assignment is presented as a group task). Your project will also be independent and unique to yourself.

Exams and percentage of final grade:

Midterm exam	20%
Final exam	25% (not cumulative)

A Word about the Date and Time of the Final Exam: The final examination date and time is expected to be announced by the Registrar generally by the tenth day of classes. I will announce the final examination date and time for this course on the course ELMS/Canvas site once it is known. Do not plan your end of the semester travel plans until the final exam schedule is made public. It is **your responsibility** to know the date, time, and place of the final exam.

Course procedures and policies

Course attendance and participation in class discussions:

Regular attendance and participation in this class is the best way to grasp the concepts and principles being discussed. However, in the event that a class must be missed due to an illness, the policy in this class is as follows:

- 1 For every medically necessary absence from class (lecture or lab), a reasonable effort should be made to notify me by email in advance of the class. When returning to class, please provide a note identifying the date of and reason for the absence, and acknowledging that the information in the note is accurate.
- 2 If you are absent more than one time, you are required to bring documentation signed by a health care professional.
- 3 If you are absent on days when tests or exams are scheduled or course material is due *[or other such events as specified in the syllabus]* due to illness, please notify me in advance by email, and upon returning to class, bring documentation of the illness, signed by a health care professional.
- 4 If you will be absent due to religious observances, you are responsible for notifying me during the **first week** of the semester.

Turning in assignments late due to illness accompanied by a signed note or religious observances, will not result in the deduction of points.

Timely completion of assignments: All lab exercises are expected on their due date. Late work

receives a penalty of 10%. No exercises will be accepted for grading once a graded assignment has been handed back.

Lectures: You are expected to attend and be actively engaged in each lecture. Laptops and tablets are permitted for **note-taking purposes only**. Students should be aware that most of the material covered in the class is not necessarily available in a textbook, and will be presented in lectures only. Students are strongly encouraged to take careful notes during the lectures.

Students with disabilities: I will make every effort to accommodate students who are registered with the Disability Support Services Office and who provide me with a University of Maryland DSS Accommodation form that has been updated for the Fall 2016 semester. Please present this form to me as soon as possible. My office is in LeFrak Hall on the first floor.

Academic integrity

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. 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. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

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