

Cartographic Applications of GIS

Geography 484/584

Course materials available on D2L

Course Objectives

1. Understand cartographic principles and design techniques for static map display and production in GIS – layout and visual hierarchy, type and labeling, color, symbols, data selection, generalization, and mapping quantitative data.
2. Understand how these same principles and techniques apply to interactive map design.
3. Learn to use the mapmaking tools available in ArcGIS software.
4. Develop the ability to critically evaluate maps for effective design.

Requirements

The format of the course is a mix of lectures and computer lab time spent learning to use the tools available in ArcGIS Pro software.

The course requires the completion of a set of computer lab exercises; two mapmaking projects, one for print and one for interactive web display; three quizzes; and active participation in class discussions and map critiques. Graduate students must make two presentations.

GEOG 380 is a prerequisite.

If you are having problems with any component of the course, talk to me. I don't have "office hours" but we can schedule a time to meet at your convenience. Also, do not underestimate how long it will take to complete an assignment.

Grading

Computer lab exercises- 24% (Undergrads 32%)

Mapmaking assignments- 40%

Quizzes- 18%

Participation- 10%

Grad Student Presentations 8%

Reading

A recommended text for this course is *GIS Cartography: A Guide to Effective Map Design* by Gretchen Peterson 2014. Other cartography textbooks are useful – see separate handout about cartography texts. Additional readings of journal articles will be assigned and these will be made available as pdfs.

Mapmaking Assignments

You will have two major mapmaking projects:

- 1) A detailed map at the neighborhood scale designed as a static map.
- 2) A three-scale interactive map published through ArcGIS Server and viewable online with a web browser.

You will present a rough draft of each map for group critique during class. You will also meet with your instructor individually to discuss your draft map. Final map products will be evaluated based on composition, visual hierarchy, symbol choice, labeling, data generalization, functionality, etc.

Participation

Although formal attendance is not taken, your regular attendance is strongly encouraged. Although you will get a pdf of lecture slides, most of them are images and you will not know what was discussed unless you are in class. If you know in advance that you are going to miss class, be sure to notify me.

All students must actively participate in group map critiques; if you are not present to do a map critique, you cannot get credit for it.

In addition, all students are required to share with the class a “**map of the day**” and talk about its cartographic properties for a few minutes. This may be any kind of map that you have seen that you find interesting, either online or in print **provided it could have been created using GIS software**. It is up to you when you do this; just let me know that you want to share a map before class starts.

Presentations (graduate students only)

1. Cartographic Techniques – All graduate students are required to do a 10 minute presentation of a particular cartographic technique that can be used in ArcGIS. The presentation should demonstrate how the particular technique is used and where one can get information about the technique. This presentation can be informal, but I expect you to understand the topic you are discussing, and present your information in a clear and understandable way so that other students can use the technique if they so choose. I also encourage you to discuss your presentation with me beforehand. Note that some specialty techniques may require a special installation of a style/script/program.

A good place to start looking for cartographic techniques at the ESRI Mapping Resources Page: <http://resources.arcgis.com/en/communities/mapping/home/>. Check out the link to Cartographer’s Favorites. You are not limited to what is available at this site, and I will provide a set of possible ideas.

A presentation sign-up sheet will be available during the second week of class, and presentations will begin the third week of class.

2. Web Map Design – All graduate students must present their final map designed for interactive web display during the final exam session using a web browser. During this short (5 minute) presentation, you will navigate through the different scales and explain what you were trying to accomplish with your map design.

Computer Lab Exercises

There are 5 lab exercises that use ArcGIS Pro software. These exercises provide a way to acquire skills using ArcGIS and allow you to apply the course concepts to real data.

The lab exercises will take typically 4-6 hours.

Access to Computer Labs and Software

You can get access to CH 469 during times when classes are not being conducted. To do so, you need a PSU access card. Apply for access here: <https://sites.google.com/a/pdx.edu/geog-ch469/access-form>

You may also install the software on your home computer. To install ArcGIS Pro software (works with Windows only), you must first create an account in PSU’s ArcGIS Online (AGOL) system. Go to <https://pdxedu.maps.arcgis.com/> and click on Enterprise Login Portland State. Log in with your PSU ODIN username and password. This step creates an AGOL account for you and will allow you to use the ArcGIS Pro software.

You can then download ArcGIS Pro software from here:

<https://drive.google.com/drive/folders/1x7ukxjNXEZ4cVuD8jLqymdZKDKfag2YP>

You need to log in to your PSU ODIN email account to access this Google Drive shared folder.

Be sure to check out this page for recommended computer specs for using ArcGIS Pro:

<https://pro.arcgis.com/en/pro-app/get-started/arcgis-pro-system-requirements.htm>

If you do not have a computer capable of running the software, there are two options. You can access ArcGIS Pro using a web browser through the PSU Virtual Computer Lab: vlab.pdx.edu. Laptops may be available to check out from the Portland State Library (<https://library.pdx.edu/study-spaces-computers/equipment/>)

Access and Inclusion for Students with Disabilities

My goal is to create a learning environment that is equitable, useable, inclusive, and welcoming; if any aspects of instruction or course design result in barriers to your inclusion or learning, please notify me. The Disability Resource Center (DRC) provides reasonable accommodations for students who encounter barriers in the learning environment. If you already have accommodations, please contact me to make sure that I have received a faculty notification letter and we can discuss your accommodations.

Title IX Reporting Obligations

As an instructor, one of my responsibilities is to help create a safe learning environment for my students and for the campus as a whole. As a member of the university community, I have the responsibility to report any instances of sexual harassment, sexual violence and/or other forms of prohibited discrimination. If you would rather share information about sexual harassment, sexual violence or discrimination to a confidential employee who does not have this reporting responsibility, you can find [a list](#) of those individuals. For more information about Title IX please complete the required student module [Creating a Safe Campus](#) in D2L.

SCHEDULE

Date	Topic	Reading*	Exercise
9/28	Syllabus; Course Intro		Document: Cartography Books
9/30	Map Elements; Map Layout and Composition; Visual Hierarchy	Kent Ch 2, 3	Document: Map Critique Lab 1: Design and Layout
10/5	Computer Lab		Discuss Map Assignment 1
10/7	Type Basics	Ch 4	
10/12	Map Labeling	Fairbairn	Lab 2: Type and Labeling
10/14	Computer Lab	Case	
10/19	Map Critique		In Class: Group Map Critique
10/21	QUIZ Discuss draft maps		
10/26	Using Color	Ch 5	
10/28	Using Color (continued) Computer Lab	Brewer	Lab 3: Color Decisions for Mapping
11/2	Designing Interactive Maps		Map Assignment 1 Due Discuss Map Assignment 2
11/4	Designing Interactive Maps (continued)	Ch 6	In Class: Gallery of neighborhood maps
11/9	Generalization	Ch 9 Brewer and Buttenfield	Lab 4: Generalization
11/11	HOLIDAY		
11/16	Quantitative Symbology- Choropleth; Graduated Symbols; Dot Density	Brewer and Campbell	
11/18	Map Critique		In Class: Group Map Critique
11/23	Quantitative Symbology (continued) Computer Lab		Lab 5: Mapping Quantitative Data
11/25	QUIZ Computer Lab		
11/30	Publishing Interactive Maps		In Class: Map Publishing
12/2	Computer Lab	Patterson	
Thurs 12/10	WEB MAPS DUE- presentations TAKE-HOME QUIZ DUE		

* Chapters noted are from Peterson's GIS Cartography book, in case you purchase it.