

Geography 1103: Spatial Thinking

Lecture: T\TH 10:00-11:15 am, EPIC 1249

Lab: T 5:30-8:15 pm (Section 1) OR Wed 4:00-6:45 pm (Section 2) McEniry 420

Instructor: Dr. Elizabeth C. Delmelle

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Office Hours: Thursday 2:30-4:00; Or by appointment (send an email to arrange)

Teaching Assistant: Mr. Robert Alexander

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Office Hours: By appointment – please send an email to arrange.

1. Course Overview: This course is intended to provide students with an overview of spatial thinking fundamentals and introduces geospatial technology as a means for illustrating these concepts. Spatial thinking is a set of cognitive skills aimed at identifying, analyzing, and understanding the location, scale, patterns, and trends of geographic and temporal relationships among data, phenomena and issues. The most critical question spatial thinkers ask is “the why of where.” This course will explore this question in relation to applications within the natural world, and in regards to human-environment interactions

Students will have hands on experience working with these concepts in a geospatial environment through laboratory exercises. Throughout the semester, the notion and steps of geographic inquiry are reinforced. This spatial expansion upon the scientific method will form the framework to which students will perform a final research project.

2. Learning Outcomes: Upon completion of this course, students can be expected to:

- Understand what role spatial thinking plays in the natural world and in respect to human-environment interactions.
- Be competent in the process of “geographic inquiry.”
- Apply critical spatial thinking to issues present in the real world.
- Explain how geospatial technology enables spatial thinking and problem solving.
- Understand the basic foundations of representing spatial phenomena in a geospatial environment.
- Have a basic understanding of how spatial data are collected, displayed, and analyzed, and gain an understanding of their limitations and the inherent uncertainty in empirical analyses.

4. Student Assessment: Final grades will be determined based on the following types of assessments:

Laboratory Exercises – A series of 11 laboratory assignments worth 15 points each will be assigned on a near weekly basis (165 Points Total). Labs will be assigned at the beginning of the lab section of the course and will be due by the end of the lab period in which you are assigned. **Failure to attend the**

laboratory session will result in a 0 for that week's assignment. Any extenuating circumstances regarding lab attendance should be discussed with Mr. Alexander.

- Up to 1 day late (24h): -25%
- 1 – 2 days late: -50%
- **More than 2 days late: No Longer Accepted**

Exams: There will be 2 exams during the semester worth 40 points each.

Class Participation: You are expected to attend every lecture session. This is an active learning class and so your participation in the class activities are critical to your learning of the material (which is the whole point of the class besides fulfilling a GenEd requirement). Nearly every class period will have some activity for you to participate in. You will be graded (2-5 points per activity) and will only receive points on these activities if you are present. All activities will be completed in the provided course packet handed out on day 1. At the end of each class, put your work in the folder with your table number on it. I'll grade it and put it back on the folder on your table for you to gather at the start of the next class. Theoretically, this is going to work wonderfully.

Attendance: Attendance to the lecture and lab are critical to your success in this course. Please plan to attend each class, pay attention and take notes! If you miss a class, it is your responsibility to contact me as soon as possible to become informed on the missed material. According to UNCC policy, students may submit a request for religious accommodation for up to two class periods in a semester; please give me advance notice of these dates, and you will have the opportunity to make up missed work or turn in a late reading assignment. Other excused absences will require a note from a doctor. In the case of an excused absence, students will have the opportunity to make up missed assignments (in-class or reading). **HINT: NOBODY HAS EVER PASSED THIS CLASS BY NOT ATTENDING THE LECTURE.**

Extra Credit: There will be several extra credit opportunities announced throughout the semester for attending various departmental seminars. These events will be the only extra credit opportunities offered.

Scale: A: 90-100%, B: 80-89.5%, C: 70-79.5%, D: 60-69.5%, F <60%

4. Course Material

Textbook (required): "Introduction to Geospatial Technologies" 5th Edition by Bradley Shellito. Please bring the book with you to class as we will follow some of the exercises.

Provided course packet.

5. Class Behavior:

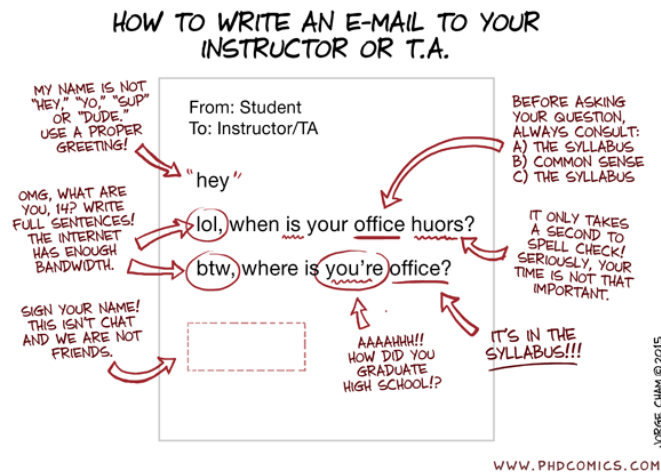
(1) Please turn off and put away your cell phone before entering the classroom.

(2) Do not use the computers during lectures to browse the internet, check your [most current and trendy] social media account, do homework for other classes (or this class), or play games. After an initial warning, you will be asked to leave the classroom. It is very distracting for everyone and research shows that distractions lead to worse academic outcomes.

6. Ethics: If you are contemplating an ethical failure please read the code of student academic integrity: <http://www.legal.uncc.edu/policies/ps-105.html>, so you can plan for the consequences. Students are encouraged to work on their own, however, helping each other understand concepts is fine. In other words, you may work with other students on lab assignments, but you may not copy projects or written answers to questions from another student. Specific examples of unethical behavior that will result in an academic integrity violation include, but are not limited to:

- Turning in lab assignments with answers to written questions that are identical to another student in the class. All words and thoughts should be your own.
- Turning in assignments from students from past semesters.

7. Disabilities: UNC Charlotte is committed to access to education. If you have a disability and need academic accommodations, please provide a letter of accommodation from Disability Services early in the semester. For more information on accommodations, contact the Office of Disability Services at 704-687-0040 or visit their office at Fretwell 230.



Week	Date	Lectures & Labs	Readings & Assignments
1	TH Jan 9	Course Overview & Introductions	Syllabus Homework. Take Photos to bring to lab
2	T Jan 14	Spatial Thinking, Cognition and the Geospatial Revolution	Shellito Ch. 1
	TH Jan 16	The Process of Geographic Inquiry: Focus on formulating spatial hypotheses.	
	LAB 1	Lab 1: 'The Why of Where': Mapping Your Footsteps	
3	T Jan 21	The Power of Maps	"When Maps Lie" (Canvas link)
	TH Jan 23	Some cartographic basics	Shellito Ch. 7
	LAB 2	Lab 2: The Power of Maps	
4	T Jan 28	Where are we? Coordinate Systems, Map Projections	Shellito Ch. 2
	TH Jan 30	Coordinate Systems & Projections Continued. (laptop)	
	LAB 3	Lab 3: Coordinate Systems, Map Projections, and Scale	
5	T Feb 4	Introduction to GIS and Spatial Data	Shellito Ch. 4&5
	TH Feb 6	Spatial Data II: Remote Sensing. Introduction to Aerial Photography	Shellito Ch. 9
	LAB 4	Lab 4: Collecting Field Data	
6	T Feb 11	Drone Mapping Exercise	
	TH Feb 13	Movie "Home" by Yann Arthus-Bertrand	
	LAB 5	Lab 5: Collecting Data 2 – Aerial Imagery	
7	T Feb 18	Spatial Data III: Citizen Science, VGI, Social Media, Geo-AI	
	TH Feb 20	Spatial Data IV: GPS	
	LAB 6	Lab 6: Collecting Data 3 – Social Media Mapping and sentiment analysis. What can we infer?	
8	T Feb 25	Midterm Exam Review	
	TH Feb 27	Midterm Exam in Class	
		No Lab This Week	
9	T March 3	Spring Break!!!	
	TH March 5	Spring Break!!!	
	No Lab	No Lab This Week	
10	T March 10	Basic Spatial Analysis: Queries, buffer, Overlay	Shellito Ch. 6 (up to pg. 201)
	TH March 12	Network Modeling	Shellito Ch. 8
	Lab 8	Lab 7: Groundwater for Many People: The spatial science of a shared resource	
11	T Mar 17	Point Pattern Analysis	
	TH Mar 19	Point Pattern Analysis (laptop needed)	
	LAB 8	Lab 8: Point Pattern Analysis	
12	T Mar 24	Change over time: Introduction to Satellite Remote Sensing	Shellito Ch. 10 & 11
	TH Mar 26	Satellite Remote Sensing/Land Change Analysis (laptop)	
	Lab 9	Lab 9: Landsat Change Analysis	
13	T Mar 31	Water Networks – Flows, Connectivity, Watersheds	
	TH Apr 2	Multicriteria/Habitat Suitability Analysis (laptop)	Shellito Ch. 13
	LAB 10	Lab 10: Hydrologic Modeling	

14	T Apr 7	Instructor Away – No Lecture (Exciting assignment on Canvas)	
	TH Apr 9	Instructor Away – No Lecture (Exciting assignment on Canvas)	
	LAB 11	Lab 11: Site Suitability (Final Lab)	
15	T Apr 14	Spatial Interpolation	
	TH Apr 16	GPS-Interpolation Adventure	
		No New Lab This week – You may use lab time to finalize the interpolation adventure if needed.	
16	T Apr 21	Ethics and Privacy in Spatial & Location-Bases Data	
	TH Apr 23	Wrap-Up, Final Assignment	
17	T Apr 28	Final Exam Review	
18	TH May 7 th	8:00-10:30AM Final Exam	SET YOUR ALARM!!

8. Tentative Schedule. Note the Syllabus and Course Schedule are subject to modification. Please follow on Canvas for any updates and come to class listening for announcements.