Introduction to Geographic Information Systems & Cartography

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. The readings will cover principles and concepts and you will 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
Required Textbooks

_A Primer of GIS, Fundamental Geographic and Cartographic Concepts_, by Francis Harvey (2nd edition)
ISBN: 978-1-4625-2217-0


System Requirements: This class can be attended from anywhere there is an Internet connection. All course work can be submitted electronically, including exams. Students must be able to use an Internet browser.

Both texts can be purchased from the U Bookstore. Also, the texts are on reserve in the library and can be checked out for a 2-day period.

Coursework: The course consists of assigned chapter readings, twelve labs, and two midterms. See below for an explanation of the recommended procedure.

Grading Policy:

Your grade in this class will be based on the following scale:

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Student Assessment Activities and Grading

5% Introduction Discussion and possible additional discussions.

5% Map assessment
Maps are effective ways to relay all sorts of information. 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. Examples will be provided in class announcements or labs.

30% Midterms (2)
These will be composed of multiple choice, matching, and short answer questions.

40% Labs

20% Final Project
The design and implementation of a project solving a problem or answering a question using spatial data and analysis. Details on the format for the different components of the final project will be provided in class announcements or labs.

10% Final project map

10% Final project report

Readings: There are 17 chapters in the text and all of them will be covered. The way the procedure works is that you read the chapters in the text first and then work on the Labs. The due dates for the Labs are found below and also appear on the Calendar.
**Labs:** There are 12 web-based labs for this course. The labs are designed with the objective of exposing students to various fundamental skills in Cartography and GIS.

**Discussions:** We may have discussion topics if students would like to submit their ideas or questions to be discussed by other students, this is not mandatory, but may be a good venue for sharing ideas and asking questions. We also have the Chat room where this exchange can take place. There will be one mandatory introductory Discussion at the beginning of the semester and worth 5 points.

If you have any more questions, feel free to contact me anytime at the e-mail address above or via the e-mail on Canvas.

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 Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS 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 Services.