

Geography 370

Introduction to Cartography



Instructor:

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Office Hours: Friday 11a-12p & 2-3p, or by appointment

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Office Hours: TBD (in Science Hall M376)

Lectures (360 Science Hall):

Tuesday/Thursday 1pm-2:15pm

Labs (380 Science Hall):

Section 301: Wednesday 1:20-3:20pm
Section 302: Wednesday 6:00-8:00pm

Course Overview

Geography 370 (G370) provides a general introduction to *Cartography*, broadly defined as the art and science 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 static or print mapping over interactive or web-based mapping (compared to G572 and G575). G370 is divided into two components: lectures and labs.

Lecture Overview:

The lecture component of the course covers the extant cartographic theories and prior cartographic success stories that are important for thinking critically about the design of maps. 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 #1-6) and topics that traditionally fall under *thematic mapping* (Weeks #7-14), 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:

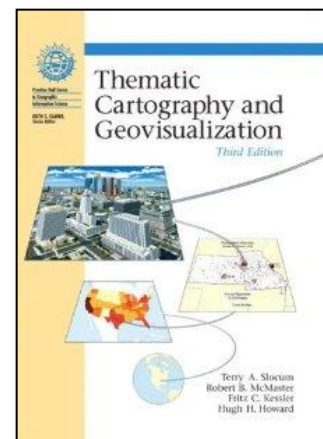
The laboratory component of the course emphasizes the practical skills needed to make maps. Each lab assignment requires you to grapple with a topic previously discussed in lecture, with the final map deliverable representing your critical thinking about the topic. The labs leverage the ArcGIS and Adobe Illustrator software packages; 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. Creativity and ingenuity are strongly encouraged in the conceptualization and execution of the final project. The final project is submitted as the closing entry in a larger *map portfolio*, which also contains your labs, revised according to our feedback; the overarching goal of the map portfolio is to assist in securing employment following your university studies.

Course Requirements

G370 assumes no prior knowledge of or experience in Cartography or related fields; there are no Geography/Cartography 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. 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. Upper Saddle River, NJ: Pearson Prentice Hall. (available new from Amazon for \$118 and on course reserve)



Recommended Software:

Adobe Illustrator CS5 (available through DoIT for \$124)

*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 your composite percentage across all evaluated items.

	Item	Weight	Description	Date(s)
Lecture	Exam #1	20%	75-minute midterm (primarily short-answer questions)	3/8
	Exam #2	20%	75-minute final (non-cumulative; primarily short-answer)	4/26
	Quizzes	5%	8-10 in-class quizzes covering topics from the previous lecture	throughout
Labs	Lab Assignments	25%	Five mapping assignments	throughout
	Final Project	20%	Individual mapping project (no group projects allowed)	5/15 (noon)
	Map Portfolio	10%	Compilation of lab assignments and final project	5/15 (noon)

Exams (40% total; 20% per exam) and Quizzes (5%)

Your understanding of the lecture material is evaluated through administration of a pair of examinations and a series of quizzes. Exams constitute the majority of the lecture points and include a combination of multiple choice, true/false, and short answer questions, with an emphasis on the latter. The exams are not open book/open notes and must be completed within 75 minutes. A review is provided one or two days prior to the exam, in the evening. 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. Make-up exams are in an essay format, rather than primarily short answer.

In non-exam weeks, quizzes will be proctored at the beginning of lecture covering material from the prior lecture. In-class quizzes provide sample questions to inform exam preparation as well as promote class attendance and attentive note-taking. Quizzes are open book/open 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 after the weekly quiz is administered.

Important Dates for Exams and Quizzes:

- **March 8th:** Exam #1 (in Science Hall 360)
- **April 26th:** Exam #2 (in Science Hall 360)

Lab Assignments (25%)

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 Chris's mailbox **1 hour** prior to the lab period meeting on the due date; mailboxes are found on the 3rd floor of Science Hall, near the State Cartographer's Office.

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 advanced. 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:

- **February 15th:** Lab #1 Due (Projections/Generalization Challenge)
- **February 29th:** Lab #2 Due (Typography Challenge)
- **March 14th:** Lab #3 Due (Choropleth Challenge)
- **March 28th:** Lab #4 Due (Proportional Symbol Challenge)
- **April 11th:** Lab #5 Due (Isoline Challenge)

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 represented geographic information. 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.

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:

- **March 30th:** 2-page proposal due describing your map's topic and purpose, your planned representation technique, and the source of the underlying geographic information (counts towards 10% of your final project grade).
- **May 9th:** 3-5 minute in-class presentation of a draft version of your final project map (counts towards 10% of your final project grade).
- **May 15th:** Final project due (as part of the portfolio); submit a print to Chris's mailbox and upload a PDF to a Learn@UW dropbox by **Noon**.

Map Portfolio (10%)

The sum product of G370 is your map portfolio. A diverse and well-organized map portfolio illustrating your abilities as a cartographic designer is essential for securing employment in Cartography specifically, and is becoming increasingly impactful for gaining employment in GIS domains broadly. The submitted map portfolio must include seven pages: a 1-page résumé or vita, all five of your lab assignments, and your final project; you are encouraged to include additional maps that you have made for other courses (we will provide feedback to you on these, but will not grade them). The portfolio is evaluated based on the revisions made to your initial lab assignments in response to our feedback; thus, some students may have more work to do than others, depending on the quality of your initial assignments. As with the final project, late map portfolios are not accepted. The map portfolio is a document to which you can continue to contribute over the course of your career.

Important Dates for the Map Portfolio:

- **May 15th:** Map portfolio due; submit a print to Chris's mailbox and upload a PDF to a Learn@UW dropbox by **Noon**.

Week	Date	Lecture/Lab Topic	Assignment	
W1	1/24	Introduction to Cartography I: Mapicity	Slocum Ch1	Reference Cartography
	1/26	Introduction to Cartography II: Cartographic Dichotomies	Slocum Ch1	
		Introduction to ArcGIS and Adobe Illustrator		
W2	1/31	Map Projections I: Geodesy & the Geographic Coordinate System	Slocum Ch7; Ch8	
	2/2	Map Projections II: Projection Mechanics & Distortions	Slocum Ch8; Ch9	
		Assign Lab #1: Projection/Generalization Challenge		
W3	2/7	Map Generalization I: Map Scale and the Cartographic Problematic	Slocum Ch6	
	2/9	Map Generalization II: Generalization Operators	Slocum Ch6	
		Work Period for Lab #1		
W4	2/14	Map Typography I: Label Appearance	Slocum Ch11	
	2/16	Map Typography II: Label Placement	Slocum Ch11	
		Assign Lab #2: Typography Challenge	Lab #1 Due	
W5	2/21	Putting it All Together: Map Elements & Visual Hierarchy	Slocum Ch11; Ch12	
	2/23	Terrain Representation w/ Daniel Huffman	Slocum Ch20	
		Illustrator Tricks w/ Tanya Buckingham		
W6	2/28	No Class: AAG Conference; Work on Lab #2		
	3/1	Semiotics I: Theory of Sign Systems	Slocum Ch5	
		Assign Lab #3: Choropleth Challenge	Lab #2 Due	
W7	3/6	Semiotics II: Applications to Map Symbolization	Slocum Ch5	
	3/8	EXAM #1: 75-minute midterm		
		Work Period for Lab #3		
W8	3/13	Go over Exam #1; Assign Final Project		
	3/15	Choropleth Maps I: Normalization	Slocum Ch14	
		Assign Lab #4: Proportional Symbol Challenge	Lab #3 Due	
W9	3/20	Choropleth Maps II: Classification	Slocum Ch4; Ch14	
	3/22	Choropleth Maps III: Color Theory	Slocum Ch10; Ch14	
		Work Period for Lab #4		
W10	3/27	Proportional Symbol Maps	Slocum Ch17	
	3/29	Dot Maps and Dasymetric Maps	Slocum Ch15; Ch17	
		Assign Lab #5: Isoline Challenge	Lab #4, Prop. Due	
	4/1-7	No Class: Spring Break		
W11	4/10	Isoline Maps I: Interpolation	Slocum Ch16	
	4/12	Isoline Maps II: Design Considerations	Slocum Ch16	
		Final Project Consultation	Lab #5 Due	
W12	4/17	Cartograms	Slocum Ch19	
	4/19	Flow Maps	Slocum Ch19	
		Terrain Representation Tricks w/ Daniel Huffman		
W13	4/24	Professional Cartography w/ Tanya Buckingham	Slocum Ch13	
	4/26	EXAM #2: 75-minute final (non-cumulative)	Exam #2	
		Final Project Consultation		
W14	5/1	Go over Exam #2		
	5/3	Additional Techniques: Preview of G572 & G575	Slocum Ch18; Ch22	
		Final Project Consultation		
W15	5/8	No Class: Final Project Presentations in Lab	--	
	5/10	No Class: Final Project Presentations in Lab	--	
		Final Project In-Class Presentations	Presentations	
	5/15	Final Projects and Map Portfolios Due by Noon	Portfolios Due	

Reference Cartography

Thematic Cartography