Course Information

Course Number:	GEOG 395
Course Title:	Thematic Cartography
Section:	500
Lecture Time:	Tuesday and Thursday 2:20 pm – 3:35 pm
Lecture Location:	OMB 110
Lab Time:	Tuesday 9:35 am – 11:25 am
Lab Location:	CSA 307
Credit Hours:	4

Instructor Details

Instructor:	Dr. Elizabeth Breyer
Office:	OMB 803C
Phone:	979-458-1272
E-Mail:	bbreyer@tamu.edu
Office Hours:	Tuesdays and Thursdays 1:00 - 2:00 pm or by appointment

Teaching Assistant:	Yuhang Xie
Office:	TBD
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Office Hours:	TBD

Course Description

Catalog Description: Cartographic and data visualization applications of Geographic Information Systems (GIS); theory and practice of cartographic decisions and design; user interface, map design, and visualization of geospatial, spatiotemporal, 3D, and big data; designed map experiences for different environments and purposes.

Visually communicating information via maps is one of humanity's oldest forms of knowledge transfer. New forms and volumes of data, along with emerging user interaction techniques and analytical approaches require geospatial professionals to employ new visualization techniques across a growing domain of users and use cases. This course covers basic and advanced topics in cartography and visualization to reinforce classic and time-tested approaches to map making, as well as explore map and visual communication approaches required of modern cartographers. Through lectures, labs, map critiques, and course projects, you will apply cartographic theory to visualize numerous forms data across a series of user, usage, and data contexts.

Course Prerequisites

GEOG 390

Special Course Designation

None

Course Learning Outcomes

This course aligns its learning outcomes with the Geographic Information Science & Technology Body of Knowledge (BOK), a set of core geospatial competencies which was produced by the University Consortium for Geographic Information Science (UCGIS) and published by the Association of American Geographers (AAG). In particular, it meets many of the objectives in the Cartography and Visualization BOK Knowledge Area. For details, see https://gistbok-topics.ucgis.org/CV.

At the end of this course, you will be able to:

- Compare cartographic and visualization techniques for different types of geospatial 2D, 3D, and spatiotemporal data
- Apply cartographic principles, including map projections, scale, data classification, and symbolization, in map design
- Design and build cartographic and visualization products for specific uses and audiences
- Explain the appropriate usages of different map forms, formats, and techniques, including the use of critique and critical cartography
- Test the effects of cartographic and visualization choices for different data and user scenarios

Textbook and/or Resource Materials

Our recommended textbook is:

Brewer, C. (2015). *Designing better maps: a guide for GIS users*. ESRI press.

Additional recommended readings will be provided on Canvas in pdf format. As instructor, I reserve the right to change readings as needed. Students will be notified of the reading schedule through Canvas weekly modules. All exam material will be presented and reviewed in lecture.

Grading Policy

Your grade in this class will be based on the following:

Assignment	Points
Labs (10 labs, 50 points each)	500
Quizzes (5 quizzes, 10 points each)	50
Lecture and lab attendance (67% lecture, 33% lab)	100
Exams (2 exams, 100 points each)	200
Final project	100
Critiques (3 critiques, 10 points each)	30
LinkedIn Learning certificates (2 certificates required)	20
Total	1,000

Grading scale

- A 90+ % (≥ 895 points)
- B 80-89% (795 - 894 points)
- C 70-79% (695 - 794 points)
- D 60-69% (595 - 694 points)
- F < 60% (< 595 points)

Labs | You will complete ten lab assignments over the semester to learn key cartographic techniques. Lab manuals and lab data will be posted on Canvas. Please contact your Teaching Assistant with any questions or concerns regarding labs. Lab attendance is required and graded.

Lectures | You will attend lectures twice weekly to learn and discuss key concepts in cartographic design and data visualization. All exam material will be delivered through lectures.

Quizzes | Some lectures are accompanied by pop quizzes. You must attend lecture to be eligible to submit the quiz. Lecture attendance is required and graded.

Exams | You will take two closed-book, proctored exams over the semester during our regular lecture time. Exams consist of multiple choice, true/false, matching, short answer, and extra credit essay questions. A review lecture will be held prior to each exam. Exams are non-cumulative.

Map critiques | You will submit three map critiques over the semester to demonstrate your knowledge of cartographic principles. Map critiques are submitted in two parts. In the proposal, you will seek instructor approval for the map you select. Once you receive approval, you will prepare a detailed written critique of the cartographic design.

LinkedIn Learning | You will complete two certificate-eligible LinkedIn Learning courses on topics related to this course (e.g. GIS, data visualization). LinkedIn Learning courses are completed in two parts.

In the proposal, you will seek instructor approval for the course you select. Once you receive approval, you will submit a screenshot of your certificate of completion before the end of the semester.

Final Project | Students will demonstrate their cartographic skill by creating a series of maps and infographics embedded in an ArcGIS StoryMap. Details will be provided on Canvas.

Late Work Policy

The university views class attendance as the responsibility of the individual student. Scores for lab assignments, map critiques, and LinkedIn Learning assignments will be reduced by 20% for every 24 hours they are late unless you have an excused absence that adheres to Student Rule 7. No late or make-up work will be accepted for quizzes, exams, or the final project without an excused absence.

Communications Policy

My office hours are the best way to get answers to your questions. You are officially invited and encouraged to come to office hours to discuss any aspect of this course. If you can't make office hours, email me to set up a separate appointment.

I use Q&A discussion boards to address frequently asked questions about upcoming assignments. Students should post to these discussion boards, come to office hours, or set up appointments rather than emailing me with specific questions. This approach allows frequently asked questions to receive a quick, consistent response. I will respond to all posts within one business day. If you have a question, it's likely others do, too. Ask away!

This course has the following policies regarding emails to the instructor:

- Please include "GEOG 395" in the subject heading of your email. I use filters to sort the large volume of email I receive. Using this subject heading will ensure your email is sorted correctly so that I can respond promptly.
- Provided you use the required subject heading, you can expect a response to your email within one business day.
- Students who email questions about assignments will be invited to come to office hours, arrange a Zoom appointment, or post in the appropriate Q&A discussion board.

Generative Artificial Intelligence Statement

Artificial intelligence (AI) technologies are transforming how we approach creative processes. AI tools have evolved from basic features like grammar and spell checking (e.g., Grammarly, MS Word Spell Check) to advanced capabilities, including text generation (ChatGPT, etc.), image creation, coding assistance, and audio generation. Despite these advancements, AI tools do not replace the fundamental skills of drafting, revising, and reflecting on your own work, nor do they substitute for locating, evaluating, incorporating, and properly citing sources. The Association for Writing Across the Curriculum states:

"Writing to learn is an intellectual activity that is crucial to the cognitive and social development of learners and writers. This vital activity cannot be replaced by AI language generators"

AI technologies will continue to shape how we approach creative pursuits. However, to be truly creative, we must present our authorship with honesty and integrity. Thus, in this course, it is permitted to use generative AI tools to explore ideas. However, submitting AI-generated content as your own work is considered academic misconduct under Texas A&M University Student Rule 20. Students must write in only their own words.

If you use generative AI tools, you must:

1. Clearly cite how the AI tools were used.
2. Document how they contributed to your work.

Instructions on how to cite and document AI tool use appropriately will be provided in class.

Academic Freedom and Classroom Discussion Statement

Academic freedom is a cornerstone of the University. Academic freedom in its teaching aspect is fundamental for the protection of the rights of the teacher in teaching and of the student to freedom in learning.

- Each faculty member is entitled to full freedom in the classroom discussing the subject which the faculty member teaches.
- Texas A&M will not penalize or discipline members of the faculty because of their exercise of academic freedom.

Along with this freedom comes responsibility. It is the responsibility of faculty members to ensure that topics discussed are related to the classroom subject. Students should be free to take reasoned exception to the data or views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the content of any course of study for which they are enrolled.

- It is not the proper role of the university or any outside agency to attempt to shield individuals from ideas and opinions they find unwelcome, disagreeable, or even deeply offensive.
- Engaging with new ideas and perspectives helps students grow intellectually and is beneficial to the educational process.

Course Schedule

Major tasks with due dates and a list of class topics are provided below. All items are due at 11:59 pm CST on the due date unless otherwise indicated. As instructor, I reserve the right to change the course schedule or content as needed depending on the pace of the class. You will be notified of any changes to the syllabus through an announcement on Canvas. You are expected to check Canvas frequently to stay on top of deadlines and announcements.

Week	Dates	Lecture/lab topics	Deadlines
1	January 13-17	Tuesday: No lab Tuesday: Lecture, Scale and generalization Thursday: Lecture, Map design	No lab
2	January 20-24	Tuesday: Lab 1, Scale and generalization Tuesday: Lecture, Symbolization Thursday: Lecture, Typography	
3	January 27-31	Tuesday: Lab 2, Labels and legends Tuesday: Lecture, Principles of color Thursday: Lecture, Projections and coordinate systems	Lab 1 due Thursday, January 30
4	February 3-7	Tuesday: Lab 3, Choropleth maps Tuesday: Lecture, Choropleth maps and data classification Thursday: Lecture, Proportional and graduated symbols maps	Lab 2 due Thursday, February 6
5	February 10-14	Tuesday: Lab 4, Proportional and graduated symbol maps Tuesday: Lecture, Dot density and dasymetric maps Thursday: Lecture, Flow maps and cartograms	Lab 3 due Thursday, February 13
6	February 17-21	Tuesday: Lab 5: Dasymetric dot density maps Tuesday: Exam 1 review Thursday: Exam 1	Critique 1 proposal due Tuesday, February 18 Lab 4 due Thursday, February 20
7	February 24-28	Tuesday: Lab 6, Flow maps Tuesday: Lecture, Isarithmic maps and terrain visualization Thursday: Lecture, 3D visualization	Critique 1 write-up due Tuesday, February 25 Lab 5 due Thursday, February 27
8	March 3-7	Tuesday: Lab 7, Topographic maps and terrain visualization Tuesday: Lecture, Spatiotemporal visualization Thursday: Lecture, Big data visualization	Critique 2 proposal due Tuesday, March 4 Lab 6 due Thursday, March 6
9	March 10-14	Spring break!	
10	March 17-21	Tuesday: Lab 8, Spatiotemporal visualization Tuesday: Workshop, Final project overview Thursday: Lecture, Geovisual analytics	Critique 2 write-up due Tuesday, March 18 Lab 7 due Thursday, March 20
11	March 24-28	Tuesday: NO LAB Tuesday: Lecture, Uncertainty visualization	Lab 8 due Thursday, March 27

		Thursday: Lecture, Web-based and mobile maps	
12	March 31-April 4	Tuesday: Lab 9, Map infographics Tuesday: Lecture, History of cartography Thursday: Lecture, Critical cartography	Critique 3 proposal due Tuesday, April 1
13	April 7-11	Tuesday: Lab 10, ArcGIS Online Tuesday: Exam 2 review Thursday: Exam 2	Critique 3 write-up due Tuesday, April 8 Lab 9 due Thursday, April 10
14	April 14-18	Tuesday and Thursday: Workshop, Final projects	LinkedIn Learning proposals due Tuesday, April 15 Final project proposal due Thursday, April 17 Lab 10 due Thursday, April 17
15	April 21-25	Tuesday and Thursday: Workshop, Final projects	
16	April 28-May 2	Tuesday: Workshop, Final projects	LinkedIn Learning certificates due Tuesday, April 29 Final project due Friday, May 2

University Policies

Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to Student Rule 7 in its entirety for information about excused absences, including definitions, and related documentation and timelines.

Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to Student Rule 7 in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" (Student Rule 7, Section 7.4.1).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" (Student Rule 7, Section 7.4.2).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See Student Rule 24.)

Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" (Section 20.1.2.3, Student Rule 20).

Texas A&M at College Station
You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at aggiehonor.tamu.edu.

Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below) Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

Texas A&M at College Station
Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit disability.tamu.edu.

Title IX and Statement on Limits to Confidentiality

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see University Rule 08.01.01.M1):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

Texas A&M at College Station
Students wishing to discuss concerns related to mental and/or physical health in a confidential setting are encouraged to make an appointment with University Health Services or download the TELUS Health Student Support app for 24/7 access to professional counseling in multiple languages. Walk-in services for urgent, non-emergency needs are available during normal business hours at University Health Services locations; call 979.458.4584 for details.

Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's Title IX webpage.

Statement on Mental Health and Wellness

Texas A&M University recognizes that mental health and wellness are critical factors influencing a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care practices by utilizing the resources and services available through University Health Services. Students needing a listening ear can call the Texas A&M Helpline (979.845.2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends for mental health peer support while classes are in session. The TELUS Health Student Support app provides access to professional counseling in multiple languages anytime, anywhere by phone or chat, and the 988 Suicide & Crisis Lifeline offers 24-hour emergency support at 988 or 988lifeline.org.

Texas A&M College Station
Students needing a listening ear can contact University Health Services (979.458.4584) or call the Texas A&M Helpline (979.845.2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends while classes are in session. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at 988lifeline.org.