Sustainability and the Built Environment, Geodesign
College of Design, Construction, and Planning, University of Florida.
431 Architecture Building, Gainesville FL 32611.

DCP 2001 - Introduction to GIS I - Geodesign Specialization
Syllabus

INSTRUCTOR:

JUNA (GODA) PAPAJORGJI, Ph.D.
Phone: 1.352.335.7580
email: juna[at]ufl.edu

CLASS PERIODS:

Monday 3.00 p.m. - 4.55 p.m.
Wednesday 4.05 p.m. - 4.55 p.m.

OFFICE HOURS:

Available via phone/email constantly. Class communication via Canvas. Office hours virtual, Friday 3pm-5pm. Other meetings by appointment.

PREREQUISITES: None

COURSE FULFILLMENTS: Three Credits

REQUIREMENTS: No prerequisites. No textbook. GIS software, lecture notes, assigned readings, handouts, data and class exercises - will all be provided digitally. Required, laptop with Windows. Reference book: Geodesign in Practice: Designing a better world. ESRI, 2013.

COURSE OBJECTIVE:

This course provides a general understanding of the fundamental principles of Geographic Information Systems (GIS); a hands on software experience using ArcGIS 10 (an ESRI desktop product); a real world experience with a community problem to be solved by applying spatial data analysis and techniques.

ORGANIZATION:

This course is organized in 11 Lectures, 15 Learning Exercises, 2 Computer Demonstration Tutorials, 3-4 Class Quizzes, 8 Homework Assignments, 1 Exam, and 1 Final Project. Detailed schedule here.

GRADING:

I use a progressive evaluation approach with a premium on learning and accomplishment rather than on effort or compliance. Below is a broad guideline that I use to assess progress in learning, and which shapes according to individual performance. Overall, I try to place an equal weight between the theoretical and the applied portions of the course.

- Class Participation and Class Quizzes 10% - individual evaluation
- Class Exercises 10% - individual evaluation
- Homework Assignments 20% - individual evaluation
- Midterm Examination 30% - individual grade
- Final Project (presentation and paper) 30% - team grade

Assignments turned in late without prior approval will be decreased one grade level. No student is allowed to miss the mid-term exam or the final project presentation without prior approval.

LEARNING OUTCOMES

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 and add items to a table.
- 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.
- 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.
- 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.
- Understand the use of the Raster Calculator.
- Work in teams to solve a real world problem - applying in an integrated approach all of the above acquired knowledge.
- Co-write a standard structured paper - synthesizing research and methods used to solve the real world problem.
- Co-write a standard structured paper - synthesizing research and methods used to solve the real world problem.

ATTENDANCE:

Students are expected to attend classes and give notification in the event of a conflict. Every effort will be made to accommodate students with a legitimate reason for missing classes. UF attendance policies here.

ACCOMMODATION:

Students in need of special accommodation must register with the Dean of Students Office. This office will provide them the appropriate documentation for submission to me.

ACADEMIC HONESTY:

Students are responsible for abiding by the University of Florida's policies published at: Student Conduct and Honor Code.