Independent Project Instructions

GIS3043C – GIS for Environmental Studies
Instructor: Mira Bourova GISP

Objectives: All students will conduct an independent project outside of class that demonstrates their understanding of GIS analysis and their expertise with the ArcGIS software. Specifically, the independent study project will allow students to demonstrate mastery of the following class objectives:

1. Understand the basic techniques for performing data visualization of point, line and polygon data. Learn to use ArcGIS to symbolize map data to achieve desired effects.
2. Understand the basic cartographic concepts involved in preparing a map, and learn to use ArcGIS to create original maps and export them to standard graphics formats.
3. Understand basic spatial data organization. Learn data capture techniques for inputting new spatial data into GIS, and practice data capture using ArcGIS, including use of some common attribute data classification systems.
4. Understand the common sources of existing GIS data available from the Internet, commercial vendors, and government agencies.
5. Understand basic GIS spatial analysis concepts including Clip, Buffer, Union, Intersect and Dissolve. Learn to apply these techniques using ArcGIS.

Project Requirements: To obtain full credit, each project must adhere to the following requirements.

1. Identify an Original Spatial Analysis Question – Each student shall identify a question to be answered via GIS analysis. The question may be about any topic (e.g., environmental science, social science, public heath, public policy, politics, arms control) and may be inspired by current events. However, the analysis must be original to the student; it must not be derived from an existing study or work by another student. Students must submit their Independent Project ideas to the Instructor in advance for evaluation as to its originality and practicality.
2. Locate and Organize Spatial Data – Each student must identify appropriate spatial data for use in the GIS analysis. Students may use data provided in class, but must use at least one (1) data theme obtained from an external source (e.g., an Internet GIS depository, original research data).
3. Conduct a Spatial Analysis – Each student will use ArcGIS to perform a spatial analysis designed to answer the question posed in 1., above. The analysis must employ at least one of the following spatial analysis techniques: Clip, Buffer, Intersect, Union, Identity, or Dissolve. The analysis may also include tabular analysis techniques (e.g., Select by Attributes), or any other spatial transformation available in ArcGIS (e.g., Erase), but must include one of the six techniques listed previously.
4. Prepare a Map Illustrating Your Findings – Each student shall use ArcGIS to prepare a map that illustrates the results of the spatial analysis. The map shall be designed for a Size A (8.5" x 11") sheet, and may be either Portrait or Landscape orientation. In addition to all the standard elements that should be included on a map, the student shall include the following:
    a. The text "Map Prepared By:" followed by the student's name near the bottom of the map,
    b. A paragraph or more of text labeled "Methods:" that describes the process used to conduct the spatial analysis, and
    c. A line of text labeled "Sources:" that lists the sources of spatial and tabular data used in conducting the analysis and preparing the map.

Project Deliverables: The following products must be delivered to the Instructor for full credit:

1. Project Proposal – Upload your proposal to the appropriate assignment ("Independent Project – Proposal") under the Assignments section of the Webcourses@UCF site by the due date specified in

the assignment. Your proposal must be approved by the Instructor before you begin work on your project. Your proposal is worth 10 points and should include the following:

a. The question you wish to answer with your spatial analysis,

b. The types and source(s) of the spatial data you intend to use, and

c. An outline of the methodology (including the spatial analysis processes) you intend to use.

d. A brief description of what your final map would look like.

2. Final Project Deliverables – Upload your final map to the appropriate assignment ("Independent Project – Deliverable") under the Assignments section of the Webcourses@UCF site by the due date specified in the assignment. Your final deliverable submission is worth 90 points and should include the following:

    a. Independent Project Map Contents – Your map should illustrate the findings of your GIS analysis so as to be understood by someone unfamiliar with your project and seeing the map for the first time. In addition to the standard elements of a good map, your map must include:

        i. Sources – Include a block of text the lists the sources of data (both spatial and tabular) that you used in your project.

        ii. Methods – Include a block of text that states the question you were trying to answer with your GIS analysis and describes the methods you used in your analysis. To obtain full credit you must mention the spatial transformations used in your analysis (e.g., Clip, Buffer, Intersect) and how they were used (i.e., by describing how the inputs of the transformation, the outputs, and how this step contributed to your analysis). Your Methods should be written as a narrative in complete English sentences and conforming to standard usage for grammar and punctuation. Avoid a first person, blow-by-blow account of how you conducted your analysis and prepared your map. ("First I added my data to ArcMap. Then I changed the projection. Then I did a Clip…") Instead, the Methods should be written in a style appropriate for a scientific paper or presentation.

    b. Independent Project Map Format – Export your map as a PDF (*.pdf) file with settings of 300 dpi resolution. Name your map output file as "IP_Map_Lastname.pdf" and attach it to the assignment.