

Geography 370

Introduction to Cartography



Instructor:

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Office Hours: Monday 1-2pm, Tuesday 1-2pm (in Science Hall M376)

Lectures (360 Science Hall):

Tuesday/Thursday 11am-12:15pm

Labs (380 Science Hall):

Section 301: Wednesday 9:55-11:55am

Section 302: Thursday 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 typically 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 generally are discriminated by topics that traditionally fall under

reference mapping (Weeks #1-5) and topics that traditionally fall under *thematic mapping* (Weeks #6-14), 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 'rules' 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 the quality of your map.

Lab Overview:

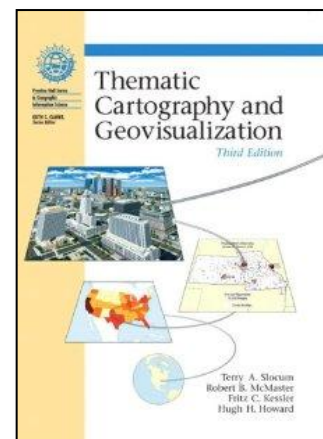
The laboratory component of the course emphasizes the practical skills needed to make maps. Each lab assignment requires you to grapple with a topic previously discussed in lecture, with the final map deliverable representing your critical thinking about the topic. The labs leverage the ArcGIS and Adobe 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 resumé. 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 map. 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.

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)



Recommended Software:

Adobe Illustrator CS5 (available through DoIT for \$196)

*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)	10/20
	Exam #2	20%	75-minute final (non-cumulative; primarily short-answer)	12/6
	Bonus Map Examples	+2pts on exams	Weekly "winner" for best example of a topic discussed in lecture (used for attendance)	throughout
Labs	Lab Assignments	30%	Six mapping assignments	throughout
	Final Project	20%	Individual mapping project (no group projects allowed)	12/20 (noon)
	Map Portfolio	10%	Compilation of lab assignments and final project	12/20 (noon)

Exams (40%; 20% per exam)

Your understanding of the lecture material is evaluated through administration of a pair of examinations. Each exam includes a combination of multiple choice, true/false, and short answer questions, with an emphasis on the latter. The exams are not open book and must be completed within 75 minutes. A review is provided one or two days prior to the exam, in the evening; sample questions are provided at the review sessions to inform preparation. 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.

Important Dates for Exams:

- **October 20th:** Exam #1 (in Science Hall 360)
- **December 6th:** Exam #1 (in Science Hall 360)

Lab Assignments (30%)

Your ability to apply the mapping principles learned in lecture is evaluated through a series of six 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) is 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; your chances of receiving points back are increased significantly if you are able to cite statements from the Slocum text or other, credible cartography resources.

Important Dates for Lab Assignments:

- **September 28th/29th:** Lab #1 Due (Projections Challenge)
- **October 19th/20th:** Lab #2 Due (Typography Challenge)
- **November 2nd/3rd:** Lab #3 Due (Choropleth Challenge)
- **November 9th/10th:** Lab #4 Due (Proportional Symbol Challenge)
- **November 16th/17th:** Lab #5 Due (Dot Density Challenge)
- **November 30th/December 1st:** Lab #6 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:

- **October 26th/27th:** Assignment of the final project (in lab)
- **November 17th:** 1-page proposal due describing your map's topic and purpose, your planned representation technique, and the source of the underlying geographic information; this is the only assignment that will be submitted electronically.
- **December 14th/15th:** 3-5 minute in-class presentation of a draft version of your final project map; the goal of the presentation is to educate your classmates on the novel design choices you made as part of the map and to receive a formal round of feedback, prior to the submission deadline.
- **December 20th:** 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 eight pages: a 1-page resumé or vita, all six 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 assignment) and the consistency and professionalism in the overall design; 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:

- **December 20th:** 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	9/6	Course Overview	
	9/8	Introduction to Cartography: Frameworks, Dichotomies, Mapticity	Slocum Ch1
	9/7-8	Introduction to ArcGIS and Adobe Illustrator	
W2	9/13	Map Projections I: From a Round Earth to a Flat Map	Slocum Ch7; Ch8
	9/15	Map Projections II: Characteristics & Distortions of Projections	Slocum Ch8; Ch9
	9/14-15	Assign Lab #1: Projection Challenge	
W3	9/20	Map Generalization I: Map Scale and the Cartographic Problematic	Slocum Ch6
	9/22	Map Generalization II: Generalization Operators	Slocum Ch6
	9/21-22	Work Period for Lab #1	
W4	9/27	Map Typography	Slocum Ch11
	9/29	Terrain Representation	Slocum Ch20
	9/28-29	Assign Lab #2: Typography Challenge	Lab #1 Due
W5	10/4	Terrain Representation (cont'd) & Additional Reference Techniques	Slocum Ch20
	10/6	Putting it All Together: Map Elements and Visual Hierarchy	Slocum Ch11; Ch12
	10/5-6	Work Period for Lab #2	
W6	10/11	Semiotics I: Theory of Sign Systems	--
	10/13	NO CLASS: NACIS Conference	
	10/12-13	NO LAB: NACIS Conference	
W7	10/18	Semiotics II: Applications to Map Symbolization	Slocum Ch5
	10/20	EXAM #1: 75-minute midterm	Exam #1
	10/19-20	Assign Lab #3: Choropleth Challenge	Lab #2 Due
W8	10/25	Choropleth Maps I: Data Classification	Slocum Ch4; Ch14
	10/27	Choropleth Maps II: Color Theory	Slocum Ch10; Ch14
	10/26-27	Assign Final Project; Work on Lab #3	
W9	11/1	Choropleth Maps III: Color Theory (cont'd)	Slocum Ch10; Ch13
	11/3	Proportional Symbol Maps	Slocum Ch17
	11/2-3	Assign Lab #4: Proportional Symbol Challenge	Lab #3 Due
W10	11/8	Dot Maps and Dasymetric Maps	Slocum Ch15; Ch17
	11/10	Qualitative Point Symbols	--
	11/9-10	Assign Lab #5: Dot Density Challenge	Lab #4 Due
W11	11/15	Isoline Maps I: Interpolation	Slocum Ch16
	11/17	Isoline Maps II: Design Considerations	Proposal Due
	11/16-17	Assign Lab #6: Isoline Challenge	Lab #5 Due
W12	11/22	Flow Maps	Slocum Ch19
	11/24	NO CLASS: Thanksgiving	
	11/23-24	NO LAB: Thanksgiving	
W13	11/29	Cartograms	Slocum Ch19
	12/1	Multivariate Symbolization	Slocum Ch18
	11/30-1	Final Project Consultation	Lab #6 Due
W14	12/6	EXAM #2: 75-minute final (non-cumulative)	Exam #2
	12/8	Thinking Critically about Map Design	--
	12/7-8	Final Project Consultation	
W15	12/13	Final Project Consultation	--
	12/15	Final Project Consultation	--
	12/14-15	Final Project In-Class Presentations	Presentations
	12/20	Final Projects and Map Portfolios Due by Noon	Portfolios Due

Reference Cartography

Thematic Cartography