Geography 471/571: Advanced Cartography (4 credits)

Instructor: Jim Thatcher, thatchja@oregonstate.edu (he/him)
Office Hours and Location: Wednesday, 11:00-12:30pm, Strand 318
And ***by appointment***

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And ***by appointment***

Prerequisite: **471:** 370 - Cartography [C-], or instructor permission
571: None

Class Meeting Times

The course credit number and class contact hours are in alignment with the *course credits policy*.

Lecture: Mondays, Wednesdays, and Fridays – 10:00-10:50 pm (Strand 361)
Lab: Tuesdays – 4:00 – 5:50 pm (Strand 361)

Catalog Course Description

Explores advanced concepts, techniques, and theories of Cartography. Details current research in color theory, typographic design, and other aspects of thematic, reference, and analytic maps. Focuses on the design, compilation, construction, and analysis of maps in multiple formats and created for diverse audiences. Constructs a professional level cartographic portfolio of work using GIS, publishing, and image editing software packages.

Extended Course Description

This course builds on the foundational concepts learned in GEOG 370. The course is broken into three major components - lectures, discussion sessions, and lab exercises. The lectures focus on the history, theories, principles, and questions surrounding maps and their role in society. Planned and organized discussion sessions push students to analyze specific mapping practices and maps in the context of the theoretical and historical principles taught in the lectures. The labs will apply the concepts and technologies introduced in the lecture sections and provide opportunities for students to develop a well-designed, professional-quality cartographic portfolio.

Student assessment will consist of four labs, four quizzes. amd a final project. Details can be found in the **Evaluation of Student Performance** section below.

Textbooks and Readings

This course has one required texts and also makes use of supplementary material from an online, open-education resource:

1. *Mapping by Design: A Guide to ArcGIS Maps for Adobe Creative Cloud* by Sarah Bell.

2. The GIS&T Body of Knowledge which was created by UCGIS and intended to represent the domain of knowledge needed for an undergraduate understanding of GIS and Cartography. It can be found here: https://gistbok.ucgis.org/
   Each entry will have its own citation.

3. In addition, research articles that address the theoretical and practical limits and promises of web mapping will be added to the canvas site regularly. These reflect the latest research in the field of cartography. On weeks with such readings, the syllabus will make note.

Additional optional resources will also be provided at the course's github site. These include optional readings, tutorials, and other exercises.

Readings are to be completed PRIOR to the week for which they are assigned. In other words, the readings for Week 2 should be completed **before** the Monday class of the second week. Some weeks will have heavier reading assignments than others.

Canvas use

This class will predominantly distribute and submit materials through canvas. Students are expected to both acquire class content and submit class work using canvas.

Grading will be handled via the course Canvas site; however, note that **the average and total grades seen in Canvas do not necessarily accurately reflect your overall course grade.** If you have any questions regarding your grade, please reach out to the instructor directly.

Class Schedule

Week 1

Readings: Bell, Chapter 1; Body of Knowledge: "Cartography & Science"; "Cartography and Art"

M 3/31 – Course and student/faculty introductions; introduction to the working environment (arcgis pro, adobe creative cloud)

W 4/2 – What is Cartography? *Cartography as Art; Cartography as Science*

F 4/4 – **Graduate Student Only Meeting; EVERYONE complete class survey**

Week 2

Readings: Body of Knowledge: "Common Thematic Map Types"; "Multivariate Mapping"; "Statistical Mapping"

Lab 1: Choropleth and Proportional Symbol Comparison (ArcGIS)

M 4/7 – Review: Common Types of Thematic Maps

W 4/9 - Review: Choropleth and Proportional Symbol Maps in practice
F 4/11 - Review: Visual Hierarchy and map layout

Week 3

Readings: Bell, Chapters 2, 3, and 4
Lab 1: Choropleth and Proportional Symbol Comparison (Adobe)
M 4/14 – Thematic Maps in Adobe Creative Cloud
W 4/16 - Thematic Maps in Adobe Creative Cloud Activity
F 4/18 - **Graduate Student Only Meeting; Undergraduates take Quiz 1**

Week 4

Readings: Body of Knowledge: "Color Theory"; "Typography"; "Design and Aesthetics"
Lab 2: Color and labels (ArcGIS)
M 4/21 – *Our Favorite Cartographic Products*; **Lab 1 due**
W 4/23 – Color Theory
F 4/25 – *Activity*: Colorful (how color is cultural and contextual)

Week 5

Readings: Bell, Chapter 5; Body of Knowledge: "Map Projections"; "Map Icon Design"
Lab 2: Color and labels (Adobe)
M 4/28 – Typography; **Final Project discussion**
W 4/30 – Label Placement
F 5/2 – **Graduate Student Only Meeting**; **Undergraduates take Quiz 2**

Week 6

Readings: Bell, Chapter 6 and 7; Body of Knowledge: "Terrain Representation"
Lab 3: A beautiful basemap (ArcGIS)
M 5/5 – Terrain Representation; **Lab 2 due**
W 5/7 – Hillshades
F 5/9 – Isolines

Week 7

Readings: Body of Knowledge: "Map Projections"; "Scale and Generalization"; "Cartograms"
Lab 3: A beautiful basemap (Adobe/Blender)
M 5/12 – Projections; **Final Project topic proposal due**
W 5/14 – Generalization and algorithmic harm
F 5/16 – **Graduate Student Only Meeting**; **Undergraduates take Quiz 3**

Week 8

Readings: Body of Knowledge: "Cartography and Power"; **see canvas for additional readings**
Lab 4: Mapping care (Both)
M 5/19 – Critical Cartography: History
W 5/21 – Critical Cartography: Present and Future
F 5/23 - Weird Maps: Cartograms and Other Oddities

Week 9

Readings: see canvas for additional readings

Lab 4: Mapping care (Both)

M 5/26 – **NO CLASS, MEMORIAL DAY**

W 5/28 – Final Project work time

F 5/30– **Graduate Student Only Meeting; Undergraduates take Quiz 4**

Week 10

Readings: None, though see Canvas for *optional* readings

Lab: Work on Final Project

M 6/2 – Map Gallery; **Lab 4 due**

W 6/4– Open Class time - Final Project work

F 6/6 – Open Class time - Final Project work

Final Projects are due June 11th by 5:00pm

Course Specific Measurable Student Learning Outcomes

By the completion of this course, students will be able to:

- Implement and execute advanced cartographic techniques using current mapping technologies (e.g. Adobe Illustrator and ESRI ArcGIS Pro)
- Examine and critique cartographic principles as applied to a variety of existing maps created by government agencies, news organizations, academics, and private corporations.
- Author compelling, professional-quality maps using current cartographic best-practices.
- Design and develop a mapping project on a topic of the student's choice making use of cartographic best practices and current industry-standard software (e.g. Adobe Illustrator and ESRI ArcGIS Pro)

Additional Outcomes for 571:

- Appraise, assess, and constructively criticize their own work
- Propose and plan the use of a map in their own research

Evaluation of Student Performance

Student performance will be evaluated out of 100 total points. These points are divided between **four** lab assignments (15 pts each, 60 pts total), **four** quizzes (5 pts each, 20 pts total), a final project (20 pts total).

Undergraduate Point totals

4 Labs x 15 pts =	60 pts
4 Quizzes x 5 pts =	20 pts
Final Project =	20 pts
Total:	**100 pts**

Graduate Student Additional Standards
The four quizzes are optional for graduate students.

Graduate students will meet with the instructor within the first two weeks of the course (see **Class Schedule** above) to discuss a series of additional research focused readings and discussions that will occur throughout the quarter. Each discussion will feature three or four articles selected by the instructor and graduate students. Graduate students (individually or in self-selected groups) will be responsible for leading one of these discussions which will be worth 10 points. The final project will also have additional research requirements (including a literature review) that will be worth an additional 10 points.

Graduate Point totals

4 Labs x 15 pts =	60 pts
Discussion lead =	10 pts
Final Project =	30 pts
Total:	**100 pts**

The Final Project consists of at least one (but potentially multiple) maps and spatial visualizations. The visualizations may be print, digital, or other material and students are encouraged to think creatively and expansively on their chosen topics. End products will be displayed and discussed during the week 10 Map Galleries. Details will be discussed during class with templates available on canvas (see week 5)

Grading Scale

Grade	*Total Pts*
A	*94-100*
A-	*90-93*
B+	*87-89*
B	*83-86*
B-	*80-82*
C+	*78-79*
C	*74-77*
C-	*70-73*
D+	*68-69*

Grade	*Total Pts*
D	*64-67*
D-	*61-63*
F	*<61*

Late Policy

Assignments are marked late as soon as their submission deadline passes. If submitted within one day of the due date, students will lose one point. For each week past the due date, students will lose an additional point. Assignments are accepted up to three weeks late.

Within 24 hours of due date	-1 point
Over 24 hours, under one week	-2 points
One to two weeks	-3 points
Two to three weeks	-4 points
More than three weeks	Not accepted (without permission)

This policy may be modified on an individual basis with the instructor's approval.

Learning Resources

This course relies upon a series of technologies and texts which are open-access and/or free to use. The principle texts are discussed above in the **Textbooks and Readings** section. In addition, the course will ask students to make use of **arcgis, the adobe creative cloud**, and assorted libraries and technologies that they may find useful.

All of the **required** technologies work on windows platforms and are available for use in the class without additional cost. While not directly supported by the class, open-source, multi-platform alternatives exist and students are welcome to make use of them as they see fit. All additional readings will be provided on canvas.

Course Statements

Academic Calendar

All students are subject to the registration and refund deadlines as stated in the Academic Calendar: https://registrar.oregonstate.edu/osu-academic-calendar

Statement Regarding Students with Disabilities
Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations."

Student Conduct Expectations link: https://beav.es/codeofconduct

Student Bill of Rights
OSU has twelve established student rights. They include due process in all university disciplinary processes, an equal opportunity to learn, and grading in accordance with the course syllabus: https://asosu.oregonstate.edu/advocacy/rights

Reach Out for Success
University students encounter setbacks from time to time. If you encounter difficulties and need assistance, it's important to reach out. Consider discussing the situation with an instructor or academic advisor. Learn about resources that assist with wellness and academic success at oregonstate.edu/ReachOut. If you are in immediate crisis, please contact the Crisis Text Line by texting OREGON to 741-741 or call the National Suicide Prevention Lifeline at 1-800-273-TALK (8255)

Rules of civility
The College of Earth, Ocean, and Atmospheric Sciences follows the university rules on civility and honesty. These can be found at: http://oregonstate.edu/studentconduct/offenses-0 Behaviors disruptive to the learning environment will not be tolerated and will be referred to the Office of Student Conduct for disciplinary action.

General Etiquette – Respect and Inclusivity
It is expected that, at all times, we will behave in a way that is respectful and encouraging to those around us. On this matter, we follow the general rules of civility and honesty linked above. In addition, students will be given the chance to indicate the name that they prefer to be called and, if they choose, to identify pronouns with which they would like to be addressed. This will be done confidentially through Canvas during the first week.

Use of Artificial Intelligence
Use of generative AI tools such as ChatGPT is allowed in this course on all non-writing assignments. Be transparent about your uses of AI. When you use AI tools in this course, ***always cite the source***. In code, make a comment that states the resource used and what it was used to accomplish. For example, you might have a comment like "// ChatGPT was used to locate a bug in this function" or "// The layout of this script was generated using ChatGPT prompts". These are **acceptable** uses, but they need to be documented.