Course Syllabus

GISC 2305: Spatial Thinking and Data Analytics
Fall 2016
Tuesdays and Thursdays: 10-11:15am
Classroom: GR 3.602

Professor Contact Information
Dr. May Yuan
myuan@utdallas.edu
Office: GR 3.108C
The carrying of a concealed handgun is prohibited in this office.

Office Phone: 972-883-6284
Office Hours: Tuesdays 2-4 pm or by appointments

TA Contact Information
Brent Dell (bxd160430@utdallas.edu)
Emily Gold (ehg160030@utdallas.edu)
Office Hours: TBD

Course Description
This course explores the role that Spatial Thinking plays in our daily life and across a variety of subject areas in science, engineering, mathematics, arts and humanities. We will introduce rich resources of geospatial data from government agencies, social media, and semantic web. Students will be exposed to introductory methods in Spatial Data Analytics afforded by Global Positioning Systems (GPS), Remote Sensing (RS), and Geographic Information Systems (GIS), Spatial Analysis, and Mapping technologies and learn how to bring spatial considerations into research and applications. The course is intended to empower students with spatial intelligence (one of the nine intelligences on Howard Gardner's Theory of Multiple Intelligences) and with experiences of applying spatial thinking and data analytics to problem solving

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Student Learning Objectives/Outcomes

1. Knowledge:
    a. Define spatial thinking, spatial concepts, and spatial data
    b. List and understand techniques and methods commonly used to reference spatial information and portray spatial patterns
2. Comprehension:
    a. Explain spatial dimensions and interpret spatial patterns
    b. Differentiate good visualizations of spatial information from bad ones.
3. Application:
    a. Develop spatial thinking procedures to solve problems
    b. Produce maps to communicate spatial patterns

Required Textbooks and Materials

Steinberg and Steinberg (2015) GIS Research Methods: Incorporating Spatial Perspectives, Esri Press. Redlands, California. Available online at UTD Eugene McDemott Library.

Electronic Texts* will make available on eLearning or are accessible on the Web. *Students are not required to print materials available electronically*.

Course Plan (subject to modifications)

Students are expected to have read the assigned chapters prior to coming to class.

Week	Date	Day	Topic	Reading Assignment (additional readings may be assigned later)
1	23-Aug	T	Course Introduction	Ch1
	25-Aug	R	Think Spatially	
2	30-Aug	T	Spatial Conceptualization, Implementation	Ch 3
	1-Sep	R	Research Design	Ch 2
3	6-Sep	T	Research Ethics and Spatial Inquiry	Ch4
	8-Sep	R	What is special about spatial data	Ch 5
4	13-Sep	T	Learning ArcGIS Pro Workshop	
	15-Sep	R		
5	20-Sep	T	Spatial Analysis	Ch11
	22-Sep	R		
6	27-Sep	T	Spatial Analysis Lab	
	29-Sep	**R**	**Exam One**	
7	4-Oct	T	Spatial Statistics	Ch 11
	6-Oct	R	Spatial Data Collection and Databases	Ch 7
8	11-Oct	T	Remote Sensing and Image Analysis	
	13-Oct	R	National Geospatial Agency (NGA) guest lectures on satellite imagery in geospatial intelligence	Dr. Wayne Prosser, Dr. Steve Jackson, and Ms. Britany Selhorst
9	18-Oct	T	Image Analysis Lab	
	20-Oct	R	Spatial Statistics Lab	
10	25-Oct		Spatial qualitative analysis	Ch 12
	27-Oct	R	Spatial qualitative analysis Lab	
11	1-Nov	T	R workshop on Geospatial Data Analytics and Visualization	
	3-Nov	R		

12	8-Nov **10-Nov**	T **R**	Mapping twitter data Lab **Exam Two**	
13	15-Nov 17-Nov	*T* *R*	ArcGIS Online workshop	
14	*22-Nov* *24-Nov*	*T* *R*	*Fall Break* *Thanksgiving*	
15	29-Nov 1-Dec	T R	UAV and 3D modeling Mapping emotion with Big Data	Guest Lecture by Arlo McKee Guest Lecture by Brent Dell
16	**6-Dec**	**T**	**Exam Three (class report)**	

Grading Policy

No Curve
93-100 points = A; 90-92 points = A-
87-89 points = B+; 83-86 points = B; 80-82 points = B-
77-79 points = C+; 73-76 points = C; 70-72 points = C-
67-69 points = D+; 63-66 points = D; 60-62 points = D-
59 and below = F

- The first wo exams: 40% (each counts 20%)
- The third exam is a report: 10%; The report is to summarize all you have learned in this class: date, class topic, at least one paragraph to highlight what you have learned. If you miss a class, write the summary based on reading assignments, class presentations, and lab instructions.
- Laboratory exercises: 40%
- Team charades: 10% (will form teams in the first class. Charade games in the first 10 minutes of each lecture with terms from reading assignments or materials from the previous class).
- Class attendance is expected. If you miss a class during a charade, you won't receive the team credits for that game. Alternatively, you can submit a write-up for the terms used in the charade and explain each term by the class following the next class (i.e. if you miss one Tuesday's class, you need to submit the write-up before the next Tuesday's class.). You will receive the same credits as your team if your absence is for medical reasons or family emergency. Otherwise, you will receive 50% of your team credits. Email your write-up to myuan@utdallas.edu.
- Bonus: one grade up based on discussions and participation in class. That is, you will receive one grade higher than the grade from the total points you earn in the class.

Late work penalty: 10% per day late

Class attendance is required. Students are expected to actively participate in class discussion.

Course & Instructor Policies
No make-up exams or assignments except for medical reasons. Class materials will be distributed on our class elearning website. All assignments should be submitted to the class elearning site. There will be no paper handouts and submissions in the class.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

UT Dallas Policies on Carry of Concealed Handguns is available at
http://www.utdallas.edu/campuscarry/policy.pdf

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.