Geography (GEOG) 3403: Geographic Information Systems
Fall 2020
Time: T 6:00 pm- 9:00 pm
Location: Burdick Hall 313

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Office Hours: MW 12:30- 2:20 pm

Course Contributions
Several people helped me to develop this course by providing advice, data, or materials. Specifically, I would like to acknowledge the contributions of Dr. Stephen O'Connell, Dr. Fang Fang from UIUC, Dr. Aaron Maxwell from WVU, and staffs from National Geospatial Technology Center of Excellence.

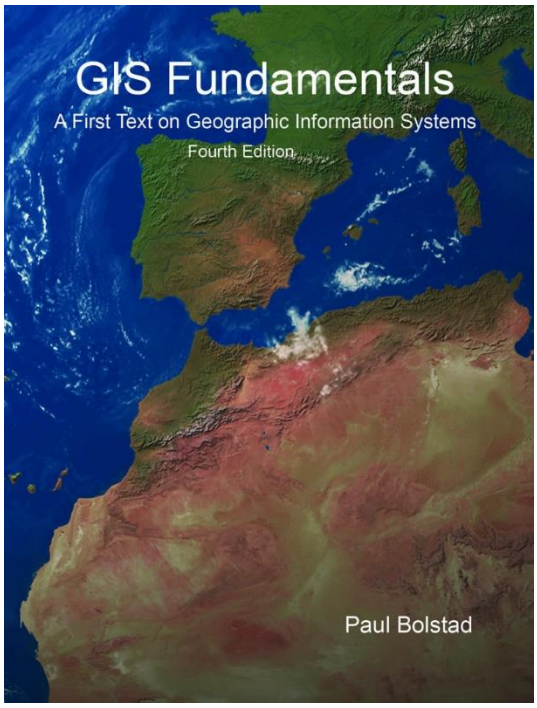
Course Description
GIS is a computer-based system to aid in the collection, maintenance, storage, analysis, output, and distribution of spatial data and information. This course is designed to provide introductions to concepts, principles, and practices of acquiring, storing, analyzing, displaying and use of geographic information. This course also explores the science behind GI systems and the techniques and methods GIS scientists and professionals use to answer questions with a spatial component.

Course Outcomes
After completing this course, a student will be able to:
1. understand GIS principles and concepts
2. acquire the knowledge of how computers store spatial data using the vector and raster data structures
3. find geospatial data using the web
4. use the ArcGIS software package with a variety of data and methods to address a question with a spatial component
5. produce spatial models using ArcGIS Model Builder and weighted overlay techniques
6. assess the suitability of specific spatial analysis techniques for addressing a spatial problem

Course Framework
This course will use a combination of lectures, demonstrations, and lab exercises. The instructor firmly believe that students learn via engagement and doing. As a result, large portions of the class time will be set for demonstrations and lad 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)



Required software

1: ArcGIS Pro 2.5, provided by Geography department

Grading

Grading for this course will consist of 11 labs and two exams. The detailed showed in the Table 1 and Table 2.

It is important that all lab exercises be completed in a timely manner. Some bonus exercises maybe 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, final exam cannot be rescheduled. You are expected to take the final at the time specified.

Table 1 Grade distribution

Item	Points	Description
Lab exercises	50 points each, 550 points total	11 lab exercises. Each will be provided with guidelines. In each lab, there are ~10-30 questions to answer.
Midterm Exam	100 points	Exam will consist of multiple choice, true/false, and short answers.
Final Exam	100 points	Exam will consist of multiple choice, true/false, and short answers.
Total	750 Points	

Table 2 Grade Scale

90%- 100%	A	> 675 points
80%- 90%	B	> 600 Points
70%- 80%	C	> 525 Points
60%- 70%	D	> 450 Points
0%- 60%	F	< 450 Points

Attendance Policy

1. Attendance is mandatory
2. Class will begin promptly, so please show up on time. If you are more than 10 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 email 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 note-taking 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 responding to COVID-19, all in-person instruction must be before November 24, 2020. The class schedule has followed this guidance. However, the schedule maybe changed and we will transfer to virtual format if face-to-face delivery is interrupted. All students are expected to comply with the University policy regarding face coverings (see https://uca.edu/coronavirus/students/).

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

There are no penalties for any COVID-19 related absence of class. Please also contact the instructor for labs and exam rearrangement.

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 an accommodation under this Act due to a disability, please contact the UCA Disability Resource Center, 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
If a student discloses an act of sexual harassment, discrimination, assault, or other sexual misconduct to a faculty member (as it relates to "student-on-student" or "employee-on-student"),

the faculty member cannot maintain complete confidentiality and is required to report the act and may be required to reveal the names of the parties involved. Any allegations made by a student may or may not trigger an investigation. Each situation differs, and the obligation to conduct an investigation will depend on the specific set of circumstances. The determination to conduct an investigation will be made by the Title IX Coordinator. For further information, please visit: https://uca.edu/titleix. **Disclosure of sexual misconduct by a third party who is not a student and/or employee is also required if the misconduct occurs when the third party is a participant in a university-sponsored program, event, or activity*

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 may evaluate courses they are taking starting on Monday, November 16, 2020, through Sunday, December 13, 2020 by logging in to myUCA and clicking on the Course Evaluations task.

Week	Date	Tuesday	Lab Exercise	Due Dates	Source Material
W1	Aug. 20-21				
W2	Aug. 24-28	Introductions, Syllabus, ArcGIS Online Accounts			Ch 1
W3	Aug. 31- Sep. 4	Datums and Projections	Lab #1: Intro to ArcGIS Pro		Ch 3
W4	Sep. 7-11	Geospatial Data	Lab #2: Datums and Projections	Lab #1 Due by Beginning of Class Time on Tuesday	Ch 2
W5	Sep. 14-18	Attribute Tables and Geodatabases	Lab #3: Exploring Spatial Data	Lab #2 Due by Beginning of Class Time on Tuesday	Ch 8
W6	Sep. 21-25	Digitizing, Georeferencing, Resampling	Lab #4: Queries	Lab #3 Due by Beginning of Class Time on Tuesday	Ch 4
W7	Sep. 28-Oct. 2	Data Accuracy and Precision	Lab #5: Georeferencing and Resampling	Lab #4 Due by Beginning of Class Time on Tuesday	Ch 14
W8	Oct. 5- Oct. 9	Vector Analysis	Lab #6: Vector Analysis	Lab #5 Due by Beginning of Class Time on Tuesday	Ch 9
W9	Oct. 12- Oct. 16	Midterm Exam		Lab #6 Due by Beginning of Class Time on Tuesday	
W10	Oct. 19- Oct. 23	Raster Analysis	Lab #7: Raster Analysis		Ch 10
W11	Oct. 26- Oct. 30	Digital Terrain Analysis	Lab #8: Terrain Analysis	Lab #7 Due by Beginning of Class Time on Tuesday	Ch 11
W12	Nov. 2- Nov. 6	Spatial Modeling	Lab #9: ModelBuilder Vector	Lab #8 Due by Beginning of Class Time on Tuesday	Ch 13
W13	Nov. 9- Nov. 13	Spatial Statistics	Lab #10: Spatial Statistics	Lab #9 Due by Beginning of Class Time on Tuesday	Ch 12
W14	Nov. 16- Nov. 20	Spatial Interpolation	Lab #11: Spatial Interpolation	Lab #10 Due by Beginning of Class Time on Tuesday	Ch 12
W15	Nov. 23- Nov. 27	Thanksgiving Break	Thanksgiving Break		
W16	Nov. 30- Dec. 4	Catch up session		Lab #11 Due by Beginning of Class Time on Tuesday	
W17	Dec. 7- Dec. 11	Final exam			