

Geography 361: Cartography--Maps and Map Construction *Fall 2024*



Instructor

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- Office Hours: Mondays and Thursdays 3:30-4:30pm, or by appointment.
- Held **hybrid***: in Walker 106 & Zoom: <https://psu.zoom.us/j/97557954280>. **In-person is prioritized*

Lecture: 124 Walker Building

- Mondays and Wednesdays 11:15-12:05pm

Teaching Assistant:

Sarah Riadi | PhD Student | sjr6360@psu.edu

- Office Hours: Wednesdays 2:00-3:00pm and Thursday 12:30-1:30pm (205 Walker Building)

Teaching Intern:

Michael Cattell | Undergraduate Geography Student | michaelcattell@psu.edu

- Office Hours: By appointment

Labs: 123 Walker Building

001L - Tuesdays 3:35-5:30pm | 002L - Wednesdays 8:00-9:55am | 003L - Fridays 10:10-12:05pm

Course Description

Maps do far more than get us from point A to point B. They help us understand election results, decide whether or not to pack a rain jacket, predict disease outbreaks, and so much more. At their core, maps visualize aspects of the world we could not otherwise see or experience; thereby enabling us to explore and understand geographic phenomena in new ways. Geography 361 (G361) introduces the fundamentals of **cartography**, defined as the art, science, technologies, and ethics of mapmaking and map use. Mapmaking is the primary emphasis of this course. Accordingly, this course explores evidence-based and time-tested best practices for designing effective maps. These best practices will be introduced in lectures, and the lab component of the course will require you to apply your understanding of lecture material while producing maps. In doing so, you will learn how to design both thematic and reference maps at multiple scales using symbols and visual hierarchies that allow the content of the maps to be effectively communicated. The course will also encourage you to become critical and ethical consumers of maps and geographic data produced by government agencies, industry, and the media. Special attention will be paid to how maps can mislead and distort reality.

Disclaimer Statement

Please note that as the semester progresses, I might make changes to this syllabus in order to improve the learning environment. Changes to the syllabus shall be given to you in written (paper or electronic) form.

Course Details

Course Prerequisite

GEOG 260, *Geographic Information in a Changing World: Introduction to GIScience*

or GEOG 160, *Mapping Our Changing World*

Course Designation

G361 is one of many optional courses that students in the Geography BS program can take to fulfill the *Geographic Information Science Skills* requirement.

Credit Load

G361 is a 3-credit course with 3.6 hours of classroom contact per week. There are two 50-minute lectures and one two-hour lab each week. Students should expect to spend around 6 - 8 hours of self-directed study and design outside of class per week.

Course Materials

This course requires you to have a USB 2.0 or 3.0 flash drive that is 32GB or larger, so you can store your lab files. You can purchase a flash drive for \$15-\$30 at [PSU Bookstore](#), Target, Bestbuy, Walmart, or Amazon.

Readings draw from an open source resource: Cartography and Visualization section of the UCGIS GIS&T Body of Knowledge: <https://gistbok-topics.ucgis.org/CV>. **Optional readings** will also be assigned from the textbook: Cynthia Brewer, 2016, *Designing Better Maps: A Guide for GIS Users* (2nd edition), Esri Press (see Readings posting in first Canvas module for purchase ideas). A copy of this book is on reserve in the EMS Library. These optional readings are especially helpful for if you are pursuing a career in Cartography and/or struggling with specific lecture topics.

Assistance with Textbooks: Penn State honors and values the socioeconomic diversity of our students. If you require assistance with the costs of textbooks for this course, contact your academic advisor. For additional needs, related to socioeconomic status, please visit Project Cahir or visit the [Office of Student Care and Advocacy](#) at 220 Boucke Building or call 814-863-2020.

Course Mode

This is a resident course. It does not include an online or hybrid mode. Labs and lectures are offered in-person only. All content, assignments, and grading will be delivered through Canvas.

Course Goals

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

Design Maps

- Select appropriate symbols and colors to represent geospatial data
- Select map projections to suit different map purposes
- Generalize data to suit a particular map scale
- Establish visual hierarchy to emphasize important features and play down other features
- Create balanced and fluid map layouts
- Position labels according to cartographic placement conventions
- Apply typography to delineate categorical and hierarchical differences among labels

Produce Maps

- Follow a cartographic workflow in ArcGIS Pro and Adobe Illustrator
- Apply geoprocessing tools to prepare geographic datasets
- Execute original map designs from conceptualization to delivery
- Acquire and prepare geographic datasets
- Estimate and manage your time needed for an open-ended design project

Critique Maps

- Recognize limitations and biases introduced by maps
- Self-critique and improve your own maps
- Provide constructive feedback for peers during the mapmaking process

Assessment Policy

Grades are calculated using this set scale:

- A: 94 to 100%
- A-: 90 to 93.99%
- B+: 87 to 89.99%
- B: 84 to 86.99%
- B-: 80 to 83.99%
- C+: 77-79.99%
- C: 70-76.99%
- D: 60-69.99%
- F: < 60%

The course will be out of a total of 1,000 points. Therefore, each percent of your grade constitutes 10 points. For example, a 4% quiz will be out of 40 points.

Quizzes (24%)

There is no midterm exam or comprehensive final exam.

There will be seven quizzes that are each worth (4%). A student's lowest quiz grade may be dropped. The quizzes are composed of questions that request short answers (one word to half-page responses), calculations, and diagrams. Quizzes require you to not only understand course material but also analyze and synthesize what you have learned. These quizzes are **closed book/notes**. Quizzes are **not** cumulative.

Quizzes will be 25 minutes. Cheating during a quiz is not tolerated and results in a zero for the quiz and disclosure of the impropriety to the University.

If you need to miss a quiz, please request permission to take a **makeup quiz**. An alternative quiz will be provided for you that requests responses for two essay questions (this is a different format than the in-class quizzes.) Take the makeup quiz **before the in-class quiz is discussed** in lecture (e.g., take it on Thursday, Friday, or the next Monday morning after a Wednesday quiz).

Readings (3%)

There will be five reading assignments on canvas that each make up 0.6% of your grade (readings total 3% of the total course grade). These readings are meant to be a low-stakes way for 1) you to better retain information introduced in lecture and 2) me to understand areas that require additional attention.

Readings are assigned before introducing a topic in lecture to promote spaced practice of content which has been shown to promote metacognition. Readings are due by midnight the day before various lecture sessions **as outlined in the G361 schedule document**.

Readings are hosted on Perusall, a social annotation platform that allows you to highlight, comment, etc. on readings. Perusall is embedded in Canvas and can be accessed on the side bar.

Readings Grading:

For each reading you will be required to add four annotations. These can include:

- Pointing out something interesting, new to you, or relating to something you already know.
- Asking a meaningful question.
- Briefly explaining why you chose that text to highlight.
- Providing a substantive comment on a peer's annotation related to the previous three points.

Readings are graded either full or no credit. Late reading assignments will be recorded as zero points.

Lab Assignments (48%)

There will be six lab assignments that are each worth 8% each. These labs are where you apply concepts introduced in lecture to create effective maps! Labs are due on the days as indicated on Canvas and the course schedule and must be submitted **1 hour** before your weekly lab section meets.

Lab Assignment Grading

A rubric is provided for each lab assignment to indicate how it is graded. The penalty for a late lab assignment is 10% of the total score per day late. Late labs will not be accepted one week past their original due date. **Zero points for a lab late by more than one week.** 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 in Week #1.** Technical complications (e.g., disk errors, ArcGIS Crashing) are not reason for extension; be sure to back-up copies of all of your work and version meticulously. Plagiarism is not tolerated; each lab assignment should be only your work and cannot be work from prior semesters. Any offense results in a zero for the lab assignment and disclosure of the impropriety to the University. Requests for grade changes must be submitted via email within **24 hours** of receiving your feedback.

Final Project (25% Total)

There will be a final project that constitutes the culmination of your learning in the semester. The final project will allow you to apply all of what you have learned to create a single, exceptional map. This project

differs from the labs in that you will not be given step-by-step instructions on how to produce the map and are given more freedom on what you want to map. This project is meant to be something to show potential employers and showcase your expertise and skills in mapmaking!

Final project proposals and draft final projects must be uploaded by **12:00pm Noon** the day prior to the lab period meeting on the due date to allow your TAs to compile deliverables for cohort discussion. Failure to upload a project proposal or draft final project on-time results in a 10% deduction for either assignment.

Final Project Proposal (6%):

The final project proposal 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 an estimation of effort (in terms of hours) for each task (4% of the grade). Final projects should be proposed to consume 40 hours of time, with the proposal then used to assess progress in lab. The final project proposal also requires you to identify a reliable and appropriate data source for your final project goal. The data must be shown to work in ArcGIS Pro and cannot be in raw form (E.g., table, PDF, etc.) (this is 2% of your final grade).

Final Project Draft (4%):

You will discuss an **80%** complete draft of your final project in Week #15. "80%" 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 80% threshold.

Final Project Submission (15%):

Final projects must be printed and placed in your TA's mailbox at **12pm Noon** on the final due date. You also must upload your final project as a PDF to the Canvas Dropbox so that we have a copy of the file. The printed version is graded, so take care in color proofing the final submission.

Late final projects are not accepted; you must submit the current state of your project (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.

Course Policies

Attendance

Please come to class! I understand that you have a lot going on in various aspects of your life be it personal, academic, or something else. But coming to class will help you learn more, connect with your classmates and me, and prepare you for a career upon graduating. One of my favorite parts with teaching is connecting with my students, so please show up to class!

Lab attendance is graded but you get two excused absences. Missing more than 2 lab sessions results in one percent of the **overall course grade** deducted for each lab missed, up to 10% of your total course grade. If you do not attend labs, your map products will not be as good as your peers who do, and your grades will reflect that. Sarah and Michael are there to help you so attend lab and take advantage of them!

Academic Integrity

Academic integrity is fundamental to the learning at Penn State. It involves honesty and ethical behavior in all aspects of your academic work. This includes, but is not limited to, doing assignments independently, using proper citations to avoid plagiarism, and taking exams without unauthorized assistance.

To uphold academic integrity in this course:

- Complete all coursework independently unless explicitly instructed otherwise.
- Use only permitted sources for your assignments and research.
- Refrain from sharing information about or from course quiz with others.
- Avoid using unauthorized aids during exams and assignments.

Collaborative learning is encouraged, such as discussing course material or providing feedback on map designs. However, all submitted work must be your own original creation. The use of AI tools is strictly prohibited unless an assessment or assignment explicitly states that you can use AI.

Violations of academic integrity will be taken seriously and may result in severe penalties. Refer to PSU's policy [G-9: Academic Integrity](#) for more information.

Etiquette and Classroom Conduct

To create a respectful and productive learning environment for everyone, please:

- Arrive on time and stay for the entire class period.
- Silence your phone and avoid unnecessary conversations during class.
- Refrain from eating or drinking in a disruptive manner.

Disruptive behavior may result in being asked to leave class.

Netiquette

Effective communication is essential for a successful course. When emailing your instructor or TA:

- Be respectful and clear in your message.
- Include your name and course information in the subject line.
- Allow 48 hours for a response, excluding weekends and holidays.
- Politely remind us after the 48 hour period has passed

Social Media and Course Materials

Unauthorized sharing of course materials on social media or other platforms is prohibited.

- Avoid posting course materials online without explicit permission.
- Respect the intellectual property of your instructor and classmates.

Violations of this policy may result in disciplinary action. All course content is protected by copyright law.

Change in Normal Campus Operations

Campus emergencies, including weather delays and closures, are announced on [Penn State News](#) and communicated to cell phones, email, the Penn State Facebook page, and Twitter via PSUAlert ([sign up at: https://psualert.psu.edu/psualert/](https://psualert.psu.edu/psualert/)). Changes to the course in the event of campus emergencies will be communicated via Canvas/email.

Inclusivity

Inclusivity Statement

Inclusivity is a core value of the EMS college and the wider university community. This means fostering a diverse, welcoming, and equitable learning environment – something that we all contribute towards. This is an inclusive classroom. As such, we embrace the rich spectrum of diversity within our community and across the globe, spanning differences in race, ethnicity, faith, sexual orientation, gender, socio-economic background, accessibility, political ideologies, or any other distinction among individuals. It is our firm stance to unequivocally condemn acts of harassment or expressions of hate directed toward individuals or groups on the basis of these differences. We will actively work to ensure that everyone is welcome and is invited to share their perspectives.

There will be absolutely zero tolerance for **racist, sexist, homophobic, transphobic, classist, ableist or otherwise discriminatory remarks and hostile behavior of any kind**. We will respect one another, even if we do not agree, and it is everyone's right to be able to participate fully and meaningfully in a learning environment free of such behavior or attitudes. If there is any reason such a space has been compromised for you, please know my door is open for an honest and non-judgmental conversation about this and I will make every effort to address it.

To learn more, visit the EMS Educational Equity website <https://www.ems.psu.edu/diversity>.

Inclusive Teaching Learning Plan

This course and the materials are designed to foster an inclusive and quality learning environment. A key principle that I base this course on is *more structure is better*. To illustrate, each lecture includes an outline, signposts for different sections, and a set of learning objectives. The syllabus and schedule are also more detailed to convey rationale for different pedagogical tools. Labs will include rubrics to ensure transparent and balanced grading.

I also strive to have inclusive interactions with you by promoting active learning opportunities. These opportunities (e.g., think-pair-share) will allow students of varying comfort levels to participate and think critically about course content. I will also do my best to meet you as you are a busy college student, acknowledging that things are difficult but reminding you that you belong here and can succeed!

The readings in this class are designed to be low stakes and help you gain confidence with the course material. They are also collaborative in nature through Perusall and hopefully allow you to build connections with your classmates.

I include many examples in this course to illustrate concepts. I strive to choose examples that reflect a variety of people, voices, and viewpoints. My goal is also to highlight people doing cool stuff with maps that come from a variety of backgrounds.

Finally, I use both quizzes and labs, so you have multiple opportunities to show your skills and understanding of course content.

Additional Policies

Students with Diverse Abilities

All of us learn in different ways and, depending on how those ways are applied, with varying degrees of success. If you know of any factors in your life that may hinder your ability to learn up to your potential in this course, please notify me at once. In order to receive consideration for formal accommodations provided by the university, I encourage any students [to contact the office](#) of Student Disability Resources (116 Boucke Building; 814-863-1807). There you will participate in an intake interview, and provide required documentation ([see guidelines](#)). Should your request be approved, the office will provide you with an accommodation letter which you must share with your instructors. Please know that should you not meet the documentation requirements outlined by SDR, that I encourage you to still approach me about accommodations you feel may help you. NOTE: You are under no obligation to disclose your disability to me, I simply need to know the best ways to support you in your learning.

Reporting Educational Equity Concerns

Penn State takes great pride to foster a diverse and inclusive environment for students, faculty, and staff. Acts of intolerance, discrimination, or harassment due to age, ancestry, color, disability, gender, gender identity, national origin, race, religious belief, sexual orientation, or veteran status are not tolerated (<https://policy.psu.edu/policies/ad29>) and can be reported through Educational Equity via the [Report Bias webpage](#) (<http://equity.psu.edu/reportbias/>).

Mental Health Resources

College can be incredibly challenging to your mental health. Many students face personal challenges or have psychological needs that may interfere with their academic progress and emotional wellbeing. You are under no obligation to disclose personal stories of hardship or trauma, but please do let me know how any issues may be impacting your success in this course so we can come up with a plan to accommodate.

Know that the university offers a number of confidential services, including individual and group counseling, crisis intervention, online chats, and mental health screenings.

Do not hesitate to draw on these resources for support:

- [Counseling and Psychological Services at University Park \(CAPS\)](#): 814-863-0395
- Counseling and Psychological Services at [Commonwealth Campuses](#)
- Penn State Crisis Line (24 hours/7 days/week): 877-229-6400
- Crisis Text Line (24 hours/7 days/week): Text LIONS to 741741

Attendance

Regular attendance is critical for building the skills and knowledge developed throughout the class. Students who participate have a more complete understanding of the material presented and are more likely to succeed in the class. The University recognizes that, on exceptional occasions, students may miss a class meeting to participate in a regularly scheduled university-approved curricular or extracurricular activity (such as field trips, debate trips, choir trips, and athletic contests), or due to unavoidable or other legitimate circumstances such as illness, injury, military service, family emergency, religious observance, participation in local, state, and federal government elections, or post-graduate, career-related interviews when there is no opportunity for students to re-schedule these opportunities (such as elections or employment and graduate school final interviews). In all cases, you should inform me in advance, when possible. Missing class, even for a legitimate purpose, may mean there is work that cannot be made up, hurting your grade in this class. Students who encounter serious family, health, or personal situations that

result in extended absences should contact the Office of the Assistant Vice President for Student Affairs (AVPSA) and Student Care and Advocacy for help: <http://studentaffairs.psu.edu/studentcare>. You should be prepared to provide documentation for participation in University-approved activities, as well as for career-related interviews. You should submit to the me a Class Absence Form: https://undergrad.psu.edu/aappm/class_absence_v3.pdf, at least one week prior to the activity.

Military Personnel

Veterans and currently serving military personnel and/or spouses with unique circumstances (e.g., upcoming deployments, drill/duty requirements, disabilities, VA appointments, etc.) are welcome and encouraged to communicate these, in advance if possible, to the instructor in the case that special arrangements need to be made.

Technical Requirements

For this course, we recommend the minimum technical requirements outlined on the World Campus Technical Requirements page (<https://www.worldcampus.psu.edu/general-technical-requirements>), including the requirements listed for same-time, synchronous communications. If you need technical assistance at any point during the course, please contact the ITS Help Desk (<http://itservicedesk.psu.edu>).

Safety

In the event of an evacuation, we will follow posted evacuation routes and gather at the Designated Meeting Site. Evacuation routes for all EMS buildings are available at <https://www.ems.psu.edu/resources-faculty-and-staff/safety-and-emergency-information/emergency-management-planning>. For more information regarding actions to take during particular emergencies, please see the [Penn State Emergency Action Guides](#).