

Introduction to GIS and Cartography (GEOG 3100/6100)

Fall 2020

Class page on <http://canvas.utah.edu/>

Instructor of record: Dr. Alexander Hohl

Email: alexander.hohl@geog.utah.edu

Office Location: GC 4841

Office Hours: MW, 9:30 – 10:30 AM, book a 20-minute slot [here](#).

Office Phone: 801-581-6021

Lectures: Posted on CANVAS every Sunday 11:59pm

Labs: Gardner Commons 1825

GEOG 3100-002: M 9:40am-11:35am

GEOG 3100-003: M 12:55pm-2:50pm

GEOG 3100-004: W 9:40am-11:35am

GEOG 3100-005: W 12:55pm-2:50pm

Lab TA: Kripa Thapa

Email: kripa.thapa@utah.edu

Office Hours: by appointment

Course description and goals

This course is an introduction to the major concepts and applications of Geographic Information Systems (GIS) and cartography. GIS is a system for management, analysis, and display of geographic information. In this course, you will learn about spatial information, digital data, and how GIS is used as a tool to represent features, examine relationships between features, and display information. In lecture, we will cover principles and concepts and learn about the applications and uses of GIS, as well as covering the principles of cartography/map design and geo-visualization. The labs are designed to apply the concepts with hands on exercises while becoming familiar with, and learning the functionality of, ArcGIS software.

The objective of the class is to learn to solve problems using GIS and display the information in a way that facilitates communication and understanding and follows cartographic principles. We will learn and practice skills by completing exercises in class and labs and completing a final project, with the goal of being able to apply skills to solve real problems. This class fulfills a quantitative intensive (QI) requirement, which means the course content will develop analytic reasoning skills and deepen knowledge of quantitative methods. You will build upon and expand previous knowledge of quantitative method concepts by learning about, and practicing, the underlying quantitative theory behind core GIS concepts. The goal is that you will understand not just the software but also the theory when applying quantitative methods to practical issues and real world problems via spatial analysis.

Learning Outcomes

- Demonstrate understanding of the fundamental concepts and methods in geographic information science
- Understand the concept of ‘thinking spatially’ and determine when spatial analysis is appropriate and needed
- Understand common approaches to spatial analysis and their applications
- Ability to effectively display and visualize spatial data and implement cartographic principles

General Information

- It is expected that you have access to a computer with internet connection. Get in touch with your instructor ASAP if that is not the case.
- Check our CANVAS class page (<http://canvas.utah.edu/>) daily. It includes 16 weekly modules that go live every Sunday at 11:59pm. They include:
 - Lectures: Class content is delivered in an asynchronous fashion: **We will not hold live lectures online.** Each module includes voice-over Power Point presentations, which you can watch at a time you choose. However, since assignments and labs build on knowledge gained during lectures, it is recommended you watch the presentations soon after they are posted.
 - Assignments: Instructions and submission pages are found within each weekly module.

- Map Assessment: Maps are effective ways to visualize a variety of topics. You will select a map, from print, popular media, social media, or other source, and write a critical analysis of the maps design and functionality and use of cartographic principles. To be submitted in W12 through the corresponding module on CANVAS. Examples will be given in class.
- Exams. There will be two exams (W7, W14), both administered on CANVAS in their respective modules. You will be tested on contents from lectures, labs and readings. You have the entire week to complete them, but it is recommended you take them in one sitting. The second exam is not cumulative but integrates concepts from first part of semester.
- Labs: You will find the lab instructions, data, and submission pages in their corresponding weekly modules.
- Final project: The Final Project module on CANVAS includes detailed information, instructions, examples and submission pages. Graduate students need to submit a project presentation as a voice-over Power Point presentation (time limit: 10 minutes). Instructions to produce a voice-over Power Point presentation can be found [here](#). Undergraduates receive extra credit if they choose to submit a project presentation.
- Office hours: Office hours will be held virtually. Sign up for appointments with the instructor [here](#) (entries named “GEOG 3100/6100 Instructor Office Hours”). You will receive an invitation with link to a live video meeting at the scheduled time.

Helpful Details

- Don’t be shy! Please feel free to ask me as many questions as you can think of either through email or during my office hours. I also welcome feedback about the class, and what you find works or doesn’t work for your learning process.
- Since the lecture is online, it is important for me to keep in touch with students. I will do my best to respond to emails within 24 hours, with the exception of holidays and weekends, over which I will still try to respond in a timely fashion- **don’t be afraid to email me twice if you think your email may have been overlooked.**
- If you are going to miss an assignment or test, please make arrangement with the instructor or TA ASAP.
- Late assignments lose ten percent per day, no late tests are allowed.
- Work must be original, while you may work on things together, for individual assignments each person must turn in their own assignments in their own words. Cheating, copying, and plagiarism will automatically result in a zero on the test or assignment.

Textbooks

- “Harvey”: A Primer of GIS, Fundamental Geographic and Cartographic Concepts, by Francis Harvey (2nd edition). ISBN: 978-1-4625-2217-0

- “Brewer”: Designing Better Maps: A guide for GIS Users, by Cynthia Brewer (2nd edition). ISBN: 978-1-5894-8440-5

Student Assessment Activities and Grading

Item	Points	Quantity	Total
Labs	30	12	360
Assignments	6	10	60
Map Assessment	60	1	60
Exams	150	2	300
Final Project	220	1	220

= 1000 points possible

Grade Scale

A	940 – 1000
A-	900 – 939
B+	870 – 899
B	840 – 869
B-	800 – 839
C+	770 – 799
C	740 – 769
C-	700 – 739
D+	670 – 699
D	640 – 669
D-	600 – 639
E	< 600

Class Schedule (subject to change, with notice)

W	Dates	Reading	Lecture Topic	Lab Exercise Topics
1	8/24 – 8/30	Harvey Ch. 1 & 2	Course Plan, Motivation Introduction to GIS, GIS examples	Lab 1: Overview of the ArcGIS Software Suite,
2	8/31 –	Harvey Ch. 3 & 4	Nature of geographic information/Types of GIS	Lab 2: Interacting with Data, Symbology

	9/6		data/Uncertainty	
3	9/7 – 9/13	Harvey Ch. 5 & 6 Brewer Ch. 1 & 2	Map Projections Geodesy and Datums Coordinate Systems	Lab 3: Creating a Map, Map Types
4	9/14 – 9/20	Harvey Ch. 7 Brewer Ch. 3 & 4	Representation/Types/Modeling Databases and Tables	Lab 4: Projections, Coordinate Systems
5	9/21 – 9/27	Harvey Ch. 8 Brewer Ch. 5 & 6	Surveying and GPS Digitizing, Creating, Editing Data, Metadata	Lab 5: Querying data, features, joining and relating data
6	9/28 – 10/4	Harvey Ch. 10 Brewer Ch. 7 & 8	Topology, Buffering, and Overlays	Lab 6: Creating/Editing Features, Building Geodatabases, Metadata
7	10/5 – 10/11	Exam #1		
8	10/12 – 10/18	Harvey Ch. 14	Online GIS/Geocoding	Lab 7: Vector Analysis
9	10/19 – 10/25	Harvey Ch. 9	Introduction to Remote Sensing and Data Sets Terrain Analysis	Lab 8: Advanced cartography (labeling, representations, map element editing, etc.)
		Final Project Proposal due		
10	10/26 – 11/1	Harvey Ch. 15	Map Algebra, Local, Neighborhood, Zonal and Global Functions	Lab 9: Geocoding/Reverse Geocoding
11	11/2 – 11/8	Harvey Ch. 16	Spatial Estimations, Spatial Modeling	Lab 10: Online Mapping
12	11/9 – 11/15	Harvey Ch. 11 & 12 Brewer Ch. 9	Cartography and Geovisualization	Lab 11: Raster Analysis
		Map Assessment due		

13	11/16 – 11/22	Harvey Ch. 17	Special topics in GIS/ Future of GIS	Lab 12: Map Algebra
14	11/23 – 11/29	Exam #2		
15	11/30 – 12/6	Working on Final Projects		
16	12/7 – 12/13	Final Projects due (Final Reports, Maps, Presentations)		

The Americans with Disabilities Act. *The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability & Access, 162 Olpin Union Building, 801-581-5020. CDA will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability & Access.*

Addressing Sexual Misconduct. *Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran’s status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, SSB 328, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).*

Diversity and Inclusivity. *It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.*

Preferred Names and Pronouns. *Class rosters are provided to the instructor with the student’s legal name as well as “Preferred first name” (if previously entered by you in the Student Profile*

section of your CIS account, which managed can be managed at any time). While CIS refers to this as merely a preference, I will honor you by referring to you with the name and pronoun that feels best for you in class or on assignments. Please advise me of any name or pronoun changes so I can help create a learning environment in which you, your name, and your pronoun are respected. If you need any assistance or support, please reach out to the LGBT Resource Center. https://lgbt.utah.edu/campus/faculty_resources.php (Links to an external site.)

Undocumented Student Support. *Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members, friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.*

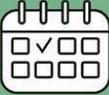
CSBS Scholarships: *Complete one application and apply for multiple scholarships! Undergraduate scholarship applications for the 2021-2022 academic year open on November 1, 2020 and close on February 1, 2021. Students must provide a well-written essay, gather two letters of recommendation, and be a declared major in the College of Social and Behavioral Science. We have scholarships for every type of student—nontraditional, minority, merit, experience-based, and all GPA's. Typical scholarships range from \$1,000-\$5,000. Visit <https://csbs.utah.edu/students/scholarships/undergraduate.php> for instructions. You can also email scholarships@csbs.utah.edu with questions, or to set up a scholarship appointment.*

2021-2022

CSBS UNDERGRADUATE SCHOLARSHIPS



**ONE APPLICATION.
MULTIPLE SCHOLARSHIPS!**

DEADLINES	ELIGIBILITY	FAFSA	U's GENERAL APPLICATION	CSBS MAJOR APPLICATION
 November 1, 2020- February 1, 2021	 Be a declared major in CSBS	 Complete your FAFSA application	 Complete the U of U general application	 Complete your major's application

VISIT: <https://csbs.utah.edu/students/scholarships/undergraduate.php>
QUESTIONS OR APPOINTMENTS: scholarships@csbs.utah.edu



Safety & Wellness Statement. *Your safety is our top priority. In an emergency, dial 911 or seek a nearby emergency phone (throughout campus). Report any crimes or suspicious people to 801-585-COPS; this number will get you to a dispatch officer at the University of Utah Department of Public Safety (DPS; dps.utah.edu). If at any time, you would like to be escorted by a security officer to or from areas on campus, DPS will help — just give a call. The University of Utah seeks to provide a safe and healthy experience for students, employees, and others who make use of campus facilities. In support of this goal, the University has established confidential resources and support services to assist students who may have been affected by harassment, abusive relationships, or sexual misconduct. A detailed listing of University Resources for campus safety can be found at <https://registrar.utah.edu/handbook/campussafety.php> ([Links to an external site.](#)). Your well-being is key to your personal safety. If you are in crisis, call 801-587-3000; help is close. The university has additional excellent resources to promote emotional and physical wellness, including the Counseling Center (<https://counselingcenter.utah.edu> ([Links to an external site.](#))), the Wellness Center (<https://wellness.utah.edu> ([Links to an external site.](#))), and the Women's Resource Center (<https://womenscenter.utah.edu> ([Links to an external site.](#))). Counselors and advocates in these centers can help guide you to other resources to address a range of issues, including substance abuse and addiction. The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu ([Links to an external site.](#)).*

CSBS EMERGENCY ACTION PLAN



BUILDING EVACUATION



EAP (Emergency Assembly Point) – When you receive a notification to evacuate the building either by campus text alert system or by building fire alarm, please follow your instructor in an orderly fashion to the EAP marked on the map below. Once everyone is at the EAP, you will receive further instructions from Emergency Management personnel. You can also look up the EAP for any building you may be in on campus at <http://emergencymanagement.utah.edu/eap>.

CAMPUS RESOURCES



U Heads Up App: There's an app for that. Download the app on your smartphone at alert.utah.edu/headsup to access the following resources:

- **Emergency Response Guide:** Provides instructions on how to handle any type of emergency, such as earthquake, utility failure, fire, active shooter, etc. Flip charts with this information are also available around campus.
- **See Something, Say Something:** Report unsafe or hazardous conditions on campus. If you see a life threatening or emergency situation, please call 911!

Safety Escorts: For students who are on campus at night or past business hours and would like an escort to your car, please call 801-585-2677. You can call 24/7 and a security officer will be sent to walk with you or give you a ride to your desired on-campus location.

