

The University of Montana, Department of Geography

GPHY 481

# Advanced Cartographic Design

Fall Semester 2022

Wednesday Lecture, 3:00-3:50 PM, Room SH 217

Thursday Lab, 2:00-4:50 PM, Room SH 218

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**TA:** TBA

**Office:** TBA

**Office Hours:** TBA

**Email:** TBA

Open lab hours: SH 218 has a schedule on the door. You can work in there anytime there is not a class, M-F. SH 219 is open any time Stone Hall is. I will activate everyone's GrizCard for the door slider.

## ***COURSE DESCRIPTION:***

The art of Cartography, that is the aesthetic representation of space and place, is losing the battle against the plethora of mass-produced cart junk that inundates our lives in every waking moment. Between the standardized web-Mercator maps per Google and the stock menu GIS output, the sheer volume of poor maps that we are exposed to has desensitized the public into accepting a denuded pallet of dull graphic literacy. The explosion of geographic awareness, spatial data, and computing power has certainly affected our lives in many positive ways, but it comes at a cost. Lost are the subtle details within, beneath the first glance. Against the tsunami of map mayhem stands only the c-artisan. Are we living in the dying age of the cartographer? Is it time to throw in the towel and accept our fate as GIS technicians?

There is a long tradition of beautiful artistry in cartography; that of hand painted shaded relief, meticulously set type, and measured hierarchy that draws the reader into the map. Surprisingly, many of the historic techniques can be replicated within the modern cartographic workflow at a minimum of extra manipulation. This is advantageous because an attractive map will hold the users gaze, giving the cartographer precious seconds to impart the information they wish to share. This transfer of knowledge is the goal, and the well-designed map will be our medium.

This course focuses on the purpose behind the spatial presentation of data and the construction of maps that have clear messages and excellent aesthetic design. The ultimate goal of the course, expressed through the final project, is to provide the students with the skills and abilities to manage a cartographic production. You will interview a prospective client, define map requirements, find and process the relevant data, design a map that satisfies the aesthetic guidelines, and construct the final product for actual use by the map user. The intent is to move the student beyond GIS data processing and into the realm of cartographic artistry.

### ***Course Format:***

The general program for each week will be Wednesday lectures, map proof critiques and group discussions, with Thursday reserved for lab work. However, this schedule is subject to change, and will vary with the needs of the class, workload, or in special circumstances. This is especially true towards the end of the semester.

Lecture days will start with announcements and be followed by a presentation on principles of design as applied to map construction.

Lab days will begin with an introduction to the new lab assignment. Some working lab days will begin with on-screen demonstrations of software techniques needed to complete the labs. These demos will be used to fulfill the Demonstration Tutorial write-up requirements, with spares counting as extra credit. The labs will not be written up in a button-by-button click format. You are expected to refer back to previous skills learned in other courses, tutorials provided by the instructor, and outside resources found on the web. Utilize your time in the labs to ask questions of your fellow students, the TA, and the instructor.

### ***Learning outcomes - By the end of this course you will:***

1. Understand design theory as it applies to map making and the application of these theories through the entire process of map creation.
2. Develop software skills in programs used for map production in the modern cartographic workflow.
3. Learn how to identify specific map design requirements based on users' needs and construct a product that meets the users' objectives.
4. Serve the community through the design and creation of a map product as commissioned by a community member or organization.

### ***Recommended Text:***

*The Visual Display of Quantitative Information*, by Edward Tufte, 2nd Edition, 2001.

*Cartography: An Introduction 2nd Edition*, by Giles Darkes, 2017.

NOTE\* You do not have to purchase these texts. Various required readings will be posted to Moodle. All that I ask you to buy for this course is a set of watercolor paints and a brush. They are available in the Bookstore, but cheaper online.

**Required Storage:** You will need a thumb-drive or external hard drive with at least 4 GB of space. If you have a large final project, you may need more.

**Server Address:** TBA

## ***POLICIES AND PROCEDURES:***

The following policies are the minimum standards for which all students are responsible. They set the ground rules so that class can move forward in an efficient and productive manner. Please review and put into practice:

- Please consult the Class Schedule for relevant dates. All assignments will require submission on the due date specified in the Class Schedule unless otherwise noted.
- See the [Official Dates and Deadlines Calendar](#) for registration changes or withdrawals.
- **Moodle:** Class materials will be available on **Moodle** the week they are covered in class. Larger datasets needed for the labs will be stored in the class folder on the server that can only be accessed in the lab.
- All assignments will be turned into the digital drop-boxes on **Moodle** on the due date. The drop-box will close at **the specified time** and no longer accept submissions. Some maps will require printed submission as specified by the instructor.
- Required Class Attendance: Class will include theory, discussion, map critiques, and exercises – all of which are important to the overall understanding of map design. Much of this information will be only be available in class. If you must miss a class, **you are responsible for the material covered.** Arrange with another student to get their notes.
- Participation: This class is interactive and requires student participation in hands-on exercises and group discussions. Students that do not participate will not do well in the class. It is important to work with your fellow students and share ideas. They will be your best resource for missed material, design advice, technique tips, and moral support.
- No cell phones **on** in class! Please make sure your cell phone is off before lecture begins.
- **Be on time!** I expect everyone to be on time for class in order to not disturb the lecture. Do not leave the class early. If you have a special reason for leaving early, please contact me before class begins and sit close to the door in order to exit quietly.

- Please do not surf the internet during class. While I am lecturing, or we are engaged in group discussion, power off the computer screen. Those caught surfing the web during these times will be asked to leave.
- For assistance with writing, please consult the on-line resources of the [UM Writing Center](#). For assistance with MS Office, please consult this [on-line training](#) resource.
- All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the [Student Conduct Code](#).
- Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction for students with disabilities in collaboration with instructors and [Disability Services for Students](#), which is located in Lommasson Center 154. The University does not permit fundamental alterations of academic standards or retroactive modifications.
- Syllabus is subject to change.

## ***CLASS ASSIGNMENTS:***

- ***Lab exercises***  
Labs will consist of exercises that provide a means to put theory as presented through the lectures and reading material into practice. The labs are software intensive utilizing, ESRI ArcGIS, Adobe Illustrator, Adobe Photoshop, and Adobe InDesign. The labs are presented with some structure but require that the student create and implement maps of their own design, seeking additional resources for data and software techniques. Maps will go through one round of class critique where the students will receive feedback from the entire class. **Students will rate each submission on a 1-10 point scale and the average of those ratings will contribute to the final score for the lab. If you do not submit the proof on the due date, you lose 10% of the points for that lab.** There will be time for revisions and then the final map will be submitted to the instructor. The labs gradually become worth more points as the semester progresses and they become more difficult. See grading table below for specific point values.
- ***Service-Learning Project***  
A semester-long assignment, the service-learning project requires the student to identify an individual or organization in the community in need of a map. Students will work with that person(s) to implement a professional final product based on requirements defined in conjunction with the client. The final product must be accepted and signed off by the client. The design and production process will be documented and backed-up in a Project Management Folder formatted as required by the instructor. The final map will be shown to the public and your map user during a gallery opening at the end of the semester. The **500 point** project is worth roughly 25% of your total grade and is divided as follows:

Final Map	350 pts.
Gallery Presentation	100 pts.
Project Management Folder	50 pts.

- ***Read and Respond***

Beyond the ample technique readings, every other week we will read a cartographic design related paper. You must submit a one page response that presents a distillation of the paper's main point, and then offers your opinion of the author's premise. We will discuss the responses in a class conversation that is led by a team of students. Your one page response is due in the Moodle drop-box before the discussion, after which no further submissions will be allowed. Of the 7 group discussions we hold, you are required to submit at least **5 Responses worth 20 points each (100 pts. total)**. The other two can be used for extra credit.

- ***Demonstration Tutorials***

There will be multiple on-screen demonstrations of various cartographic techniques in the software used in class. You must take notes of the techniques in class, apply the steps to complete your labs, and then write a tutorial that explains the workflow in a format that will be covered. There will be a Tutorial drop-box for the first half of the semester, and another opened for the second half. You are responsible for writing up **10 Demonstration Tutorials worth 10 points each (100 pts. total)**. Up to 5 spare tutorials can be written up for extra credit. Completed tutorials belong in your Resource Notebook.

- ***Resource Notebook***

Each student is required to put together a digital notebook that will be filled with tutorials, handouts, readings, labs and other content featured in the class. The purpose of this notebook is to give the students a "take-away" resource of cartography techniques for future mapping projects. It should be organized with these folders inside your Student Folder on the server: Labs, Readings, Responses, Tutorials, and Final\_Project. Feel free to create other categories if you like (for example; Inspiration), but it should contain all the course materials. Do not wait until the last minute to put together the notebook. Start adding content the first week and continue to keep it organized throughout the semester. The notebook will be reviewed toward the end of the semester for a grade worth **100 points**.

- ***Advanced Tutorial Project – Graduate Students Only***

Graduate students are required to submit an additional project, both written and presented, to fulfill the graduate increment. Each student will be asked to explore additional functionality and techniques in the software of their choice (e.g. ESRI or an Adobe product) that would be of benefit to the class as a whole in the creation and design of maps. This functionality must be documented in a detailed tutorial and demonstrated in a presentation to the class. The graduate tutorial is worth **100 points**. See the instructor to get approval and/or ideas for the project.

These assignments will be all that determines your final grade, so make sure to turn them in on time and complete.

***There are no late assignments accepted after the due date!***

If you are having trouble with a project, come and see me well before it is due. If you have an emergency, illness, or crisis; send an email, call, or dispatch a carrier pigeon to me before the assignment is due. Once the due date and time have passed, no excuses will be entertained.

**THIS IS AN EXTREMELY DEMANDING CLASS. DO NOT FALL BEHIND ON THE ASSIGNMENTS; CATCHING-UP WITH BE VIRTUALLY IMPOSSIBLE!**

***GRADING:***

The tables below break down the point values for all the exercises. Grades are evaluated on the completeness and organization of the project, the use of the design theory techniques taught in class, and the implementation of revisions suggested by peers and the instructor. Maps will not be graded purely on a subjective assessment of aesthetic appeal; however, a poorly executed map is certainly worth less than a properly designed one. Not everyone is an artist, but the student should demonstrate progress toward cartographic competency. All assignments, as well as the final grade, are based on the following grade scale:

A ..... 95 – 100%  
A- ..... 90 – 94.99%  
B+ ..... 87 – 89.99%  
B ..... 83 – 86.99%  
B- ..... 80 – 82.99%  
C+ ..... 77 – 79.99%  
C ..... 73 – 76.99%  
C- ..... 70 – 72.99%  
D ..... 60 – 69.99%  
F ..... 59.99% and below

\*Please note that in order to be fair to all students, I will not round up a grade. For example, if you earn 79.99%, you will receive a ‘C+’ in the course. Since there are no “A+” marks, an “A” grade requires 95% or higher and is reserved for students with the highest work ethic.

**Grading: Undergraduate**

Assignments	Points
Lab 1	100 pts.
Lab 2	150 pts.
Lab 3	200 pts.
Lab 4	250 pts.
Lab 5	300 pts.
Lab 6	100 pts.
Read & Respond	5 x 20 = 100 pts.
Demo Tutorials	10 x 10 = 100 pts.
Resource Notebook	100 pts.
Final Project	500 pts.
<b>Total</b>	<b>1900 pts.</b>

**Grading: Graduate**

Assignments	Points
Lab 1	100 pts.
Lab 2	150 pts.
Lab 3	200 pts.
Lab 4	250 pts.
Lab 5	300 pts.
Lab 6	100 pts.
Read & Respond	5 x 20 = 100 pts.
Demo Tutorials	10 x 10 = 100 pts.
Resource Notebook	100 pts.
Final Project	500 pts.
Grad Tutorial	100 pts.
<b>Total</b>	<b>2000 pts.</b>