Syllabus: Cartography and Visualization

Geography 2005 - Fond du Lac Tribal and Community College – Spring 2022

Syllabus and schedule are subject to changes at the discretion of the course instructor.

Instructor

Dr. Carl M. Lemke Oliver Sack (he/they). I prefer to be called Carl; if you feel more comfortable referring to me by my last name, just use Sack (as in Dr. Sack and Professor Sack).

Contact Information

Email: carl.sack@fdltcc.edu. I reply to all student emails within 24 hours.
Cell Phone: (608) 712-8335. Call or text at any time; you will not bother or disturb me. If you call and I don't answer, please leave a voicemail. I generally reply to voicemails and texts within a few minutes to a few hours.

Office Hours

10:45 AM-12:45 PM Mondays and 1-3 PM Thursdays, or by appt., in Room W222 or via Zoom.

Class Meetings and Attendance

1-3:40 PM Mondays and Wednesdays. This is an in-person course that meets in Room 208 on campus; however, if you have difficulty or safety concerns with coming to campus, you may join class on Zoom at https://minnstate.zoom.us/j/97420335956. It is important to arrive on time, stay for the entire period, and fully participate in class meetings. Attendance and participation at each class meeting is graded on a 4-point scale: 4=arrive on time, stay until end, and fully participate; 3=arrive late or leave before being dismissed; 2=arrive very late or leave very early; 1=absent with prior notification; 0=absent with no prior notification.

Course Overview

This course explores the art, science, technology, and ethics of map design and map making. Course topics include maps as representations of reality and culturally situated documents, the power of maps, coordinate systems and projections, scale and generalization, map elements, visual hierarchy and variables, typography, reference and thematic map types, and design considerations for print and web. Students will apply cartographic principles using industry-standard GIS and graphics software to design effective maps covering real-world social, cultural, and/or scientific themes. Meets MnTC Goal Area 6.

Course Goals

1. Discuss the history and significance of the map and mapping as scientific document, cultural tool, expression of power, and artistic representation.
2. Produce maps that reflect personal understandings of place and geospatial phenomena.
3. Locate and process data for thematic mapping projects, including applying appropriate data classification schemes.
4. Visualize geospatial data as quantitative thematic maps using cartographically appropriate design techniques.
5. Critique maps produced by others based on cartographic soundness and the veracity and impact of their visual messages.
6. Present a visual narrative through effective use of cartographic design to tell a story or deliver a call to action.
7. Design map documents for both print and web consumption.

Learning Resources

Digital Textbook: Kraak MJ, RE Roth, B Ricker, A Kagawa, and G Le Sourd. 2020. *Mapping for a Sustainable World.* The United Nations: New York, NY (USA).
https://digitallibrary.un.org/record/3898826?ln=en (download PDF)

Additional Online Resources: Wilson, John P (Ed.), 2019. *The Geographic Information Science & Technology Body of Knowledge.* University Consortium for Geographic Information Science.
https://gistbok.ucgis.org/

What you can expect from me

I have a passion for making maps, especially maps that change the world. I went to grad school for Cartography at the University of Wisconsin, where academic cartography was pioneered, so I will be teaching the craft based on the cartographic principles and traditions that I learned there. Among those are attention to graphic design detail and a critical eye toward the messages and power dynamics that inhabit all maps. I will do my best to meet your needs as a learner and communicate course expectations fully and openly.

What I Expect from You

This is a 4-credit (2 lecture, 2 lab), sophomore-level college course. With this credit arrangement, you are expected to put in *at least 10 hours per week total* for the course, including class meetings and homework. I expect you to attend every class meeting possible; if you have to miss, please notify me *in advance* and make up any work for the period promptly. I expect you to complete assignments on time and to take notes on lecture material. If you find yourself struggling in the course, let me know so we can make a plan for you to catch up or make other accommodations to meet your needs as a learner.

Course Feedback

Your direct and timely feedback will help me improve the class. I am open to any suggestions you have both during class meetings and more privately via email, phone, or a one-on-one Zoom meeting. If you are experiencing a problem, the sooner you let me know, the easier it will be to address.

Course Activities

The topic sequence is listed in the schedule at the end of the syllabus. Course activities will include:

Lectures

There will be about one lecture per week except on exam weeks. Lectures will be presented in class and recorded for later re-watching *outside of class time*. You are expected to take notes on the lectures, preferably by hand, and will be asked to submit photos of your notes for a grade one week after the lecture is given. *Do not spend extra class time watching lecture videos and taking notes.* If you miss a lecture, you must watch it and take notes as homework.

Readings

You will be assigned certain pages from the UN textbook and/or a *GIS&T Body of Knowledge* (BOK) article to read each week as a supplement to the lectures. Taking notes on readings is optional but encouraged.

Lecture/Reading Quizzes

For each topic, you will take an open-book online quiz covering the lecture and associated reading. You will be able to retake the quiz as many times as you like, but only the first attempt will be graded. You can earn missed points back by emailing me the *correct answer* and *an explanation of why it is correct* for each answer you got wrong on the first try. Quizzes will be due at the same time as lecture notes and will be worth equal grade points.

Lab Activities

This class is about how to make maps. You cannot learn how to make maps without *making maps.* You will be assigned a short map critique assignment the first week of the semester, and four extended mapping assignments that apply concepts from the lecture and reading. From these assignments, you will produce two portfolio-quality maps: one reference map and one thematic map. In so doing, you will learn the technical aspects of cartography, including how to use professional map-making and graphic design software and how to thoughtfully address real-world mapping problems.

Class Discussions

Our class meetings will be used to discuss the lectures and readings, present your work to the class, and answer any questions you have about the covered concepts. We will also use our time together to walk through the lab activities and address any questions and difficulties you encounter while working on them. The first 10 minutes of each class meeting will be dedicated to a "Map of the Day" show and tell. I encourage you to come prepared with a map you can present and explain what you think is interesting about it. When no one else brings a map, I will present one. You will receive 1 extra attendance point each time you present a Map of the Day.

Exams

There will be a Midterm Exam and a Final Exam, given on D2L at the allotted time. Both will be open-book and based on the concepts covered by prior quiz and lab questions, with the addition of some short answer analysis questions. The Final Exam will be open during our finals period (Friday, May 6, 1-2:50 PM).

Grading

Percentages of your final grade:

- Attendance and participation: 10%
- Notes and Quizzes: 30%
- Lab Activities: 40%
- Exams: 20%

Final grade breakdown:

A: 90-100%
B: 80-89%
C: 70-79%
D: 60-69%

I reserve the right to curve grades upward based on the class distribution of final grades. You will never get a lower grade based on your score than what is indicated above.

Late Work

Lab assignments are due at the start of class (1 pm sharp) on the due date unless you have been granted an extension in advance. Late work will be discounted by **15%**. Late work will not be accepted after 11:59 pm on Friday, May 6 (the last day of the semester).

Plagiarism

You may not copy others' work without attribution/citation or have others complete your work for you. If you copy text, it must be in double-quotes ("") with credit given to the original author, and should account for a small minority of your submission. You must appropriately cite all data sources on your maps and gain permission from the data owner if required by its license. There are no team-based assignments in this course; you must submit your own unique product for each assignment. Plagiarism, or presenting the work of another as your own (a.k.a. "copying"), results in an F for this course and is subject to any other disciplinary actions mandated by this institution and the Minnstate system.

Disabilities Notice

Fond du Lac Tribal & Community College is committed to providing equitable access to learning opportunities for all students. Under the Americans with Disabilities Act and Section 504 of the Rehab Act, Fond du Lac Tribal & Community College provides students with disabilities (e.g., mental health, attentional, learning, chronic health, sensory or physical) reasonable accommodation to participate in educational programs, activities or services. Students with disabilities requiring accommodation to participate in class activities or meet course requirements should first complete an intake form and necessary requirements with Nancy Olsen, Disability Services coordinator, to establish an accommodation plan. She can be reached at nancy.olsen@fdltcc.edu or 218-879-0819.

Sexual Violence

Fond du Lac Tribal & Community College is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence, gender or sex-based bullying and stalking. If you or someone you know has experienced gender or sex-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), know that you are not alone. Fond du Lac Tribal & Community College has staff members trained to support survivors in navigating campus life, accessing resources, providing accommodations, assistance completing with protective orders and advocacy. For more information regarding the Campus Security Report, the following link will give you a report on the Clery Compliance and Security Report at FDLTCC: http://fdltcc.edu/about-us/policies-reports/campus-security-policies-reports/

Please be aware that all Fond du Lac Tribal & Community College employees are required to report any incidents of sexual violence and, therefore it cannot guarantee the confidentiality of a report, but it will consider a request for confidentiality and respect it to the fullest extent possible. If you wish to report sexual misconduct or have questions about school policies and

procedures regarding sexual misconduct, please contact Anita Hanson, Dean of Student Services, at 218-879-0805 or anita.hanson@fdltcc.edu.

Course Schedule

Subject to change at the discretion of the instructor

(Unit) Date	Activities
(1) M 1/10	**In Class** • Introductions, Syllabus • Lecture 1: What is a map? **Assigned** • Lecture 1 notes and quiz • Reading 1: MSW Sections 2.1-2.2 • Pre-Lab 1: Map Critique Activity • Pre-Lab 2: Reference Map Proposal
(1) W 1/12	**In Class** • Lecture 2: What is Cartography? **Assigned** • Lecture 2 notes and quiz • Reading 2: BOK: Cartography and Science
(1) W 1/19	**Due** • Lecture 1 Notes & Quiz • Lecture 2 Notes & Quiz **In Class** • Lecture 3: Coordinate systems and projections **Assigned** • Lecture 3 notes and quiz • Reading 3: BOK: Map Projections, MSW Sections 2.4-2.5
(1) M 1/24	**Due** • Pre-Lab 1: Map Critique Activity • Pre-Lab 2: Reference Map Proposal **In Class** • Map Critique presentations • Lab 1 walkthrough **Assigned** • Lab 1: Start a Reference map in ArcGIS Pro
(1) W 1/26	**Due** • Lecture 3 notes and quiz **In Class** • Lab 1 work time
(1) M 1/31	**In Class** • Lab 1 work time

(Unit) Date	Activities
(2) W 2/2	**Due** • Lab 1 project package **In Class** • Lecture 4: Scale and generalization • Lab 2 walkthrough **Assigned** • Reading 4: BOK: Scale and Generalization, MSW Sections 2.6-2.8 • Lab 2: Create a Map Layout in ArcGIS Pro
(2) M 2/7	**In Class** • Lab 2 work time
(2) W 2/9	**Due** • Lecture 4 notes and quiz **In Class** • Lecture 5: Map Composition **Assigned** • Reading 5: BOK: Visual Hierarchy and Layout, MSW Section 2.13
(2) M 2/14	**In Class** • Lab 2 work time
(2) W 2/16	**Due** • Lecture 4 notes and quiz **In Class** • Lab 2 work time
(2) W 2/23	**Due** • Lab 2 final map layout **In Class** • Midterm Exam review
(2) M 2/28	**Midterm Exam**
(3) W 3/2	**In Class** • Lecture 6: Symbolization • Lab 3 walkthrough **Assigned** • Reading 6: BOK: Symbolization and the Visual Variables, MSW Section 2.9 • Lab 3: Finish a Reference Map in Adobe Illustrator
(3) M 3/7	**In Class** • Lab 3 work time
(3) W 3/9	**Due** • Lecture 6 notes and quiz **In Class** • Lecture 7: Color **Assigned** • Reading 7: BOK: Color Theory, MSW Section 2.10
(3) M 3/21	**Due** • Lecture 7 notes and quiz **In Class** • Lecture 8: Typography and Labeling **Assigned** • Reading 8: BOK: Typography, MSW Section 2.11
(3) W 3/23	**In Class** • Lab 3 work time

(Unit) Date	Activities
(3) M 3/28	**Due** • Lecture 8 notes and quiz **In Class** • Lab 3 work time
(3) W 3/30	**In Class** • Lab 3 work time
(4) M 4/4	**Due** • Lab 3 final map **In Class** • Lab 3 map presentations • Lecture 9: Thematic Maps Overview • Lab 4 walkthrough **Assigned** • Reading 9: BOK: Common Thematic Map Types, MSW Sections 3.1-3.2 • Lab 4: Create a Thematic Map
(4) W 4/6	**In Class** • Lab 4 work time
(4) M 4/11	**Due** • Lecture 9 notes and quiz **In Class** • Lecture 10: Choropleth maps **Assigned** • Reading 10: BOK: Statistical Mapping, MSW Sections 1.7, 1.9, and 3.3
(4) W 4/13	**In Class** • Lab 4 work time
(4) M 4/18	**Due** • Lecture 10 notes and quiz **In Class** • Lecture 11: Proportional Symbol and Multivariate Maps **Assigned** • Reading 11: BOK: Multivariate Mapping, MSW Sections 3.4, 3.6-3.8
(4) W 4/20	**In Class** • Lab 4 work time
(4) M 4/25	**Due** • Lecture 11 notes and quiz **In Class** • Lecture 12: Web Maps **Assigned** • Reading 12: BOK: Web Mapping, MSW Sections 4.4-4.6
(4) W 4/27	**In Class** • Lab 4 work time
(4) M 5/2	**Due** • Lab 4 final map **In Class** • Lab 4 thematic map presentations • Final Exam Review
(4) F 5/6	**Final Exam**