



Geography

Course Geography (GEOG) 2475: Geographic Information Systems I

Lecture: TR 10:50 am - 12:05 pm

Lab: TR 12: 15 pm – 1: 30 pm

Location: Lewis Science Center 174

Instructor

Yanan Wu, E-mail: ywu@uca.edu

Office Location: Lewis 154

Office Hours: MW 10:00- 11:50 am

Course Description

GIS is a computer-based system to aid in the collection, maintenance, storage, analysis, output, and distribution of spatial data and information. This course is designed to provide introductions to concepts, principles, and practices of acquiring, storing, analyzing, displaying, and use of geographic information. This course also explores the science behind GIS and software, techniques, and methods that are necessary to manipulate geographic data and produce good maps.

Course Outcomes

After completing this course, a student will be able to:

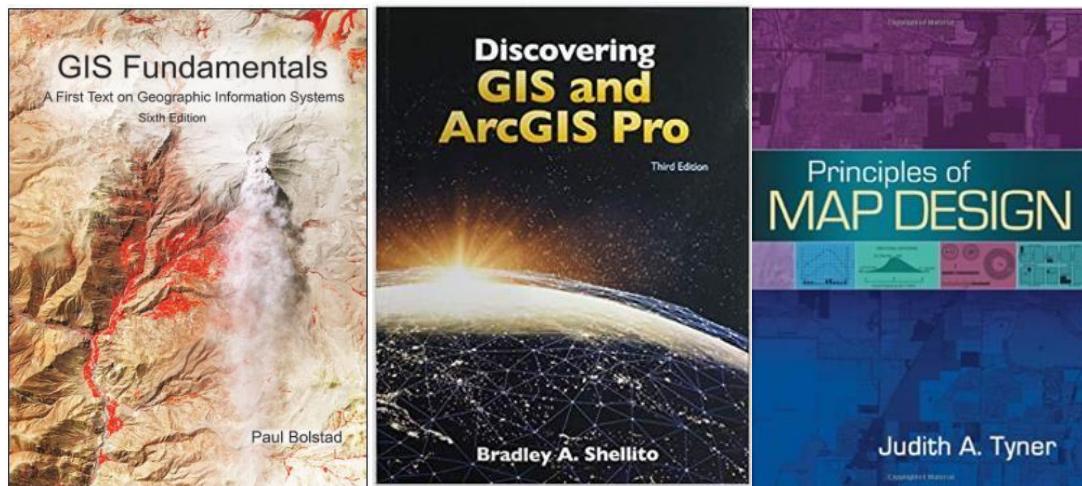
1. explain GIS principles and concepts
2. acquire the knowledge of how computers store spatial data using vector and raster data structures
3. find geospatial data using the web
4. apply cartographic principles to symbolize and classify geographic data
5. produce audience-oriented maps using spatial data
6. build a geodatabase and query attribute table
7. geocode address
8. conduct basic spatial analyses
9. gain experience in GIS software (ESRI ArcGIS)

Course Framework

This course will use a combination of lectures, demonstrations, and lab exercises. The instructor firmly believes that students learn via engagement and doing. As a result, large portions of the class time will be set for demonstrations and lab exercises. It is important that you engage yourself during this class. The instructor will do her best to help you learn, however, it is imperative that you take ownership of your own education.

Recommended Text

1. *GIS Fundamentals* by Paul Bolstad (ISBN-10: 978-0971764736; ISBN-13: 0971764735)
2. *Discovering GIS and ArcGIS Pro* by Bradley A. Shellito (ISBN-10: 131923075X; ISBN- 13: 978-1319230753)
3. *Principles of Map Design* by Judith A. Tyner. (ISBN 978-1-60623-544-7, 978-1-4625-1712- 1)



Required software

1: ArcGIS Pro 3.0, provided by the Geography department

Course Schedule

GF is from GIS Fundamentals

DGIS from *Discovering GIS and ArcGIS Pro*

PMD is Principles of Map Design

Week	Date	Meeting	Tuesday	Thursday	Source Material
W1	Aug. 21-22	Lecture	Summer Break	Introductions to Syllabus	
		Lab	Summer Break	Q&A for lecture and lab	
W2	Aug. 25-29	Lecture	ArcGIS Pro	ArcGIS Online Accounts	GF 1 DGIS 1
		Lab	Lab #1: ArcGIS Pro	Lab #1: ArcGIS Online Accounts Due by Sep 1	
W3	Sep. 1-5	Lecture	Datums and Projections	Datums and Projections	GF 3
		Lab	Lab #2: Datums and Projections	Lab #2: Datums and Projections Due by Sep 8	
W4	Sep. 8-12	Lecture	Geospatial Data	Geospatial Data	GF 8 DGIS 2
		Lab	Lab #3: Exploring Spatial Data	Lab #3: Exploring Spatial Data Due by Sep 15	
W5	Sep. 15-19	Lecture	Attribute Tables and Geodatabases	Attribute Tables and Geodatabases	DGIS 2&3
		Lab	Lab #4: Queries	Lab #4: Queries Due by Sep 22	
W6	Sep. 22-26	Lecture	Cartography I: Data Standardization	Cartography II: Symbolization	PMD 2&3

			Classification		
		Lab	Lab #5: Standardized Map	Lab #5: Standardized Map Due by Sep 22	
W7	Sep 29- Oct. 3	Lecture	Cartography III: Map Elements	Cartography III: Map Elements	DGIS 2 PMD 3
		Lab	Lab #6: Dot Density Map	Lab #6: Dot Density Map Due by Oct 6	
W8	Oct. 6-10	Lecture	Data Accuracy and Precision	Data Accuracy and Precision	DGIS 3/4, PMD 3
		Lab	Lab #8: Georeferencing and Resampling	Lab #8: Georeferencing and Resampling	
W9	Oct. 13-17	Lecture	<i>Arkansas GIS User Forum: no class</i>	<i>Fall Break</i>	
		Lab	No Lab	<i>Fall Break</i>	
W10	Oct. 20-24	Lecture	Midterm	Project Proposal	
		Lab	Midterm	Project Proposal	
W11	Oct. 27-31	Lecture	SWAAG Conference: No class	SWAAG Conference: No class	GF 9&14
		Lab	SWAAG Conference: No class	SWAAG Conference: No class	
W12	Nov. 3-7	Lecture	Vector Analysis	Geocoding	GF 9, PMD 10
		Lab	Lab #9: Vector Analysis	Lab #9: Vector Analysis Due by Nov 10	
W13	Nov. 10-14	Lecture	Raster Analysis	Raster Analysis	GF 7&10 PMD 12
		Lab	Lab #10: Raster Analysis	Lab #10: Raster Analysis Due by Nov 17	
W14	Nov. 17-21	Lecture	Programming in GIS	Programming in GIS	GF 7
		Lab	Exercise: Programming Practice	Exercise: Programming Practice	
W15	Nov. 24-28		Thanksgiving Break		
W16	Dec. 1-5		Project analysis		
W17	Dec. 8-12		Final Presentation		

Grading

Grading will consist of 10 labs, one project, and one exam. The details are shown in Table 2 and Table 3.

It is important that all lab exercises be completed in a timely manner. Some bonus exercises may be provided. *Labs that are not turned in by the due date can be turned in up to 2 days late with a 20% penalty.* Labs will not be accepted after this 2-day period.

Exams will focus on the key concepts and methods discussed in the lecture. The goal of exams will be for you to demonstrate an understanding of the key concepts discussed in class. Being able to execute an analysis is of little benefit if you do not understand the underlying concepts. The exams are not cumulative. *Make-up exams for absences due to any other reason will be at the discretion of the instructor. You must notify the instructor beforehand if you need to miss an exam, the instructor will not let you make up an exam without prior notification. However, the final presentation cannot be rescheduled. You are expected to do the final presentation at the time specified.*

Table 2 Grade distribution for 4-credit version

Item	Description	Detail	Points
Lab exercises	10 labs @ 60 points each	10 lab exercises. Each will be provided with guidelines. In each lab, there are ~10-30 questions to answer.	600
Midterm Exam	1 midterm	Exam will consist of multiple choice, true/false, and short answers.	150
Project	1 project report & 1 final presentation	1. Project report (50 points) <ul style="list-style-type: none"> a. Introduction (10 points) b. Data (10 points) c. Interpretation of the map (10 points) d. Result (10 points) e. (10 points) 2. Final presentation (100 points)	150
Total			900 Points

Table 3 Grade Scale for 4-credit version

90%- 100%	A	> 810 points
80%- 90%	B	> 720 Points
70%- 80%	C	> 630 Points
60%- 70%	D	> 540 Points
0%- 60%	F	< 540 Points

Attendance Policy

1. Attendance is mandatory
2. Class will begin promptly, so please show up on time. *If you are more than 20 minutes late for an exam or final, it will not be completed and you will receive a grade of zero on the examination.*
3. *Consistent with University of Central Arkansas guidelines, excessive absences (up to 3 times) may jeopardize students' grades and the instructor reserves the right to remove you from the class permanently.*

Feedback Response Time

The instructor generally replies to emails within 48 hours, except during holidays. Often the instructor replies much more quickly, but you should not count on a same-day reply. Please plan accordingly so that you don't miss deadlines.

Classroom Etiquette

1. Switch cell phones off and place them out of view. Do not use phones during class. Resist the impulse!
2. Computers are permitted for notetaking only.
3. Do not sleep in class or leave once a lecture has started.
4. Do not pack up and prepare to leave until the instructor has indicated that class is over
5. No eCigarettes permitted in the classroom.
6. You are encouraged to think critically and ask stimulating questions, but always respect your fellow students and your instructor.

COVID-19 adaptation

According to the guidance of the University of Central Arkansas response to COVID-19, this class in the Fall will be in an in-person format. The class schedule has followed this guidance. However, the schedule may be changed, and we will transfer to a virtual format if face-to-face delivery is interrupted. All students are expected to know and comply with university policies related to Covid-19. For information and resources, see <https://uca.edu/coronavirus/>.

Please stay healthy. If you feel any symptoms of COVID-19 (e.g., a fever of 100.4 degrees last two days, a cough, difficulty breathing, or a sore throat), please contact your healthcare provider or the Student Health Clinic (<https://uca.edu/studenthealth/>).

Academic Integrity Statement

The University of Central Arkansas affirms its commitment to academic integrity and expects all members of the university community to accept shared responsibility for maintaining academic integrity. Students in this course are subject to the provisions of the university's Academic Integrity Policy, approved by the Board of Trustees as Board Policy No. 709 on February 10, 2010, and published in the *Student Handbook*. Penalties for academic misconduct in this course may include a failing grade on an assignment, a failing grade in the course, or any other course-related sanction the instructor determines to be appropriate. Continued enrollment in this course affirms a student's acceptance of this university policy.

Accommodations

The University of Central Arkansas adheres to the requirements of the Americans with Disabilities Act. If you need accommodation under this Act due to a disability, please contact the Office of Accessibility Resources and Services (OARS), 501-450-3613.

Building Emergency Plan statement

An Emergency Procedures Summary (EPS) for the building in which this class is held will be discussed during the first week of this course. EPS documents for most buildings on campus are available at <http://uca.edu/mysafety/bep/>. Every student should be familiar with emergency procedures for any campus building in which he/she spends time for classes or other purposes.

Diversity Statement

The University of Central Arkansas is dedicated to attracting and supporting a diverse student, faculty, and staff population and enhanced multicultural learning opportunities. We value the opportunity to work, learn, and develop in a community that embraces the diversity of individuals and ideas, including race, ethnicity, religion, spiritual beliefs, national origin, age, gender, marital status, socioeconomic background, sexual orientation, physical ability, political affiliation, and intellectual perspective (<https://uca.edu/diversity/institutional-diversity/>).

Title IX disclosure

In furtherance of its core values— academic vitality, integrity, and diversity—UCA is dedicated to promoting a campus community free from discrimination. Title IX of the Education Amendments Act of 1972 requires all educational institutions to address gender-based discrimination on campus, and UCA implements these Federal requirements through a fair, consistent, and appropriate process of investigation and adjudication. Please see UCA's Title IX website (<https://uca.edu/titleix/>) for the university's policy, relevant forms, training opportunities, and related information.

Evaluations

Student evaluations of a course and its professor are a crucial element in helping faculty achieve excellence in the classroom and the institution in demonstrating that students are gaining knowledge. Students will receive evaluation notification from university.

*The instructor reserves the right to amend the syllabus, including assignments, schedules, and policies, at any time during the semester as deemed necessary.