

Geography 572

Graphic Design in Cartography



Instructor:

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Office: 375 Science Hall

Office Hours: Tuesday/Thursday 2:30-3:30pm, or by appointment

Teaching Assistant:

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Office Hours: Friday, 10-11am & 12-1pm, held in Science Hall M376

Lectures (360 Science Hall):

Tuesday/Thursday 1:00-2:15pm

Labs (380 Science Hall):

Section 301: Monday 1:00-3:00pm

Section 302: Monday 3:30-5:30pm

Course Overview

Geography 572 (G572) provides an in-depth examination of advanced topics in **cartographic representation**, or the graphics, sounds, haptics, etc., constituting a map that are employed to encode geographic information. G572 is a direct extension of the G370 course, but with a focus on cartographic design for the web rather than print, and draws upon research and practice on graphic design, web design, and art. Specifically, G572 integrates theory on both mapmaking and map use (compared to G170 or G370, which focus upon one or the other) and emphasizes design of web-delivered static maps, rather than the design of interfaces for manipulating these maps (compared to G575). G572 is divided into two components: lectures and labs.

Lecture Overview:

The lecture component of the course is designed to shed light on the question 'How maps work?'. Lecture material is organized into three primary sections: (1) **How maps are seen**, drawing on theory from visual perception; (2) **How maps are understood**, drawing on theory from visual and spatial cognition; and (3) **How maps become meaningful**, drawing on theory from semiotics as well as artistic and ethical epistemologies. Most lectures span multiple days, with the opening material introducing an influential theory relating to one of these three components and the

subsequent material presented as discussion on how such theory informs (or confuses) one or several topics regarding cartographic design. Throughout, the broader context of the course is visual storytelling, with an 'eye' towards the fundamental changes occurring to map design as the world comes online.

Lab Overview:

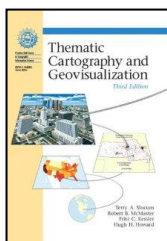
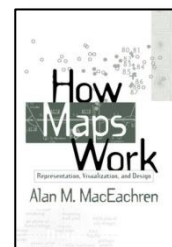
The laboratory component of the course teaches across the *cartographic workflow* for designing maps that 'work' on the web. Thus, the focus is not on a single technology or programming language, but rather effective navigation across a range of modern cartographic tools and techniques. Specifically, the labs introduce strategies for integrating the ArcGIS Suite, Adobe Illustrator and Photoshop, Mapbox Studio and CartoCSS, and responsive web design (HTML/CSS) to create elegant and intriguing map-based stories on the web. Following the series of lab assignments, you are required to design a *final project* map on a topic of your choosing. Creativity and ingenuity are strongly encouraged in the conceptualization and execution of the final project.

Course Requirements

The prerequisite for G572 is G370 (Introduction to Cartography); if you have taken a Cartography course on another campus, please meet with Rob to discuss possible remedial studies. Operational knowledge of ArcGIS and Adobe Illustrator is assumed; no experience with Photoshop, MapBox Studio, or web development is required. Readings for G572 are not required, but are *highly recommended* for students that are pursuing a career in Cartography; specific readings for each week are listed in the course schedule.

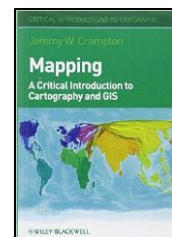
Recommended Texts:

How Maps Work: Representation, Visualization, and Design (1995) by Alan M. MacEachren. New York, NY: Guilford Press. (on course reserve in the Geography Library)



Thematic Cartography and Geographic Visualization, Third Edition (2009) by Terry A. Slocum, Robert B. McMaster, Fritz C. Kessler, and Hugh H. Howard. Upper Saddle River, NJ: Pearson Prentice Hall. (on course reserve in the Geography Library)

Mapping: A Critical Introduction to Cartography & GIS (2010) Jeremy Crampton. Chichester, England: Wiley-Blackwell (on course reserve in the Geography Library)



Recommended Software:

Adobe Illustrator & Photoshop Creative Cloud (12-month student license available through [DoIT](#) for a student discount) and MapBox Studio (available for download at: <http://www.mapbox.com/mapbox-studio/>)

Evaluation

Grade Weighting:

Each evaluated item represents a percentage of the total course weight; final grades are assigned according the composite grade distribution of the course. Under university policy, final grades are assigned to graduate and undergraduate students using separate curves.

	<i>Item</i>	<i>Weight</i>	<i>Description</i>	<i>Date(s)</i>
Lecture	Exam #1	15%	75-minute midterm (online, essay format)	10/15
	Exam #2	15%	75-minute final (non-cumulative; online, essay format)	11/24
	Quizzes	10%	8-10 in-class quizzes covering topics from the previous lecture	throughout
Labs	Lab Assignments	40%	Four mapping assignments	W#5, #8, #11, & #14
	Final Project	20%	Individual mapping project (no group projects allowed)	12/21 (noon)

*UW-Madison encourages persons with disabilities to participate in its programs and activities; contact Rob at the outset of the course if you need any type of accommodation.

Exams (30% total; 15% per exam) and Quizzes (10%)

Exams (30%): Your understanding of the lecture material is evaluated through administration of a pair of examinations and a series of quizzes. Exams are in an essay format, with each exam requiring you to answer two questions. The exams are proctored online and thus are **open** book/notes. Online exams are **timed**, giving you 75 minutes to draft your responses; the exam will be open for ~three day period to complete at your convenience. The exams are **not** cumulative. While group studying is encouraged, cheating during the exam is not tolerated and results in a zero for the exam and disclosure of the impropriety to the Department and University. Make-up exams require a doctor's note or, in the event of planned travel, must be rescheduled **4 weeks** in advance.

Quizzes (10%): In non-exam weeks, quizzes will be proctored at the beginning of lecture covering material from the prior lecture. Quizzes are open book/notes and must be completed within 5 minutes. Make-up quizzes require a doctor's note or, in the event of planned travel, must be rescheduled 4 weeks in advance; you may not complete the quiz after class if you arrive late. Lecture notes for the week will be posted only after the weekly quiz is administered.

Important Dates for Exams and Quizzes:

- **October 15th:** Exam #1 (online)
- **November 24th:** Exam #2 (online)

Lab Assignments (40%)

Assignments (40%): Your ability to apply the mapping principles learned in lecture is evaluated through a series of four lab assignments. Each assignment represents a 'challenge' in which you need to design a map for a specific purpose. Each lab assignment relates to concepts and techniques introduced in lecture and builds on the last, meaning that you are responsible for properly applying previously learned mapping principles (therefore, the lab assignments are cumulative); a rubric is provided for each lab assignment to indicate how it is marked. All lab assignments must be uploaded to a Learn@UW dropbox 1 hour prior to the lab period meeting on the due date.

Grading: The penalty for a late lab assignment is 10% of the total score per day late; submission of an assignment the day it is due, but after the deadline (e.g., following your lab that day), counts as one day late. Extensions for labs must be arranged 4 weeks in advance. Technical complications (e.g., disk errors, printing problems) are not reason for extension; be sure to back up copies of all of your work and version meticulously, as forgetting to save (or improperly saving over) your web map is the easiest way to lose your work and subsequently fall behind in the course. Plagiarism is not tolerated; each lab assignment has an 'easter egg' in it to ensure you are not using work from prior semesters. As with other evaluated items, any offense results in a zero for the lab assignment and disclosure of the impropriety to the Department and University. Requests for grade changes must be submitted in writing (via email) within 24 hours of receiving your feedback.

Important Dates for Lab Assignments (due 1hr before lab):

- **September 28th:** Lab #1 Due (Visual Storytelling Challenge)
- **October 19th:** Lab #2 Due (Terrain Representation Challenge)
- **November 9th:** Lab #3 Due (Tile Design Challenge)
- **November 30th:** Lab #4 Due (Web Portfolio Challenge)

Final Project (20%)

Final Project (20%): The final project is the cornerstone of G572, affording you the opportunity to apply the theoretical and practical knowledge acquired throughout the course on a cartographic project of your choosing. It is never too early to begin thinking about your final project topic, and, once selected, to begin assembling the needed geographic information. It is recommended to select a topic that aligns closely with your area of study (particularly if you work in one of the other sub-disciplines of Geography) or a personal interest; your enthusiasm for the mapped topic is sure to shine through to the final map product. The best final projects from G572 often are competitive in national and international student mapping competitions, including the [CaGIS Map Design Competition](#), the [NACIS Student Dynamic Map Competition \(Narrative Track\)](#), and the [National Geographic Award in Mapping](#).

Grading: Late final projects will not be accepted; you must submit the current state of your project/portfolio (however complete it is) at the deadline to avoid a zero for the deliverables. Group projects are not allowed. Plagiarism is not tolerated; final project topics are researched to ensure you did not directly copy an existing map. As with other evaluated items, any offense results in a zero for that activity and disclosure of the impropriety to the Department and University.

Important Dates for the Final Project:

- **November 16th:** 2-page proposal due describing your map's topic and purpose, your planned representation technique, and the source of the underlying geographic information (5% of your final project grade).
- **December 15th:** 2-3 minute in-class presentation of a draft version of your final project map (5% of your final project grade).
- **December 21st:** Final project due; submit the link, source code, and data sources to a Learn@UW dropbox by **Noon**.

Week	Date	Lecture/Lab Topic	Assignment	
W1	8/31	NO LAB: Before Semester Start		
	9/1	No Class: Before Semester Start		
	9/3	Course Overview & Influences		
W2	9/7	NO LAB: Labor Day (Complete Remedial Labs/Tutorials)		Perception
	9/8	Visual Storytelling I: The Story of Cartography	Mac Ch1; Cra Ch5	
	9/10	Visual Storytelling II: Narrative & Tropes	Slocum Ch24	
W3	9/14	Review of ArcGIS & Illustrator; Assign Lab #1		
	9/15	Visual Form I: Visual Perception	MacEachren Ch2,3	
	9/17	Visual Form II: Grouping & Figure-Ground	MacEachren Ch3	
W4	9/21	Lab #1 Work Period		
	9/22	Visual Attention I: Visual Variable Selectivity & Conjunction	MacEachren Ch3	
	9/24	Visual Attention II: Bivariate & Multivariate Mapping	Slocum Ch18	
W5	9/28	From Illustrator to Photoshop; Assign Lab #2	Lab #1 Due	Cognition
	9/29	Visual Complexity I: Factors of Complexity	MacEachren Ch9	
	10/1	Visual Complexity II: Terrain Representation w/ Daniel Huffman	Slocum Ch20	
W6	10/5	Lab #2 Work Period		
	10/6	Visual Complexity III: Representing Space+Time	Slocum Ch21	
	10/8	Visual Cognition I: Knowledge Schema	MacEachren Ch2,4	
W7	10/12	Photoshop Tips w/ Tanya Buckingham		
	10/13	Visual Cognition II: Representing Uncertainty	Slocum Ch23	
	10/15	Exam #1: 75-minute midterm (online, timed)	Exam #1	
W8	10/19	Introduction to Mapbox Studio & CartoCSS; Assign Lab #3	Lab #2 Due	Culture
	10/20	Visual Semiotics I: Review & Referent Focus	MacEachren Ch5,6	
	10/22	Visual Semiotics II: Interpretant Focus (Iconicity and Realism)	MacEachren Ch6	
W9	10/26	Continued discussion of CSS & CartoCSS		
	10/27	Visual Semiotics III: Sign-Vehicle Focus (Designation vs. Connotation)	MacEachren Ch6,7	
	10/29	NO CLASS: Work on Lab #3		
W10	11/2	CartoCSS Tips w/ Katie Kowalsky		
	11/3	Visual Aesthetics I: Art & Emotion	Crampton Ch12	
	11/5	Visual Aesthetics II: Graphic Design Styles		
W11	11/9	From Graphic Design to Web Design (HTML+CSS); Assign Lab #4	Lab #3 Due	Final Projects
	11/10	Visual Ethics I: Being an Ethical Cartographer	Crampton Ch1	
	11/12	Visual Ethics II: Rhetoric & Persuasion w/ Ian Muehlenhaus	Crampton Ch6	
W12	11/16	Continued discussion of Bootstrap	Proposal due	
	11/17	Visual Critique I: Critical & Radical Cartography	Crampton Ch2,4,7	
	11/19	Visual Critique II: Participatory Mapping & VGI w/ Carl Sack	Crampton Ch3,9,10	
W13	11/23	Work Period for Lab #4		
	11/24	Exam #2: 75-minute final (online, timed)	Exam #2	
	11/26	NO LECTURE: Thanksgiving		
W14	11/30	Final Project Consultation	Lab #4 Due	
	12/1-12/3	Final Project Consultation	--	
W15	12/7	Final Project Consultation		
	12/8-12/10	Final Project Consultation	--	
	12/15	Final Project Presentations in Lab (80% complete)	Projects Due	
	12/21	Final Projects and Web Portfolios Due by Noon	Projects Due	