Colorado State University, Academic Partner

Voyage: Fall 2022
Discipline: Geography
Course Number and Title: GR 220 Mapping, Cartography, and Spatial Thinking
Division: Lower
Faculty Name: Sona Andrews
Semester Credit Hours: 3

Prerequisites: None

COURSE DESCRIPTION

This course offers an in-depth examination of how maps provide a spatial perspective and shape how we think about the world. While we often think of maps as just showing where a place is (general reference maps), maps also tell stories about places (population distributions, voting patterns, diseases, vegetation, urbanization, and the list goes on). Learning the "language of maps" has applications for students from all disciplines (ranging from anthropology, biology, business, environmental science, geography, geology, history, political science, public health, to sociology). We will examine the science and art of making maps, read them, analyze data, and use techniques to visualize spatial patterns. We will study the history and influence of maps and mapmakers from the ancient world to today's high-tech images and modern geographic information science (GIS). The course uses a combination of lectures, readings, fieldwork, and assignments, many of which are linked to the places we will visit during the voyage, to teach students how to create, use, and understand maps and spatial data.

LEARNING OBJECTIVES

Upon completion of this course, students should be able to demonstrate through class participation, written work, mapwork, and field work:
- How the three-dimensional world we live in is transformed and projected onto maps.
- Basic map terminology common to cartography, remote sensing, and GIS.
- Understanding and application of the fundamental technical principles of mapping, such as scale, projections, location systems, and symbolization.
- Reading, understanding, and analyzing maps and spatial information.
- Constructively evaluate and comment on the functionality, design, and veracity of various maps.
- Create and design maps.

REQUIRED TEXTBOOKS

AUTHOR: Manson, S. M. (ed.)
TITLE: Mapping, Society, and Technology
PUBLISHER: University of Minnesota Libraries Publishing
ISBN: NA
https://geo.libretexts.org/Bookshelves/Geography_(Physical)/Book%3A_Mapping_Society_and_Technology_(Manson)
DATE/EDITION: Last updated 2021

> *Note: This is an open-source book. You can download it to your computer and print it for* ***free****! Open-source books are edited from time to time. Not to worry if you get an earlier or later version. The major difference will be page numbers but you will be able to easily navigate those in the PDF version you download.*

AUTHOR: Ingram, U.
TITLE: Introduction to Cartography
PUBLISHER: Creative Commons
ISBN: NA
https://alg.manifoldapp.org/projects/intro-cartography-ksu
DATE/EDITION: 2020

> *Note: This is an open-source book. You can access it online for* ***free****, but there is no download ability. I will send a PDF version of the book before the start of the voyage to everyone registered in the class. A PDF copy will also be on reserve in the ship's library.*

REQUIRED SOFTWARE

Students will use QGIS software for some assignments and class activities. The software is free and will be used offline. It is best to download it to your laptop prior to the voyage. Download instructions for are found at the end of this syllabus (as well as many how-to videos online). Onboard, you will also be able to download the software to your computer from the instructor's flash drive.

> ***QGIS*** *is released under the GNU General Public License (GPL), is free, and is available for Windows, macOS, Linux, and Android. It is a fully functioning GIS (Geographic Information System). It is recommended you download the software to your laptop before the voyage. The latest version is 3.24, however, 3.22 is the most stable version and the one we will use.*
>
> *The QGIS software download page can be found at:*
> *https://qgis.org/en/site/forusers/download.html*
> ***For Windows download QGIS Standalone Installer Version 3.22***
> ***For Mac download QGIS macOS Installer Version 3.16***

TOPICAL OUTLINE OF COURSE

Embarkation Day — September 9

1. Studying the language of maps
    Manson, chapter 1: Mapping, Society, and Technology
    Manson, chapter 10: Conclusions
    Ingram, chapter 1: Introduction to Cartography

2. Map elements and qualities
    Ingram, chapter 2: Map Elements and Design Principles, section 1.1

3. Map elements and qualities cont. and Getting Ready for Lisbon Field Work

4. Port Field Work Assessment

5. Is the Earth round? Earth's shape and georeferencing
    Manson, chapter 3: Scale and Projection, pgs. 43-50
    Ingram, chapter 6: Part 1: Geodesy and coordinate systems

6. Geographic Information Systems and how they work
    GIS code of ethics. URISA 2020.
    Rascoff, Spencer. (2015, Jan 28). *Venti Value, Confirmed: Starbucks knows the next hot neighborhood before everybody else does.*
    Patel, Dhrumil. (2019, Oct 17). *Site Planning using Location Data: how Starbucks uses GIS to plan their next store location.*
    Esri. (2017, Dec 29). *2014 UC: Starbucks Coffee and IT.* [Video]. You Tube.

7. What happens when you make a flat map out of a round world? Map projections
    Manson, chapter 3: Scale and Projection, pgs. 50-62
    Ingram, chapter 6: Part 2: Map projections, section 6.1 and 6.2

8. Navigating on the sea
    Kaushik, Mohit. (2021, Jan 1). *Top 8 ship tracking websites to find your ship accurately.* Marine Insight.

9. Depicting the land

10. How to make sense of all that data
    Manson, chapter 2: Data
    Ingram, chapter 4: Data for maps

11. How to show all that data
    Manson, chapter 7: Lying with maps
    Ingram, chapter 8: Lying with maps

12. Shaping the map message through design

Manson, chapter 4: Design and symbology
Ingram, chapter 2: Map Elements and Design Principles, section 2.2
Ingram, chapter 5: Map symbols, visual variables, color
Ingram, chapter 7: Typography
Buckley, A and Field, K. (2011). Making a Meaningful Map: a checklist for compiling more effective maps. ESRI. https://www.esri.com/news/arcuser/0911/making-a-map-meaningful.html

13. Points: reading and creating thematic maps

Manson, chapter 5: Simplification

14. Lines: reading and creating thematic maps

15. Areas: reading and creating thematic maps

Ingram, chapter 3: Choropleth maps, section 3.1
GIS Geography. (2022, May 30). Choropleth maps-a guide to data classification.

16. Areas: reading and creating thematic maps continued

Ingram, chapter 3: Choropleth maps, section 3.2, 3.3

17. Other coordinate systems

18. The power of where: geospatial analysis

Manson, chapter 6: Analysis

19. The power of where: geospatial analysis continued

20. Course Integration

21. Flying high: remote sensing

22. Interactive, animated, and tactual maps

23. Maps in everyday life: media, advertising, social implications

Manson, chapter 9: Social implications
Usher, Nikki. 2020. News Cartography and epistemic authority in the era of big data: Journalists as map-makers, map-users, and map-subjects. new media & society 2020, Vol. 22(2) 247–263
Manson, chapter 8: Surveillance

24. Comparative Experiential Project Voyage Map Catalog and Library

25. Comparative Experiential Project Voyage Map Catalog and Library

Disembarkation Day — December 22

FIELD WORK

Semester at Sea® field experiences allow for an unparalleled opportunity to compare, contrast, and synthesize the different cultures and countries encountered over the course of the voyage. In addition to the one field class, students will complete a Comparative Experiential Project that span multiple countries.

Field Class & Assignment
STUDENTS: Field Class proposals listed below are not finalized. Confirmed ports, dates, and times will be posted to the Fall 22 Courses and Field Class page when available.

Field Class attendance is mandatory for all students enrolled in this course. Do not book individual travel plans or a Semester at Sea sponsored trip on the day of your field class. Field Classes constitute 20% of the contact hours for each course.

Field Class Title: Let's map!

Outcomes
- Learning that anyone can be a cartographer
- Understanding how maps can shape our view of places
- Experiencing how cartographers make choices and influence the message of a map
- Understanding how maps are used in real-time decision-making

Activities
Activities will include spending class time examining historical and current general-purpose and thematic maps of the port and region. Once in port, you will walk neighborhoods and map observations (types of restaurants, vegetation, condition of sidewalks and streets, traffic patterns, land use, noise, sounds). Part of the day will be spent with a government agency to observe how Geographic Information Systems are used in real-time for planning, traffic control, safety, and other decision-making. Once back aboard the ship, the class will create composite maps from the information collected and reflect on what they tell us about the place and our experiences.

Assessment
Total 20% of the overall course grade.
- 5%: participation during the field work day (includes being attentive and asking good questions). You will be required to take field notes and photographs to accompany your mapped observations
- 5%: an individually produced map
- 5%: an in-class activity that takes information each student collected and, as a class, creates composite maps and identifies spatial relationships and correlations
- 5%: individual paper reflecting on how you made your mapping decisions and how they relate to mapping concepts in the course (e.g., generalization, classification, scale, aggregation)

Comparative Experiential Project

The CEP is the required comparative assignment that span multiple countries. The Comparative Experiential Project constitutes at least 5% of the grade for each course.

15% of grade: *Creating a Voyage Map Catalog and Library*

Part 1: Excluding the field class port, you will collect four maps, available for free (not for sale), at a minimum of five ports. These can include transportation maps (bus routes or road maps), general reference maps (of a park, site, or city), tour maps, local newspapers, placemat maps, postcard maps, etc. The maps can be hard copy or a photo (example: photo of a kiosk or bus stop). You will catalog and categorize three of the maps following each port visit, refine descriptions, and contribute to building a class Voyage Map Catalog and Library (10% of grade).

Part 2: At three intervals in the voyage (1. the Iberian Peninsula and North Africa, 2. the Mediterranean, and 3. the Middle East and West Africa) working in groups, you will compare maps, engage in group discussions on similarities and differences, and share observations in short presentations.

At the end of the term, you will work in groups to refine map descriptions based on terminology learned in the class, and note mapping variations found in different countries. The end product will be a Voyage Map Catalog and Library that we will make available to all voyagers (5% of grade).

METHODS OF EVALUATION

65% Class Activities and Lab Assignments
20% Field Class & Field Class Assignment
15% Comparative Experiential Project

Class Activities and Lab Assignments

Much of the assessment in the course will be on doing—making maps, reading maps, and critiquing maps. Significant class time will be devoted to these activities and labs. Students will need to do some independent lab assignment work. Points assigned to these activities and labs will be based on the level of effort required.

GRADING SCALE

The following Grading Scale is utilized for student evaluation. Pass/Fail is not an option for Semester at Sea® coursework. Note that C-, D+ and D- grades are also not assigned on Semester at Sea® in accordance with the grading system at Colorado State University (the academic partner institution).

Pluses and minuses are awarded as follows on a 100% scale:

Excellent	Good	Satisfactory/Poor	Failing
97-100%: A+	87-89%: B+	77-79%: C+	Less than 60%: F
93-96%: A	83-86%: B	70-76%: C	
90-92%: A-	80-82%: B-	60-69%: D	

Attendance in all Semester at Sea® classes, including the Field Class, is mandatory. Students must inform their instructors prior to any unanticipated absence and take the initiative to make up missed work in a timely fashion. Instructors must make reasonable efforts to enable students to make up work which must be accomplished under the instructor's supervision (e.g., examinations, laboratories). In the event of a conflict in regard to this policy, individuals may appeal using established CSU procedures.

CLASSROOM CLIMATE

Semester at Sea® is committed to the Voyage Community Values. Consequently, the classroom environment is founded on mutual respect, community, and an aim toward equity. The Voyage Community Values support the creation of a collaborative and vibrant community. Our community is the foundation of our learning, critical inquiry, and discovery. Each member of this course has a responsibility to uphold these values when engaging with one another.

With that, please review the following Voyage Community Values:

- **Well-Being:** We commit to the health, safety and well-being of ourselves, all members of our voyage community, *and* members of the communities we will visit.

- **Interconnectedness:** We understand our actions and attitudes have an impact locally and globally. We always seek to positively affect the planet and the people around us near and far.

- **Respect:** We honor the inherent dignity of *all people* with an abiding commitment to freedom of expression, scholarly discourse and the advancement of knowledge. We have the right to be treated, and the responsibility to treat others, with fairness and equity.

- **Inclusion:** We ensure inclusive environments that welcome, value, affirm and embrace *all people* within the shipboard community and in each country we visit.

- **Integrity:** We are honest and ethical in all of our interactions, including our academic work. We hold ourselves accountable for our actions.

- **Excellence:** We model the highest academic standards of preparation, inquiry and knowledge and consistently seek to understand complex issues and express informed opinions with courage and conviction.

LEARNING ACCOMMODATIONS

Semester at Sea® provides academic accommodations for students with diagnosed learning disabilities, in accordance with ADA guidelines. Students who will need accommodations in a class, should contact ISE to discuss their individual needs. Any accommodation must be discussed in a timely manner prior to implementation.

A letter from students' home institutions verifying the accommodations received on their home campuses (dated within the last three years) is required before any accommodation is provided on the ship. Students must submit verification of accommodations to their Student Services advisor as soon as possible, but no later than two months prior to the voyage. More details can be found within the **Course Registration Packet**, posted to the student portal prior to registration.

STUDENT CONDUCT CODE

The foundation of a university is truth and knowledge, each of which relies in a fundamental manner upon academic integrity and is diminished significantly by academic misconduct. Academic integrity is conceptualized as doing and taking credit for one's own work. A pervasive attitude promoting academic integrity enhances the sense of community and adds value to the educational process. All within the University are affected by the cooperative commitment to academic integrity. All Semester at Sea® courses adhere to this Academic Integrity Policy and Student Conduct Code.

Depending on the nature of the assignment or exam, the faculty member may require a written declaration of the following honor pledge: "I have not given, received, or used any unauthorized assistance on this exam/assignment."

RESERVE BOOKS FOR THE LIBRARY:

Garfield, S. (2013). On the Map: A Mind-Expanding Exploration of the Way the World Looks. Gotham Books.

Kimerling, J., Buckley, A., Muehrcke, P., and Muehrcke, J. (2016). Map Use: Reading, Interpretation, Analysis.8th edition. ESRI

FILMS:

Videos assigned from Ship's library

ELECTRONIC COURSE MATERIALS:

Map data files in Moodle

QGIS Installation Instructions

QGIS is free GIS software for Windows and Mac that offers common GIS (Geographic Information System) functionalities. It allows you to interactively explore spatial data and compose maps using a friendly graphical user interface (GUI). We will use it for several class assignments. You should load it onto your laptop before the start of the voyage (I will also have it available on the ship on a flash drive for you to transfer to your laptop). It is a file of about 1000 MB. Contact me if you have issues. There are also many videos you can find online for installing the program.

You might consider making a folder on your computer for GR220 and download the installer in that folder so you can easily find it. Throughout the term you will also be storing data files in this folder.
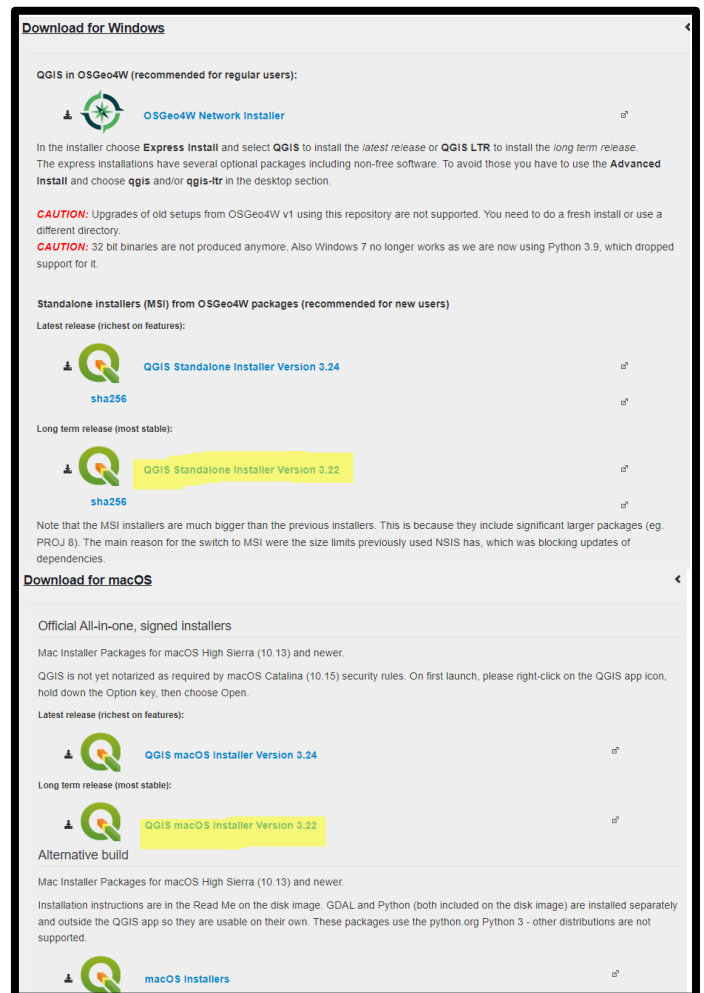
Step 1: Getting to the Site
In your web browser, navigate to https://qgis.org/en/site/ and click on the large green "Download Now" button that you see near the center of the page. This will take you to the Download page where you have the ability to select which version of QGIS you would like to install.

Step 2: Select the version and download
QGIS is unique among the major desktop GIS software applications in that it can run on Windows, Mac, and Linux computers. For this reason, it is important to select the QGIS version appropriate for your operating system on the download page.

This is the screen you will see after you click the download button in Step 1. I have highlighted the version you want to download on Windows and Mac.

You will download **QGIS Standalone Installer Version 3.22**. <u>There are earlier and later versions (you will see a 3.24 that you do not want to use). QGIS 3.22 will be the most stable version that allows for easy use offline and will be the version assignment instruction are in.</u> Click the download for your operating system (Windows or Mac). Be patient--the software will take a while to download (depending on your internet speed).

A "Donate" button will come up and you can close that message (unless of course, you want to make a donation!).

Step 3: Install
Once you have downloaded the most suitable version of QGIS for your Windows or MacOS computer the next step is to install the software on your machine.

Click on the QGIS installer file you downloaded to bring up a wizard that will walk you through the install process in a few easy steps. You will need to accept the license agreement terms. Once it installs 3.22, click the **FINISH** button. QGIS will then go through one more installation process to update to 3.22.5. The second install process for the update goes quickly.

Step 4: Check Installation
It is good to check if you have installed QGIS correctly. QGIS 3.22.5 will have installed the following files. You can find these in your "All Apps" or in your program files.

For MAC users: QGIS is not yet notarized as required by macOS Catalina (10.15) security rules. On the first launch, right-click on the QGIS app icon, hold down the Option key, then choose Open.

To check the installation, open the QGIS Desktop 3.22.5 (not the Qt Designer with QGIS 3.22.5 with custom widgets). You will see a window like this.

You may be tempted to play around a bit in the program (there are a lot of how-to videos online). That is fine, but it is a robust piece of software and easy to get lost the first time you use it. There will be tutorials and demonstrations on the ship to make sure you know the basics to complete the assignments so no need to do anything in advance.