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GPHY 481.01: Advanced Cartographic Design (SERV)

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The University of Montana, Department of Geography

GPHY 481

Advanced Cartographic Design

Fall Semester 2014

Wednesday Lecture, 2:10-3:00 PM, Room PFNAC 014
Thursday Lab, 3:40-5:30 PM, Room PFNAC 014

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Office Hours: Tues 2:10-3:00, Wed 12:00-1:00 or by appointment

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Class Blog: <http://mappractical.blogspot.com/>

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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 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 the cost. Lost are the subtle details within, beneath the first glance.

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 longer 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 interview a map user and 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 by examining user requirements and design theory.

Course Format:

The general program for each week will be Wednesday lectures and Thursday 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, then map critiques and class discussion of readings. This will be followed by a lecture on principles of design as applied to map construction. Time permitting, there will be short on-screen demonstrations of valuable software techniques used in cartography.

Lab days will begin with an introduction to the new lab assignment. 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 both your fellow students and the instructor. Some working lab days will begin with on-screen demonstrations of software techniques needed to complete the labs. All demos can be used to fulfill the Demonstration Tutorial write-up requirements, and can also serve as extra credit.

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 map products as commissioned by community members or organizations.

Required Text:

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

Recommended Text:

Cartographer's Toolkit: Colors, Typography, Patterns, by Gretchen Peterson, 2012.

Designing Better Maps – A Guide for GIS Users, by Cynthia Brewer, 2005.

Inspirational Text:

A Map of the World: The World According to Illustrators and Storyteller, by Antoniou et. al., 2013

There will be various supplemental readings supplied as pdf's throughout the semester. The Antoniou book is beautiful and belongs on every cartographer's coffee table.

Required Storage: You will need a thumb-drive or external hard drive with at least 4 GB of space.

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.
- **Moodle:** Class materials will be available on **Moodle** the week they are covered in class. Data 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-box 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.
- **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.
- Please don't do disrupt class with personal conversations. If you are disturbing the lecture, I may ask that you exit the classroom.
- 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. If for some reason you are late, I ask that you be extremely quiet and not disturb anyone as you enter and sit down. 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 read outside material during class, including on the internet. 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. Please pay attention to each lecture.
- For assistance with writing, please consult the on-line resources of the UM Writing Center, Liberal Arts 144 at: www.umt.edu/writingcenter.

- Student Conduct Code: Consult the Dean of Students website at: http://www.umt.edu/vpsa/policies/student_conduct.php. Carefully review the sections on plagiarism [also consult the UM Catalog]. Cheating and plagiarism are not tolerated and will be dealt with as outlined in the Code.
- This course is accessible to and usable by otherwise qualified students with disabilities. To request reasonable program modifications, please consult with the instructor. Disability Services for Students will assist the instructor and student in the modification process. For more information, visit the Disability Services website at <http://www.umt.edu/disability>.
- Syllabus is subject to change.

CLASS ASSIGNMENTS:

- ***Lab exercises***
Labs will consist of 7 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. Most maps will go through one round of class critique where the student can defend their design decisions to the entire class and receive feedback. **If you do not submit the proof on the due date, you lose 85% of the points for that lab.** There will be time for revisions, and then the final map can be submitted to the instructor. There is no chance of losing points with this final revision, and if the student is happy with the grade, it is not required. 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 user. The final product will need to be accepted and signed off by the user. The design and production process will be documented and backed-up in Project Management Folder of zipped files in a format provided by the instructor. The final map, along with several proof versions, and the design process, will be presented to the class at the end of the semester in Pecha Kucha style. The 450 point project is worth close to one third of your total grade and is divided as follows:

Digital (or printed map)	300 pts.
Project Management Folder	100 pts.
Presentation	50 pts.

- ***Demonstration Tutorials:***
There will be weekly on-screen demonstrations of various cartographic techniques in the software used in class. Some will also be available as video tutorials on the class blog. You are responsible for writing-up 5 of these demos in a tutorial format that will be covered in class. They are rarely more than a half page of printed text, and are due the week after they were demonstrated. Extra tutorial write-ups will be considered extra credit. They are worth 10 points each and are graded as complete or incomplete. Completed tutorials belong in your Resource Notebook.
- ***Resource Notebook***
Each student is required to put together a 3-ring 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 tabbed dividers, labeled with categories that make sense to the student, and **indexed with a table of contents** page at the beginning. 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. It will be your one-stop reference for the theory and techniques covered in class. It should contain at least 5 tutorial write-ups, the graduate student tutorials, all of the supplemental readings, the lab instructions and your finished labs. Extra material can include tutorials from the class blog and other resources from the web. The notebook will be turned in toward the end of the semester for a grade worth 100 points.
- ***Advanced Feature Project – Graduate Students only***
Graduate students are required to submit an additional project, both written and presented. 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 or design of maps. This functionality must be documented in a detailed tutorial of several pages 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.

The assignments administered throughout the semester cover the topics that we discuss in class and are related your readings. The purpose of these assignments is to ensure that each student understands the concepts being discussed, practices and improves their cartography skills, completes the required readings, and attends each lecture. **THESE ASSIGNMENTS WILL BE ALL THAT DETERMINES YOUR FINAL GRADE**, so make sure and turn them in completed and on time.

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

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.

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, an ugly map is certainly worth less than a pleasing 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 grading 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 receive a 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

Grading: Graduate

Assignments	Points	Assignments	Points
Lab 1	50 pts.	Lab 1	50 pts.
Lab 2	100 pts.	Lab 2	100 pts.
Lab 3	150 pts.	Lab 3	150 pts.
Lab 4	200 pts.	Lab 4	200 pts.
Lab 5	250 pts.	Lab 5	250 pts.
Lab 6	300 pts.	Lab 6	300 pts.
Lab 7	150 pts.	Lab 7	150 pts.
Resource Notebook	100 pts.	Resource Notebook	100 pts.
Demo Tutorials	5 x 10 = 50 pts.	Demo Tutorials	5 x 10 = 50 pts.
Final Project	450 pts.	Final Project	450 pts.
		Grad Tutorial	100 pts.
Total	1800 pts.	Total	1900 pts.

Class Schedule		
Week/Day	Topic	Assigned Reading
<i>Week 1: Introduction to Map Design</i>		
Wed, 8/27	Welcome, Syllabus, Resources, NACIS Lecture 1: Introduction to Map Design	*Adobe TV
Thurs, 8/28	Adobe Illustrator Tutorials Start Lab 1: Cartographic Logos	*Illustrator Handouts
<i>Week 2: Purpose and Audience in Map Design</i>		
Wed, 9/3	Lecture 2: Purpose and Audience	*Tufte, Intro & Ch. 1 *Brewer Design .pdf
Thurs, 9/4	Start Lab 2: Applied Styles in Illustrator Lab 1: Proof Due for Critique at the Beginning of Class	
Lab 1: Final Due Sunday, 9/7 by Midnight		
<i>Week 3: The Art of Typography</i>		
Weds, 9/10	Lecture 3: Typography Final Project: Requirements	*Tufte , Ch. 2 *Brewer Type .pdf
Thurs, 9/11	Demonstration Tutorial and Lab Work	
<i>Week 4: Nature of Geographic Data Outside GIS</i>		
Wed, 9/17	Lecture 4: Geographic Data in Design Software Lab 2: Proof Due for Critique at the Beginning of Class	*Tufte , Ch. 3 *GIS Export .pdf
Thurs, 9/18	Start Lab 3: Aesthetic Maps for Tourists	
Lab 2: Final Due Sunday, 9/21 by Midnight		
<i>Week 5: The Symbolization of Cartographic Relief</i>		
Wed, 9/24	Lecture 5: Shaded Relief Graduate Presentation	*Relief .pdf
Thurs, 9/25	Demonstration Tutorial and Lab Work	
<i>Week 6: The Use of Photoshop in Cartography</i>		
Wed, 10/1	Lecture 6: Introduction to Photoshop Lab 3: Proof Due for Critique at the Beginning of Class Final Project: Users identified	*Tufte , Ch. 4 *Peterson, Ch. 3
Thurs, 10/2	Start Lab 4: Alaska Map	
Lab 3: Final Due Sunday, 10/5 by Midnight		

Week/Day	Topic	Assigned Reading
<i>Week 7: Graphic Design in Maps</i>		
Wed, 10/8	Lecture 7: Design Movie NACIS	*Tufte , Ch. 5 *Brewer Color .pdf
Thurs, 10/9	NACIS – Instructor (and perhaps some students) Out of Town, Work on Lab 4	
<i>Week 8: The Use and Value of Color</i>		
Wed, 10/15	Lecture 8: Color as Communication Lab 4: Proof Due for Critique at the Beginning of Class	*Peterson Color .pdf
Thurs, 10/16	Final Project: User Specs w/ signed form Start Lab 5: Mini Atlas Lab 4: Final Due	
Lab 4: Final Due Sunday, 10/19 by Midnight		
<i>Week 9: The Presentation of Maps</i>		
Wed, 10/22	Lecture 9: Map Presentation	*Tufte , Ch. 6 *Hoarau .pdf
Thurs, 10/23	Graduate Presentation and Lab Work	
<i>Week 10: Maps in Info-Graphics</i>		
Wed, 10/29	Lecture 10: Rise of the Info-Graphic Lab 5: Proof Due for Critique at the Beginning of Class Final Project: Data section due	* Info-Graphic .pdf
Thurs, 10/30	Start Lab 6: Cartographic Info-Graphic Poster	
Lab 5: Final Due Sunday, 11/2 by Midnight		
<i>Week 11: Cognition and Perception in Maps</i>		
Wed, 11/5	Lecture 11: Cognition and Perception in Maps	*Tufte , Ch. 7
Thurs, 11/6	Lab Work	
<i>Week 12: Meet the Professional Cartographer</i>		
Wed, 11/12	Guest Lecture From a Working Cartographer	*Tufte , Ch. 8
Thurs, 11/13	Lab 6: Proof Due for Critique at the Beginning of Class Lab Work	

Week/Day	Topic	Assigned Reading
<i>Week 13: Cartographic Production Workflow</i>		
Wed, 11/19	Lecture 13: Production Process Lab 6: Final Due Wed., 11/19 by Midnight	*Tufte , Ch. 9
Thurs, 11/20	Real World Project – Fast Turnaround	
Lab 7: Final Due Fri., 11/21 by Midnight		
<i>Week 14: Final Project Work</i>		
Wed, 11/26	Project Work *Thanksgiving Travel, NO CLASS*	*Selected Reading
Thurs, 11/27	*Thanksgiving, NO CLASS* Project Work	
Final Project: Proof due to Client and Instructor by Wed. 12/3		
<i>Week 15: Final Project Presentations</i>		
Wed, 12/3	Lab 7 Critique Resource Notebook: Due In Class	
Thurs, 12/4	Final Project Presentations	
<i>Week 16: Finals Week –Projects Due</i>		
Wed, 12/10	Last Chance Lab / Project Work	
Thurs, 12/11	Final Projects due by 5 PM w/ form signed	