Data Science 420

Foundations of Geospatial Thinking
Summer 2025

Time: T/Th 11:30–12:50
Place: Online (link in Canvas)
Instructor: Amber Camp
Office: Data Science Center, Tredtin Hall
Office Hours: M,T, W, & F 10:00–11:20 & by appointment
Email: amber.camp@chaminade.edu

Required Materials: *How to Lie With Maps, 3rd edition* by Mark Monmonier. Available for purchase from various retailers in both digital and print format, including the Bookstore.

Citation: Monmonier, M. (2018). *How to lie with maps* (3rd ed.). University of Chicago Press.

Course Description: This course introduces geographic perspectives that are foundational to Geographic Information Systems, including: human-environment interactions, spatial thinking, and systems thinking. Students will learn about the power of maps as communicative tools, and the ethical issues in the field of cartography. Key theoretical topics will include the spatial side of: systems, processes, distributions, clusters, movement, and networks with special attention to how cultural, biological, and earth systems interact. Students will interact with existing geographic data portals to explore topics in a region of interest to them. No previous experience in geography or data science is needed. This course will prepare students for any GIS course with the ability to think and communicate from geographic perspectives. Prerequisites: EN 102 and COM 101.

Grading:

Item	Percentage
Class Engagement	10%
Reading Reviews	15%
Discussion Posts	15%
Map Mini-Projects	30%
Final Project	30%

90–100%	A
80–89%	B
70–79%	C
60–69%	D
< 60%	F

Important Dates:

Map Mini-Projects:

5/18 – Apocalypse Map
5/25 – CUH Map
6/1 – Story Map

Final Project:

6/8 – Final Project Proposal
6/15 – Final Project Data Collection
6/20 – Final Project Due

Learning Outcomes

Program Learning Outcomes (PLOs) – Upon completion of the B.S. program in Data Science, Analytics & Visualization, the student will be able to:

1. Apply collection, storage, or cleaning of datasets;
2. Apply technologies to collect or manage data, analyze data, or program an application;
3. Analyze data using mathematics, statistics, prediction models, visualizations, or other forms of analytics to support decision-making;
4. Apply effective data communication approaches for stakeholders and the public;
5. Integrate an awareness of ethical issues and collective standards to positively influence the application of data science to service, justice and peace in working towards solutions for societal problems.

Course Learning Outcomes (CLOs) – Upon completion of DS 420, the student will be able to:
1. Identify key geographic concepts such as human-environment interactions, spatial thinking, and systems thinking as they relate to GIS and cartography;
2. Evaluate ethical considerations in cartography and geospatial technologies, particularly in relation to data representation and communication;
3. Apply spatial thinking to interpret and communicate geographic data through maps and visualizations, fostering a deeper understanding of place and spatial relationships;
4. Integrate spatial data collection, processing, visualization, and analysis to effectively communicate geographic insights.

Marianist Values – This class represents one component of your education at Chaminade University of Honolulu. An education in the Marianist Tradition is marked by five principles and you should take every opportunity possible to reflect upon the role of these characteristics in your education and development:

1. Education for formation in faith.
2. Provide an integral, quality education.
3. Educate in family spirit.
4. Educate for service, justice and peace, and integrity of creation.
5. Educate for adaptation and change.

While all five Marianist educational characteristics are present in this course, we will focus in particular to education **"for service, justice, and peace."** <u>This course addresses that value by exploring how foundational geospatial concepts inform the ways GIS tools and maps are both created and consumed. We will also discuss topics around justice and representation in this field</u>. These are important concepts for students to grasp as they leave the program and aim to serve broader communities.

Native Hawaiian Values – Education is an integral value in both Marianist and Native Hawaiian culture. Both recognize the transformative effect of a well-rounded, value-centered education on society, particularly in seeking justice for the marginalized, the forgotten, and the oppressed, always with an eye toward God (Ke Akua). This is reflected in the ʻŌlelo Noʻeau (Hawaiian proverbs) and Marianist core beliefs:

1. Educate for Formation in Faith (Mana) E ola au i ke akua (ʻŌlelo Noʻeau 364) May I live by God.
2. Provide an Integral, Quality Education (Naʻauao) Lawe i ka maʻalea a kūʻonoʻono (ʻŌlelo Noʻeau 1957) Acquire skill and make it deep.
3. Educate in Family Spirit (ʻOhana) ʻIke aku, ʻike mai, kōkua aku, kōkua mai; pela iho la ka nohona ʻohana (ʻŌlelo Noʻeau 1200) Recognize others, be recognized, help others, be helped; such is a family relationship.
4. Educate for Service, Justice and Peace (Aloha) Ka lama kū o ka noʻeau (ʻŌlelo Noʻeau 1430) Education is the standing torch of wisdom.
5. Educate for Adaptation and Change (ʻĀina) ʻAʻohe pau ka ʻike i ka hālau hoʻokahi (ʻŌlelo Noʻeau 203) All knowledge is not taught in the same school

Alignment of Course Learning Outcomes

	CLO 1	CLO 2	CLO 3	CLO 4
Marianist Values	X	X	X	X
PLOs	X	X	X	X
Native Hawaiian Values	X	X	X	X
Gen Ed Learning Outcomes (if applicable)		X	X	X

Class Policies

Communication – Communication with the instructor will primarily take place over email. I will respond to your emails as soon as possible, within 36 hours. All students are also welcome to attend [office hours](#) or just stop by anytime my office door is open.
Quick reading: [Why College Professors Want You to Talk to Them](#)

Absences – Each student, regardless of the reason for absence, is responsible for completing all assigned work by the scheduled deadline, or in advance in cases of planned absences. While attendance is not graded, it is tracked as a way to support your learning progress.

Time Allocation - This is a three-credit hour course requiring 135 clock hours of student engagement, per the official CUH Credit Hour Policy. Over the 6 weeks of this course, students will spend 40 hours in class (lecture, discussion, and classwork activities), 45 hours reading and completing assignments, 15 hours writing reflections (1 per week), and 35 hours researching and developing final projects. This is an average of 22.5 hours per week, including class time.

Class Engagement - Group discussion and collaboration are essential to the sciences, and your engagement in this course is expected. Engagement can take many forms, including contributing to discussions, asking or answering questions, or actively listening and reflecting. Both active and reflective engagement are valued and *required* to earn credit in this area.

Assignments and Late Work - All assignments must be submitted by the due date listed on the syllabus or as instructed in class. **Late assignments will not be accepted without prior arrangement**. Readings are also due on the date listed on the syllabus. Reading reviews take place during the week that the reading is listed on the syllabus.

Virtual Classroom Etiquette - Electronic devices should be used responsibly during class meetings. Devices should not disrupt the learning environment. Students who are visibly distracted or causing distractions to others will not earn engagement credit for that session.

Assignment Drafts – Students may submit rough drafts up to five days before the final due date. Those who do so will receive extensive feedback and suggestions for improvement no later than two days before the due date. This **option** is recommended to enhance both your work and your grade.

Extra Credit – Extra credit opportunities will be offered throughout the semester and will often require work outside of the classroom. The number of extra credit opportunities cannot be anticipated or guaranteed, so, while it is a good opportunity to boost your grade, the best way to do well in this class will be to participate regularly and submit quality work on time.

Grades of "Incomplete" – Students and instructors may negotiate an incomplete grade when there are specific justifying circumstances. An Incomplete Contract (available from the Divisional Secretary and the Portal) must be completed. When submitting a grade the "I" will be accompanied by the alternative grade that will automatically be assigned after 30 days. These include IB, IC, ID, and IF. If only an "I" is submitted the default grade is F. The completion of the work, evaluation, and reporting of the final grade is due within 30 days after the end of the semester or term. This limit may not be extended.

Final Grades – Final grades will be computed following the grading structure printed above (see page 1). Grades will be regularly updated on Canvas, at least every week. Final grades will be submitted to [Self-Service](#) at the end of the term.

Grades are interpreted as follows:

A 90–100%   Outstanding scholarship and an unusual degree of intellectual initiative

B 80–89%   Superior work done in a consistent and intellectual manner

C 70–79%   Average grade indicating a competent grasp of subject matter

D 60–69%   Inferior work of the lowest passing grade, not satisfactory for fulfillment of prerequisite course work.

F < 60%   Failed to grasp the minimum subject matter; no credit given

Changes to the Syllabus – While the provisions of this syllabus are as accurate and complete as possible, your instructor reserves the right to change any provision herein at any time. Every effort will be made to keep you advised of such changes, and information about such changes will be available from your instructor over email and/or on Canvas, as well as announced in class.

Important Information

Academic Honesty – Academic honesty is an essential aspect of all learning, scholarship, and research. It is one of the values regarded most highly by academic communities throughout the world. Violations of the principle of academic honesty are extremely serious and will not be tolerated.

Students are responsible for promoting academic honesty at Chaminade by not participating in any act of dishonesty and by reporting any incidence of academic dishonesty to an instructor or to a University official. Academic dishonesty may include theft of records or examinations, alteration of grades, and plagiarism, in addition to more obvious dishonesty.

Questions of academic dishonesty in a particular class are first reviewed by the instructor, who must make a report with recommendations to the Dean of the Academic Division. Punishment for academic dishonesty will be determined by the instructor and the Dean of Academic Division and may include an "F" grade for the work in question, an "F" grade for the course, suspension, or dismissal from the University.

For the most up to date information, please refer to the [Academic Honesty Policy](#) on the Chaminade University Catalog website.

Title IX and Nondiscrimination Statement – Chaminade University of Honolulu is committed to providing a learning, working and living environment that promotes the dignity of all people, inclusivity and mutual respect and is free of all forms of sex discrimination and gender-based violence, including sexual assault, sexual harassment, gender-based harassment, domestic violence, dating violence, and stalking. As a member of the University faculty, I am required to immediately report any incident of sex discrimination or gender-based violence to the campus Title IX Coordinator.

Nondiscrimination Policy & Notice of Nondiscrimination – Chaminade University of Honolulu does not discriminate on the basis of sex and prohibits sex discrimination in any education program or activity that it operates, as required by Title IX and its regulations, including in admission and employment. Inquiries about Title IX may be referred to the University's Title IX Coordinator, the U.S. Department of Education's Office for Civil Rights, or both and contact information may be found at the [Chaminade University Title IX Office Contact Information and Confidential Resources website](#). On-campus Confidential Resources may also be found here at [CAMPUS CONFIDENTIAL RESOURCES](#).

The University's Nondiscrimination Policy and Grievance Procedures can be located on the University webpage at: https://chaminade.edu/compliance/title-ix-nondiscrimination-policies-procedures/.

To report information about conduct that may constitute sex discrimination or make a complaint of sex discrimination under Title IX, please refer to the [Campus Incident Report form](#). Chaminade University of Honolulu prohibits sex discrimination in any education program or activity that it operates. The NOTICE of NONDISCRIMINATION can be found here: [Notice of Nondiscrimination](#).

CUH Alert Emergency Notification – To get the latest emergency communication from Chaminade University, students' cell numbers will be connected to Chaminade's emergency notification text system. When you log in to the Chaminade portal, you will be asked to provide some emergency contact information. If you provide a cellphone number, you will receive a text from our emergency notification system asking you to confirm your number. You must respond to that message to complete your registration and get emergency notifications on your phone.

Assessment for Student Work – With the goal of continuing to improve the quality of educational services offered to students, Chaminade University conducts assessments of student achievement of course, program, and institutional learning outcomes. Student work is used anonymously as the basis of these assessments, and the work you do in this course may be used in these assessment efforts.

Student with Disabilities Statement – Chaminade University of Honolulu offers accommodations for all actively enrolled students with disabilities in compliance with Section 504 of the Rehabilitation Act of 1973, the Americans with Disabilities Act (ADA) of 1990, and the ADA Amendments Act (2008).

Students are responsible for contacting Kōkua ʻIke: Center for Student Learning to schedule an appointment. Verification of their disability will be requested through appropriate documentation and once received it will take up to approximately 2–3 weeks to review them. Appropriate paperwork will be completed by the student before notification will be sent out to their instructors. Accommodation paperwork will not be automatically sent out to instructors each semester, as the student is responsible to notify Kokua Ike via email at ada@chaminade.edu each semester if changes or notifications are needed.

Kōkua ʻIke: Tutoring & Learning Services – Chaminade is proud to offer free, one-on-one tutoring and writing assistance to all students. Tutoring and writing help is available on campus at Kōkua ʻIke: Center for Student Learning in a variety of subjects (including, but are not limited to biology, chemistry, math, nursing, English, etc.) from trained Peer and Professional Tutors. Please check [Kōkua ʻIke's](#) website for the latest times, list of drop-in hours, and information on scheduling an appointment. Free online tutoring is also available via TutorMe. TutorMe can be accessed 24/7 from your Canvas account. Simply click on Account > TutorMe. For more information, please contact Kōkua ʻIke at tutoring@chaminade.edu or 808-739-8305.

School and Department Information

School of Natural Sciences and Mathematics
Office Location: Wesselkamper, Room 116
Phone: (808) 440-4204

If you have questions regarding Data Science, Analytics, and Visualization, reach out to your Instructor or the School of Natural Sciences and Mathematics.

Course Schedule
(Dated 5/13/25. Subject to change as needed)

Week	Tuesday	To Do (ex. Tues-Sun)
One 5/12–5/16	• Syllabus • Class Orientation & General Discussion	Read: • Ch.1 Introduction • Ch. 2 Elements of the Map • Ch. 3 Map Generalization Do by 5/18: • Reading Review & Discussion Post • **Mini-Project: Draw Apocalypse Map**
Two 5/19–5/23	• Topic: Foundations of Map-Making and Map Reading • **Presenting of Apocalypse Maps**	Read: • Ch. 4 Blunders That Mislead • Ch. 6 Maps that Advertise • Ch. 7 Development Maps Do by 5/25: • Reading Review & Discussion Post • **Mini-Project: Draw CUH Map**
Three 5/26–5/30	Holiday: Mon 5/26 is Memorial Day • Topic: Maps as Tools of Influence and Persuasion • **Presenting of CUH Maps**	Read: • Ch. 8 Maps for Political Propaganda • Ch. 9 Maps, Defense, and Disinformation • Ch. 13 Prohibitive Cartography Do by 6/1: • Reading Review & Discussion Post • **Mini-Project: Story Map**
Four 6/2–6/6	• Topic: Maps as Political and Propaganda Tools • **Presenting of Story Maps**	Read: • Ch. 10 Large-scale Mapping • Ch. 11 Data Maps • Ch. 12 Image Maps Do by 6/8: • Reading Review & Discussion Post • **Final Project Proposal & Data Collection**
Five 6/9–6/13	Holiday: Wed 6/11 is Kamehameha Day • Topic 1: Mapping Data and Visualizing Scale • Topic 2: Cultural and Environmental Dimensions of Mapping • Final Project check-in	Read: • TBD article on Culture & Geography • TBD article on Human-Environment Interaction Do by 6/14: • Reading Review & Discussion Post • **Final Project Data Collection**
Six 6/16–6/20	Holiday: Thu 6/19 is Juneteenth **Discussion and Presentation of Final Projects**	Do by 6/20: • **Submit Final Project by Friday, 6/20 at 11:59 pm**