INTRODUCTION TO PLANNING INFORMATION SYSTEMS

CREDIT HOURS: 3 Credit Hours

SEMESTER: SPRING 2020

INSTRUCTOR:

Sofia Thordin-
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OFFICE HOURS: *Online Office Hours By Appointment;*

COURSE MEETING TIMES: Online

CLASSROOM: N/A

COURSE TA/COORDINATOR: *No TA*

COURSE WEBSITE: *All materials are posted on the Canvas e-Learning University of Florida. The course may be accessed at* http:/elearning.ufl.edu/

COURSE COMMUNICATIONS: ***Email through Canvas.*** .

REQUIRED TEXT: *No required text. However for students that wish more detailed information or are having trouble with concepts for this course the following resources are recommended:*

ArcGIS 9, Getting Started With ArcGIS, ESRI Press, 2004 (Optional)

ArcGIS 9, Using ArcGIS Spatial Analyst, ESRI Press 2004 (Optional)

Both books are available in .PDF format for download on the course website.

ADDITIONAL RESOURCES: The GIS software we will be using for this class is ArcGIS 10.X. The ArcGIS software is available on UFApps (http://info.apps.ufl.edu/). UFApps provides access to software applications from any computing device--laptops, tablets, desktops, and smartphones--from any location, at any time.

In order to access UFApps and ArcGIS you will need to **install Citrix Receiver** which is available from the UFApps website.

- Open your browser and navigate to http://info.apps.ufl.edu/

- Scroll down to the First Time Use Questions section and
    - click on Access UFApps from a PC if you are using a PC,
    - click on Access UFApps from a Mac if using a Mac.

The instructions will guide you through installing Citrix Receiver and logging in to UFApps.

COURSE DESCRIPTION: *Introduction to concepts, theories, and practice of the use of Geographic Information Systems as applied to urban and regional planning issues.*

PREREQUISITE KNOWLEDGE AND SKILLS: *None (knowledge of basic computer skills, Windows Operating Systems, Excel, etc. is useful, but not required. Fluency in written and spoken English are strongly recommended.)*

PURPOSE OF COURSE: *Introduction to Planning Information Systems is intended to introduce students to the concepts, principles, and the reality of using Geographic Information Systems (GIS). It also teaches the essential skills of operating a functional GIS through the use of ArcGIS software package. This powerful technology provides planners with a very effective tool for capture, analysis, and display of spatial data that is crucial to the planning process. The course is theoretical and practical (i.e., very hands-on), addressing both the structure of geographic information systems and the use of this tool within planning for spatial analysis and data management.*

COURSE GOALS AND/OR OBJECTIVES: *Upon successful completion of the course, students will be able to:*

- *Define a Geographic Information System (GIS), and identify the different "system" components that make up a GIS.*
- *Identify and access sources for GIS data including the Florida Geographic Data Library.*
- *Discuss the history of GIS, and how it has evolved into the technology we use today.*
- *Explain and interpret how GIS is used in real world spatial analysis.*
- *Recognize and explain the two models for representing spatial data: vector and raster.*
- *Recognize the common GIS data formats: coverages, shapefiles, and geodatabases.*
- *Name each ArcGIS application (ArcMap, ArcCatalog, and ArcToolbox), and explain the general use of each.*
- *Discuss how factors such as scale, resolution, and accuracy can impact GIS analysis and how accurately the location and shape of map features can be depicted for a given map scale.*
- *Explain the concept of coordinate systems and projections and how these factors allow mapping distortion to be minimized in the area of interest.*

- *Define projection and coordinate system information for feature datasets, as well as convert coordinates between different systems and formats.*
- *Use and apply basic functionality of ArcMap including selection by attributes, selection by location, map display using data view or layout view, understanding the table of contents, data frames, and layers, changing the symbology of a layer and setting bookmarks.*
- *Identify and discuss the components of a table.*
- *Add items to tables.*
- *Compare and contrast joining and relating tables, and apply the appropriate use for each method.*
- *Describe and complete the editing process in ArcMap including use of the Editor toolbar for creating and editing features and attributes.*
- *Create new shapefiles in ArcCatalog, and then add features and attribute data with editing in ArcMap.*
- *Make use of the "Add XY Data" tool to add GPS data to a map.*
- *Describe the geocoding process for assigning location (points) to addresses.*
- *Setup and create a geodatabase in ArcCatalog.*
- *Utilize Network Analyst to solve common network problems.*
- *Describe and apply methods to create a buffer around selected points, lines, or area features for proximity analysis.*
- *Identify ways that buffers can be used with overlay tools, such as Clip, to identify and clip features from other GIS layers which fall within the buffer areas.*
- *Describe and use the various overlay tools.*
- *Describe how the tools overlay different layers of features to create new information identifying the spatial relationships between the inputs.*
- *Identify the steps required to plan, implement, and carry through to completion a successful vector GIS analysis project.*
- *Contrast raster and vector, and be able to identify the appropriate use of each GIS data model for analysis.*
- *Identify two types of raster data, discrete and continuous, and discuss how each is used to represent raster cell values.*
- *Describe the uses of the Distance and Density tools, and what is represented by the rasters resulting from each of these functions.*
- *Identify and discuss the appropriate uses of the Inverse Distance Weighted and Spline Interpolation methods for creating a prediction surface from sampled point values.*
- *Identify and discuss the operation and use of each of the surface analysis tools.*
- *Contrast local, neighborhood, and zonal statistics functions.*
- *Identify appropriate uses of local, neighborhood, and zonal statistics for analysis.*
- *Identify and discuss the reasons for reclassifying raster data and how to use the Reclassify tool.*
- *Discuss the use of the Raster Calculator.*
- *Convert vector data to raster data.*

- *List and complete the steps required to plan, implement, and carry through to completion a successful raster GIS analysis project.*

HOW THIS COURSE RELATES TO THE STUDENT LEARNING OUTCOMES IN THE DEPARTMENT OF URBAN AND REGIONAL PLANNING: *As a course in the Planning Process, Methods and Systems distribution of the graduate program, Introduction to Planning Information Systems addresses components of all three departmental student learning outcomes. These are:*

- *Demonstrate an understanding of human settlement, historical and contemporary practice, and policy and processes relevant to urban and regional planning concepts and theories. This class is intended to introduce the student to spatial data analysis for understanding, evaluating, and solving contemporary planning issues.*
- *Demonstrate oral, written, and critical thinking skills required of master's students within their area of specialization. Course assignments are intended to allow students to demonstrate and practice critical thinking skills.*
- *Display ethical behaviors, cultural sensitivity, teamwork, professional conduct and communication. As a graduate level course, professional conduct and communication is expected.*

TEACHING PHILOSOPHY: *It is important for Urban and Regional Planning students to develop critical thinking, problem solving, and data analysis skills to allow them to evaluate problems and propose solutions in the "real-world" arena they will soon be entering. As someone who has held GIS positions in the professional/business environment I appreciate the importance of knowing how to think through a problem, effectively analyze data, and propose solutions. Beyond learning which buttons to push, students need to understand the why behind pushing the buttons as well as comprehending the spatial concepts behind the GIS applications they are using.*

To accomplish this objective in my classes, I use a combination of lecture to introduce a concept followed by a hands-on demonstration to illustrate how the concept can be used to solve real problems. I believe there are two types of learners, those that learn by watching and those that learn by doing. I have found this lecture/demonstration format to be quite effective in addressing the learning styles of both types.

To further promote the hands-on, problem-solving approach to learning, I assign homework and exercises that emphasize the spatial analysis concepts explained during lectures. These assignments challenge the students to solve tangible planning problems using real-world data. While these are stand-alone assignments, the skills acquired through these individual assignments build upon each other and all come together in a project. In the project, students are required to solve a spatial analysis problem much like what they might encounter as a working professional. An example of a project would be the siting of a landfill. In order to formulate proposed solutions to the problem, students must develop a methodology to employ the spatial analysis concepts they have learned.

INSTRUCTIONAL METHODS: *The course will have lectures and instructional videos which will present GIS concepts, techniques and methods of spatial analysis for planning applications. Homework and exercises will evaluate and enhance the student's understanding of the lecture materials. Two projects will be completed during the course which will allow the students to apply the spatial analysis concepts they have learned to that point to solving a "real-world" planning*

problem. The course will include a midterm and final exam which will evaluate the student's comprehension of the course materials.

COURSE POLICIES:

MAKE-UP POLICY: *Students must submit assignments at the appointed time or a grade deduction may be enforced. Students with a valid reason (required university sanctioned event or medical excuse) will be allowed to submit assignments after a posted due date with instructor's approval.*

COURSE EVALUATIONS:

"Students in this class are participating in the pilot evaluation of the new course evaluation system called GatorEvals. The new evaluation system is designed to be more informative to instructors so that teaching effectiveness is enhanced and to be more seamlessly linked to UF's CANVAS learning management system. Students can complete their evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/.

Please note your other classes this semester may be evaluated in the current GatorRater online evaluation system at https://evaluations.ufl.edu. Thank you for serving as a partner in this important effort."

UF POLICIES:

Academic Honesty

University Policy on Academic Misconduct: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/

Disabilities

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (http://www.dso.ufl.edu/drc/). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

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Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at http://www.dso.ufl.edu/students.php.

Netiquette: Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. Course communication should be civilized and respectful to everyone. The means of communication provided to you through e-Learning (e-mail, discussion posts, course questions, and chats) are at your full disposal to use in a respectful manner. Abuse of this system and its tools through disruptive conduct, harassment, or overall disruption of course activity will not be tolerated. Conduct that is deemed to be in violation with University rules and regulations or the Code of Student Conduct will result in a report to the Dean of Students.
http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf

Student Honor Code

In adopting this Honor Code, the students of the University of Florida recognize that academic honesty and integrity are fundamental values of the University community. Students who enroll at the University commit to holding themselves and their peers to the high standard of honor required by the Honor Code. Any individual who becomes aware of a violation of the Honor Code is bound by honor to take corrective action. Student and faculty support are crucial to the success of the Honor Code. The quality of a University of Florida education is dependent upon the community acceptance and enforcement of the Honor Code.

The Honor Pledge:
We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity by abiding by the Honor Code.

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment."

GETTING HELP:

For issues with technical difficulties for E-learning in Canvas please contact the UF Help Desk at:

- *Learning-support@ufl.edu*
- *(352) 392-HELP - select option 2*
- http://elearning.ufl.edu/

Any requests for make-ups due to technical issues MUST be accompanied by the ticket number received from LSS when the problem was reported to them. The ticket number will document the time and date of the problem. You MUST e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Other resources are available at http://www.distance.ufl.edu/getting-help for:

- *Counseling and Wellness resources*
- *Disability resources*
- *Resources for handling student concerns and complaints*
- *Library Help Desk support*

Should you have any complaints with your experience in this course please visit http://www.distance.ufl.edu/student-complaints to submit a complaint.

GRADING POLICIES:

Final grades will be calculated as follows:

A = 94 or above	C = 74 - 76
A- = 90 - 93	C- = 70 - 73
B+ = 87 - 89	D+ = 67 - 69
B = 84 - 86	D = 64 - 66
B- = 80 - 83	D- = 60 - 63
C+ = 77 - 79	E = 60 or below

Grades are determined only by points earned on exams and other assignments given during the semester. There is no opportunity other than what is explicitly stated in this syllabus to earn points, that is, no special assignments nor additional work beyond that given other students.

Homework Assignments 20%
Exercises 10%
Project 1 10%
Project 2 10%
Midterm Examination 20%
Final Examination 30%

COURSE SCHEDULE:

- Course Introduction
- Introduction to GIS Concepts
- Spatial Data Formats, File Structure, Overview of ArcGIS

- Map Characteristics, Map Projections
- Working with Selection Tools, Introduction to ArcMap
- Working with Tables; Joins and Relates
- Editing and Creating Data
- Spatial Modeling and Introduction to Geodatabases; Network Analyst
- Proximity Analysis, Buffers, Introduction to Overlay Analysis
- Overlay Analysis, Problem Solving using Vector GIS
- Planning a Vector GIS Project
- Introduction to Raster Data and Analysis
- Raster Layer Properties; Mapping Distance; Mapping Density
- Interpolating to Raster
- Performing Surface Analysis
- Calculating Cell, Neighborhood, and Zonal Statistics
- Reclassifying Data; Using the Raster Calculator; Converting Data; Raster GIS Project

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Disclaimer: This syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.