

Geography 370

Introduction to Cartography



Instructor:

Robert Roth, PhD | reroth@wisc.edu
Office Hours: M 2:30-3:30pm, W 5:30-6:30pm (SciHall 375)

Lecture: 1131 Humanities

Monday/Wednesday: 4:00-5:15pm

Teaching Assistants:

Atlas Guo | atlas.guo@wisc.edu
Office Hours: M 5:30-7:30pm (M376)

Randi Selvey | rselvey@wisc.edu
Office Hours: T 2:30-4:30pm (M376)

Labs: 380 Science Hall

Section 301: T 12:30-2:30pm
Section 303: T 2:45-4:45pm

Section 302: R 5:00-7:00pm
Section 304: R 2:45-4:45pm

Course Overview

Course Description:

Geography 370 (G370) provides a general introduction to **Cartography**, defined as the art, science, and ethics of mapmaking and map use. G370 focuses upon the design of maps, drawing from research and practice on graphic design, information visualization, and user experience (UX) design, perspectives that you are unlikely to receive in other GIS courses. Specifically, G370 emphasizes map design over map use (compared to G170) and static mapping over web-based or interactive mapping (compared to G572 and G575, respectively).

Prerequisites:

Sophomore standing or consent of the instructor. G370 assumes no prior background in cartography.

Programs/Breadth:

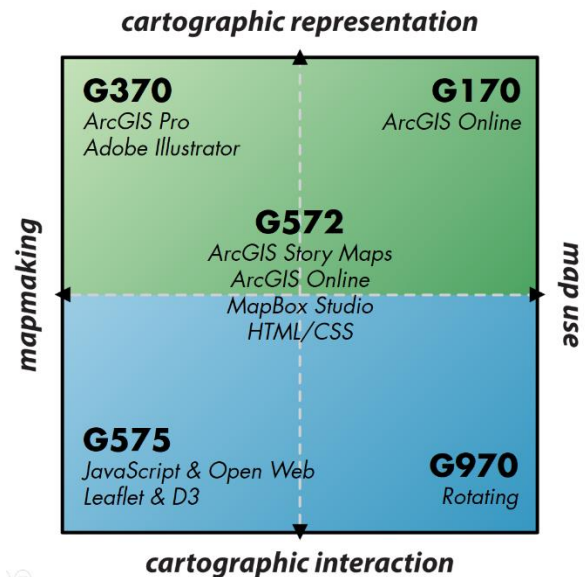
G370 serves undergraduate and graduate [programs in Cartography/GIS](#), and is Physical Science breadth for L&S majors. Under university policy, undergraduates and graduates are graded on separate scales.

Credit Load:

G370 is a 4-credit course, and therefore assumes ~4 hours of classroom "contact" per week plus ~8 hours of self-directed study and design outside of class per week.

Learning Management System:

All content, assignments, and grading will be delivered through Canvas. Please check Canvas for weekly topics, upcoming deadline schedules, and assignment rubrics.



Lecture Summary (2-credits):

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 design considerations—developed through both scientific inquiry and time-tested convention—and associated examples illustrating the range of potential design solutions. Lecture topics are loosely organized by **reference mapping** (Weeks #1-5) versus **thematic mapping** (Weeks #5-10), although 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 and when you can bend (or even break) these rules to improve your map.

Lab Summary (2-credits):

The laboratory component of the course emphasizes the practical skills needed to **design and produce** maps. Each lab assignment requires you to grapple with a topic previously discussed in lecture, with the final map deliverable operationalizing your critical understanding about the topic. The labs leverage **Esri ArcGIS Pro (Free)** and **Adobe Illustrator** (Free, also available in all campus computer labs); 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 coordinating asynchronously with us and your 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.

Learning Outcomes

Upon completion of this course, you will be able to:

Design maps. Specifically, you will be to understand and apply principles of:

- Map projections and the geographic coordinate system.
- Map generalization across map scales.
- Map typography and the design and placement of text onto maps.
- Visual hierarchy and map layout.
- Map symbolization and design considerations for thematic maps.
- Statistical mapping, including levels of measurement, enumeration, normalization, and classification.

Produce maps. Specifically, you will be able to:

- Execute original map designs from conceptualization to delivery.
- Estimate and manage your time needed for an open-ended design project.
- Design within client-defined constraints.
- Acquire and prepare geographic datasets.
- Follow and deviate from a cartographic workflow using ArcGIS and Illustrator.

Critique maps. Finally, you will reflect on your design and production to:

- Consider cartographic design within its broader historical and social contexts.
- Deconstruct maps by their elementary design components to identify opportunities and alternatives.
- Provide constructive feedback for peers during the process of design.
- Self-critique and edit your own designs using professional standards.

Assessment Summary

	Item	Weight	Description	Date(s)
Lecture	Readings	Optional	Supplemental readings drawn from the GIS&T Body of Knowledge	W2-10
	Map Critiques	30%	Two online map critiques applying lecture topics to example maps	W6, W10 (Sunday 11:59pm)
	Participation	10%	Peer-to-peer help and feedback, including two cohort critiques	Throughout; Cohort Critiques W10, W14
Labs	Lab Assignments	30%	Three multi-week mapping challenges	W5, W8, W11 (due 1-hour before lab); Revisions due 11/22 (Wed 11:59pm)
	Final Project	30%	Individual mapping project (no group projects allowed)	Proposal W10 (1-hour before lab); 75% Check-in W14 (1-hour before lab); Final 12/12 (Tues Noon)

Lecture-based Assessments (40%)

Reading (Optional):

Course lectures draw from the [Cartography & Visualization knowledge area](#) of the open access GIS&T Body of Knowledge, the primary compendium defining core curriculum and professional expectations the geospatial industry. Readings are not required, but are **highly recommended** for students pursuing a career in cartography and/or struggling with specific lecture topics. Lectures draw directly from instructional material included in the BoK. **Learning Outcome:** Design.

Map Critiques (30%):

Expectations: Your understanding of design and critique is evaluated through two online map critiques. Map critiques are submitted as short answer bullets and emphasize application of classroom concepts and terminology on real-world examples. The map critiques are **open notes** and **are cumulative**.

Submission and Late Policy: Map critiques must be uploaded as a PDF to Canvas by **Sunday 11:59pm** the week following the assignment. The penalty for a late proposal is **10%** of the total score per day late. Map critiques will be rescheduled for absences due to COVID-19 or other health issues with a doctor's note, with make-ups using alternative map examples. Otherwise map critique extensions or make-ups are not allowed so that critiques can be graded and returned to the class in a timely manner. **Learning Outcomes:** Design, Critique.

Participation (10%):

Expectations: The ability to constructively support and critique the work of others based on the design principles introduced in lecture is an essential design skill in Cartography. You will be grouped into cohorts comprising roughly four students to serve as your support team across the semester, with each group having their own Slack channel to focus online conversation. You are encouraged to work together on all activities and assignments throughout the semester, including the map critiques (although you are required to submit your own worksheets and short answer responses). 5% of cohort participation is based on overall participation in Slack and during Lab (2.5% each) and 5% will be based on structured peer critiques on the final project proposal and 75% final project check-in (2.5% each).

Submission and Late Policy: Peer-to-peer assessments and peer critiques must be submitted to Canvas **during lab** the week of assignment, with our grading completed after compiling your cohort input. Assessments and peer critiques will be dropped from your overall course grade in event of absences due to COVID-19-related complications or other health issues with a doctor's note, as the nature of group support is difficult-to-impossible to reschedule. Otherwise cohort participation extensions or make-ups are not allowed so that peer critiques can be returned in a timely manner. You do not need to complete peer critiques on assignments that are submitted late by your peers. **Learning Outcomes:** Design, Critique.

Lab-based Assessments (30%)

Lab Assignments:

Expectations: Your ability to apply the map design principles learned in lecture is evaluated through three lab assignments. Each assignment represents a mapping "challenge", in which you need to design a map for a specific mapping purpose:

1. Projection & Generalization Challenge
2. Typography Challenge
3. Choropleth Challenge

Each lab assignment builds on the last, meaning that you are responsible for applying previously learned mapping principles; thus, lab assignments **are cumulative**. A rubric is provided for each lab assignment to indicate how it is marked. **Learning Outcomes:** Design, Produce.

Honors Lab: Honors students are required to replicate Lab #3 with either a different dataset or the same dataset and a different thematic map type. Honors labs are due with the final project at the end of the semester and are graded pass/fail. Failure to submit an honors lab when taking the course for honors credit results in reduction of one-half letter grade after the final curve.

Submission and Late Policy: Lab assignments must be submitted as a print to your TA **and** as a PDF to Canvas **one hour before lab** on the due date. The penalty for a late lab assignment is **10%** of the total score per day late. Extensions on labs are provided for COVID-19-related complications or other health issues with a doctor's note. Otherwise extensions are not provided. 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.

Revision Policy: Given potential for COVID-19-related complications, you may revise your lab assignments ***one time*** to receive back 50% of the originally lost points (i.e., if 1pt was lost for label misplacement, 0.5pt will be returned if the issue is fixed in a revision). Please include an addendum PDF file listing each revision in the map as it relates to our grading rubric when resubmitting your lab. All lab revisions are due by ***Wednesday, November 22nd*** to ensure sufficient time on the final project.

Final Project (30%)

Final Project Assignment (20%):

Expectations: The final project is the cornerstone of G370, affording you the opportunity to integrate your understanding of design, production, and critique 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 datasets to tell your place-based story. We recommend choosing a topic that aligns closely with your area of study 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](#) and the [NACIS Student Poster Competition](#). **Learning Outcomes:** Design, Produce, Critique.

Submission and Late Policy: Final project proposals must be submitted as a print in person and PDF on Canvas by ***Tuesday December 12th at Noon***, as we will grade your final projects directly following submission to compile grades on time. Late submissions only are provided for COVID-19-related complications or other health issues with a doctor's note. All other final projects will be graded as is at the time of submission, so submit what you have at the deadline.

Final Project Proposal (5%):

Expectations: The final project is supported by a proposal that follows a professional cartographic process for responding to a request for proposals (RfP). The proposal outlines your design plan, distilling the design process into incremental tasks, and includes a preliminary concept design using the same worksheet evaluation form from the map critiques. Final projects should be proposed to consume approximately 40 hours of data preparation, design, and revision.

Submission and Late Policy: Final project proposals must be submitted as a PDF to Canvas ***one hour before lab*** on the due date. The penalty for a late proposal is ***10%*** of the total score per day late. Extensions on labs are provided for COVID-19-related complications or other health issues with a doctor's note. Otherwise extensions are not provided.

Final Project 75% Draft (5%):

Expectations: You will share a ***75%*** complete draft of your final project one week before the final projects are due. "75%" is defined as a map that has all graphic elements on the page (e.g., the central map representation, labels, map elements, supporting text, etc.), but remains unpolished, allowing for integration of feedback provided during the cohort activity. Final project drafts are graded on their degree of reaching the 75% threshold.

Submission and Late Policy: 75% check-ins must be submitted as a PDF to Canvas ***one hour before lab*** on the day due. Late check-ins are not accepted, so submit what you have at the time of the deadline.

Grade Distribution

The course is graded on a flat grade distribution. Undergraduates and graduates are graded on different grade scales, per university policy.

Grads		Undergrads	
A	>92%	A	>90%
AB	89-92	AB	87-90
B	82-89	B	80-87
BC	79-82	BC	77-80
C	72-79	C	70-77
D	62-72	D	60-70

Statement of Academic Integrity

While cohort group work is encouraged, students are expected to complete their own assignments with their own datasets. Each lab and map critique assignment contain an "Easter Egg" to identify usage of materials from prior semesters. 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 University.

Assignments cannot be made using Generative AI, including both the map labs and final project as well as the written critiques. Believe me, cartographic design is not mainstream enough for the output results to make sense anyway!