

Geography 370

Introduction to Cartography



Instructor:

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Office: 375 Science Hall

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

Teaching Assistants:

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Office Hours: Wednesdays 1:00-5:00pm in M376

Lecture (121 Pyle Center):

Tuesday/Thursday 11:00a-12:15pm

Labs (380 Science Hall):

Section 301: Monday 8:55-10:55am (Meghan)

Section 302: Thursday 4:00-6:00pm (Heather)

Section 303: Thursday 6:15-8:15pm (Heather)

Section 304: Friday 9:55-11:55am (Meghan)

Course Overview

Geography 370 (G370) provides a general introduction to *Cartography*, broadly defined as the art, science, and ethics of mapmaking and map use. G370—and the UW Cartography curriculum generally—focuses upon the design of maps, drawing from research and practice on graphic design, information visualization, and semiotics, perspectives that you are unlikely to receive in other GIS courses. Specifically, G370 emphasizes mapmaking over map use (compared to G170) and print mapping over web-based or interactive mapping (compared to G572 and G575, respectively). G370 is divided into two components: lectures and labs.

Lecture Overview:

The lecture component of the course covers the cartographic theories, best practices, and success stories that are essential for thinking critically about map design. Lecture material is presented as a series of cartographic guidelines—developed through both scientific inquiry and time-tested convention—and associated examples illustrating the range of

potential design solutions. Lectures are discriminated by topics that traditionally fall under **reference mapping** (Weeks #1-5) and topics that traditionally fall under **thematic mapping** (Weeks #6-12), although, as you will see, this is an imperfect distinction. As an introductory course, you are tested on your knowledge of and conformance to the cartographic guidelines discussed in lecture; however, by the end of the course, you will have an understanding about when these rules should be followed directly and when you can bend (or even break) these rules to improve your map.

Lab Overview:

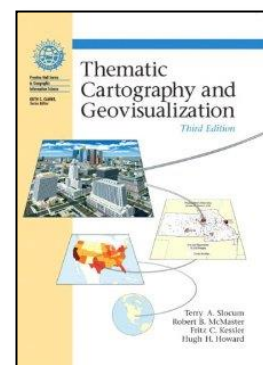
The laboratory component of the course emphasizes the practical skills needed to make maps. Each lab assignment requires you to grapple with a topic previously discussed in lecture, with the final map deliverable representing your critical understanding about the topic. The labs leverage **Esri ArcGIS** and **Adobe Illustrator**; by the end of the course, it is expected that you will have operational-to-proficient knowledge of both packages, as applied for map design, and that you can indicate such on a résumé. Following the series of lab assignments, you are required to design a **final project** map on a topic of your choosing. The final project must be completed individually, but you will be meeting regularly with a cohort of your peers to discuss and improve your designs. Creativity and ingenuity are strongly encouraged in the conceptualization and execution of the final project.

Course Requirements

G370 assumes no prior knowledge of or experience in Cartography or related fields; there are no course prerequisites (sophomore standing is required). Readings from the Slocum text are not required, but are **highly recommended** for students that are pursuing a career in Cartography and/or students struggling with specific lecture topics. The reading excerpts associated with each lecture are noted in the composite schedule and posted lecture notes.

Recommended Textbook:

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



Recommended Software:

Adobe Illustrator Creative Cloud (12-month student license available through [DoIT](#) for a student discount)

*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.

Evaluation

Grade Weighting:

Each evaluated item represents a percentage of the total course weight. Final grades are assigned according to 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 (true/false & multiple choice questions)	10/13
	Exam #2	15%	75-minute final (true/false & multiple choice questions)	11/24
	Quizzes	10%	8-10 in-class quizzes covering topics from the previous lecture	throughout
Labs	Lab Assignments	30%	Five mapping assignments	Weeks #4, #7, #9, #11, & #12
	Final Project	20%	Individual mapping project (no group projects allowed)	Proposal #10; Final 12/18
	Cohort Assignments	10%	Three review assignments completed w/ cohort	Weeks #3, #11, & #15

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

Exams (30%): Your understanding of the lecture material is evaluated through a pair of exams and a series of quizzes. Exams constitute the majority of the lecture points and include a combination of true/false, multiple choice, and short answer questions. The exams are **closed** book/notes and must be completed within 75 minutes. The exams are **not** cumulative. 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. Make-up exams are given in an essay format.

Quizzes (10%): In non-exam weeks, quizzes will be proctored at the beginning of lecture covering material from the prior lecture. In-class quizzes are designed to promote active learning and attentive note-taking, as well as class attendance. 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 following 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 13th:** Exam #1 (in 121 Pyle Center)
- **November 24th:** Exam #2 (in 121 Pyle Center)

Lab Assignments (30%)

Assignments (30%): Your ability to apply the mapping principles learned in lecture is evaluated through a series of five lab assignments. Each assignment represents a mapping 'challenge', in which you need to design a map for a specific mapping purpose. Each lab assignment 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 **printed** and placed in either Heather or Meghan's mailbox **1 hour** prior to the lab period meeting on the due date; mailboxes are found on the 3rd floor of Science Hall, past the State Cartographer's Office. We also require that you upload your lab as a PDF to a Learn@UW Dropbox to ensure we have a copy of the file. It is the printed version that is graded, so please take care in color proofing the final submission.

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 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 24-28th :** Lab #1 Due (Projection/Generalization Challenge)
- **October 15-19th:** Lab #2 Due (Typography Challenge)
- **October 29th-November 2nd:** Lab #3 Due (Choropleth Challenge)
- **November 12-16th:** Lab #4 Due (Proportional Symbol Challenge)
- **November 19-23rd:** Lab #5 Due (Isoline Challenge)

Final Project (20%) and Cohort Assignments (10%)

Final Project (20%): The final project is the cornerstone of G370, affording you the opportunity to apply the theoretical and practical knowledge acquired throughout the course on a mapping 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 to tell your visual story. It is recommended to choose 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 G370 often are competitive in national and international student mapping competitions, including the [CaGIS Map Design Competition](#), the [NACIS Student Poster Competition](#), and the [National Geographic Award in Mapping](#); you are encouraged to look at past winners of these competitions (particularly those from your UW colleagues), as they are excellent examples of 'A+' final projects. Final projects from the past ~10 years are available for review in the Map Library.

Cohort Assignments (10%): The ability to critique the work of others in a positive manner is an important design skill in Cartography. Knowing how to accept and integrate constructive input—and how to pick your battles on particular design ideas in which you strongly believe—is an equally important skill. At the start of the semester, each of you will be grouped into cohorts comprising 4 or 5 students. You will complete three assignments as a cohort across the semester: (1) an initial projections activity designed to familiarize you with your cohort; (2) peer-review of your cohort's final project proposals; and (3) peer-review of your cohort's presented final projects (80% draft). It is highly recommended that you meet as a cohort outside of class to provide informal peer-review on labs prior to submission, as well as to study for exams. You will come to rely on your cohort as you conceptualize and implement your final project design.

Grading: Late final projects will not be accepted. You must submit the current state of your project/portfolio (however complete it is) by **December 18th** 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:

- **September 17-21st (during lab):** Cohort Assignment #1 (Projections Worksheet)
- **November 5-9th (before lab):** Two-page final project proposal
- **November 12-16th (before lab):** Cohort Assignment #2 (Proposal Peer-Review)
- **December 10-14th (before lab):** 80% Complete Draft
- **December 11-15th (24 hrs after presentation):** Cohort Assignment #3 (Project Peer-Review)
- **December 18th (Noon):** Final projects due; submit a print for the 3rd floor wall to Heather or Meghan's mailbox **AND** upload as a PDF to a Learn@UW dropbox

Week	Date	Lecture/Lab Topic	Assignment	
W1	9/1	No Class		Reference Cartography
	9/3	Course Overview & Structure		
		No Labs Week #1; No Monday Lab on Labor Day (9/7)		
W2	9/8	Introduction to Cartography	Slocum Ch1	
	9/10	Map Projections I: The Geographic Coordinate System	Slocum Ch7; Ch8	
		Introduction to ArcGIS & MapShaper; Assign Lab #1		
W3	9/15	Map Projections II: Projection Mechanics & Distortions	Slocum Ch8; Ch9	
	9/17	Map Generalization I: Map Scale & the Cartographic Problematic	Slocum Ch6	
		Introduction to Illustrator; Meet & Work with Cohort	Cohort #1	
W4	9/22	Map Generalization II: Generalization Operators	Slocum Ch6	
	9/24	Map Typography I: Label Appearance	Slocum Ch11	
		Assign Lab #2	Lab #1	
W5	9/30	Map Typography II: Label Placement	Slocum Ch11	
	10/1	Putting it All Together: Map Elements & Visual Hierarchy	Slocum Ch11; Ch12	
		Illustrator Tips w/ Tanya Buckingham		
W6	10/6	Symbolization I: The Visual Variables	Slocum Ch5	
	10/8	Symbolization II: Thematic Map Types	Slocum Ch5	
		Assign Lab #3; Lab #2 Work Period		
W7	10/13	Exam #1: 75-minute midterm	Exam #1	
	10/15	No Class: Finish Lab #2 (+ Go to NACIS!)		
		Monday Lab Only: Work on Lab #2 (+ Go to NACIS!)	Lab #2	
W8	10/20	Choropleth Maps I: Normalization	Slocum Ch14	
	10/22	Choropleth Maps II: Classification	Slocum Ch4; Ch14	
		Data Tips w/ Jamie Stolenberg ; Review Exam #1; Discuss Lab #2/3 w/ cohort		
W9	10/27	Choropleth Maps III: Color Theory	Slocum Ch10; Ch14	
	10/29	No Class: Visit Map Library (could be switched with 10/27)		
		Design Tips w/ Sarah Bennett (DesignLab); Assign Lab #4	Lab #3	
W10	11/3	Proportional Symbol Maps	Slocum Ch17	
	11/5	Dot Maps and Dasymetric Maps	Slocum Ch15; Ch17	
		Discuss final project proposals w/ cohorts	Proposal	
W11	11/10	Isoline Maps	Slocum Ch16	
	11/12	Cartograms	Slocum Ch19	
		Assign Lab #5; Discuss peer-reviews w/ cohorts	Cohort #2; Lab #4	
W12	11/17	Flow Maps	Slocum Ch19	
	11/19	Professional Cartography w/ Tanya Buckingham	Slocum Ch13	
		Design Tips w/ Daniel Huffman ; Discuss final project w/ cohort	Lab #5 Due	
W13	11/24	Exam #2: 75-minute final (non-cumulative)	Exam #1	
	11/26	No Class: Thanksgiving		
		Monday Lab only: Thanksgiving		
W14	12/1	Final Project Consultation		
	12/3	Final Project Consultation		
		Review Exam #2; Discuss final project draft (50% complete) w/ cohort		
W15	12/8	Final Project Presentations in Lab	Presentations	
	12/10	Final Project Presentations in Lab	Presentations	
		Final Project In-Lab Presentations (80% complete)	Cohort #3	
	12/18	Final Projects Due by Noon	Projects	

Reference Cartography

Thematic Cartography

Final Projects