GIS 5106
Advanced GIS
Spring 2017
Syllabus

Instructor:	David C. Folch (dfolch@fsu.edu)
Office Hours:	Tuesday and Thursday 11:00am–noon or by appointment
Office:	Bellamy 308
Class Time:	Tuesday 2:30pm–5:00pm

1 Course Overview

This course is intended for graduate students who wish to deepen their understanding of GIS and spatial analysis concepts. We are in an unprecedented era of spatial data availability and computational resources. Spatial data come in many forms: from geo-referenced coordinates and areal units on a map, to social networks and brain imagery. The challenge is finding the appropriate tools to convert these raw "data" into meaningful "information" for use in decision making and advancing our understanding of the natural and human worlds. Spatial hypotheses that once could only be addressed theoretically or anecdotally, can now be tested empirically and rigorously. Researchers from across the social and physical sciences are increasingly using these spatial analysis methods and GIS tools to study spatial data, with the goal of identifying patterns and processes that were heretofore unobservable, and in some cases unknown. This course is intended to provide students with knowledge and tools applicable to this modern research environment.

As a GIS professional or academic you will be expected to understand and discuss the strengths and weaknesses of this discipline and how GIS and spatial analysis can be applied to real world problems. This course will require students to actively engage in the multidimensional expectations of the professional and academic workplace by

studying theoretical issues in the literature, technological implementations in software and the integration of the two through empirical projects.

2 Learning Outcomes

- Critically evaluate established and contemporary GIScience and spatial analysis literature
- Synthesize concepts of GIS theory, methodology and application
- Demonstrate a conceptual and working knowledge of GIS and spatial analysis operations
- Implement analytical approaches to decision-making and problem solving
- Understand how alternative techniques can determine outcomes

3 Grading

Grading in the course will be based on the following point system:

Component	Count	Points	Total Points
Responses	8	75	**600**
Projects	3	275	**825**
Software presentation	1	100	**100**
Class participation	1	75	**75**
Grand Total			**1600**

Table 1: Point Distribution

3.1 Seminar Responses

One or two readings will be assigned for each seminar meeting of the course. Each student is to submit a maximum one page (single spaced) written response to each reading. If there are two (2) readings, then two (2) responses are required. The responses must be submitted in PDF format to `folchcourses@gmail.com` by 6:00am on the day of the class meeting.

Each response should summarize the assigned reading, critique or complement a few points in the paper and identify some extensions of the material. As the focus of this seminar is spatial analysis and GIS, your responses should also have this focus. These responses are intended to facilitate classroom discussion.

3.2   Projects

Three projects will be assigned during the semester. Each project will have research and analysis aspects. The first project will be individual and the latter two in groups. For the group projects, the group is expected to develop an action plan, divide up the tasks and execute in the given time frame. The goal of these projects is to simulate professional and academic environments where collaborative projects are the norm. Class time will be allocated for instructor consultations and team collaboration.

The instructor will assign the groups, and group membership will change for each project. Each project is graded individually, and each student's score is made up of instructor and peer evaluation.

3.3   Software Presentation

Each student will prepare one presentation on a piece of GIS or spatial analysis software of his/her choosing (with instructor approval). "Software" is defined loosely and can be a standalone program or a "library" or "toolbox" within a larger application like R, Python, QGIS, ArcGIS, etc. The only requirement is that it cannot be something you have seen previously in another class (by the instructor or student). This presentation is intended to motivate the student to reach beyond their software comfort zone, and to explore the wide array of tools available to solve GIS problems. The goal of the presentation itself is to introduce the application to your peers; therefore it should included content on why the software is relevant and how it works. Presentations will include a live demo unless an instructor exception is given.

3.4   Class Participation

This course is largely student driven, therefore its success relies heavily on students' active engagement in the course as exhibited through their class preparation and participation. Students are expected to attend all meetings, cover all assigned readings before each session and to engage in class discussions. Students are expected to be prepared to ask and answer questions focusing on key theoretical concepts and practical issues covered in the assigned readings. Students are expected to pay attention and ask questions during peer presentations.

4   Schedule

We will meet 15 times during the semester. The tentative schedule for the course is reported in Table 2. The last class meeting will be during finals week (usual meeting time). Any conflicts with this last meeting time should be brought to the instructor's attention as soon as possible.

	Meeting		Deliverable
	Part I	Part II	
Jan. 9	Introduction	GIS review	
16	Ontology	Project 1 Intro	Response
23	Fractals	Software Presentations	Response
30	Modifiable areal unit problem	Project work	Response
Feb. 6	Project 2 Intro	Software Presentations	
13	Project Review	Group project work	Project 1
20	Regionalization	Software Presentations	Response
27	Volunteered geographic info	Group project work	Response
Mar. 6	Project 3 Intro	Software Presentations	
13	No Meeting — Spring Break		
20	Project Presentations	Group project work	Project 2
27	Spatial autocorrelation	Software Presentations	Response
Apr. 3	Point patterns	Group project work	Response
10	No Meeting — AAG Conference		
17	Space-time clustering	Software Presentations	Response
24	Uncertainty	Software Presentations	Response
May 1	Project Presentations		Project 3

Table 2: Tentative Course Schedule

5   University Attendance Policy

Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

6   Academic Honor Policy

The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolv-

ing alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at `http://fda.fsu.edu/Academics/Academic-Honor-Policy`.)

7   Americans with Disabilities Act

Students with disabilities needing academic accommodation should:

1. register with and provide documentation to the Student Disability Resource Center; and

2. bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the:

Student Disability Resource Center

874 Traditions Way

108 Student Services Building

Florida State University

Tallahassee, FL 32306-4167

(850) 644-9566 (voice)

(850) 644-8504 (TDD)

`sdrc@admin.fsu.edu`

`http://www.disabilitycenter.fsu.edu/`