POS 4764 - GIS For Political Analysis

School of Politics, Security, and International Affairs - COS
Fall 2019 - 3 Credit Hours

Instructor: Joshua E. Lambert, Joshua.Lambert@ucf.edu

Time and Location: T, Th 9:00-10:20am, HPH 310

Office Hours: T, Th 11:00-12:00pm, HPH 313 - 407-823-2608

Course Overview

This course will focus on the manipulation, representation, and analysis of geographical information. POS 4764 is designed for students with no prerequisite GIS skills required. Students will be introduced to software that is used to manage spatial data. With this software students are expected to develop a basic research design, argument, and communicate evidence for at least two geographical variables.

POS 4764 is a GIS based course. While we will review a number of techniques for conducting spatial analysis, this course alone will not be exhaustive in all methodologies. The goal is to provide students with the tools needed to investigate and answer questions they are interested in.

Course Prerequisite POS 2041 and ENC 1102.

Requirements

This class requires students to engage with a variety of data and software. Since students are not expected to have existing expertise, to become familiar with a new software students will need to practice outside of class hours. Core skills needed to succeed will be covered during in-class sessions, but to become proficient and apply these skills to an individual research project additional practice is needed.

GIS for political analysis will focus largely on the practical application of geospatial systems to understand the trends over time and space. Readings for this class will therefore be centered largely around the application of these tools. All required readings will be available on Webcourses. Some weeks readings will have expected outcomes (like the ability to identify a dependent variable from an article). Additionally some weeks will have visual material that will be required.

Software

A personal computer is NOT required for this class. With that said, if you have a personal computer I strongly encourage you to download the additional software described below. This class will provide examples with software that is open source (free) making the skills you develop translatable outside of this semester. Software needed for the course is as follows:

- ArcGIS - This is a paid for software for managing and manipulating geographical data. This software is in the computer labs in HPH as well as a few other places around campus. Paying for this software on a personal computer is expensive and unadvised. All assignments and work for the final paper can be completed using ArcGIS on campus, however it can also be accomplished using the following free softwares. If you can utilize open-source software I would advise you to do so.
- QGIS - This is a GIS software directly comparable to ArcGIS. It has a similar GUI (graphical user interface) complete with toolbars and drop-down menus for convenience. All required work can be done on this platform.
- Python - This is a broad programming language that is used across a number of disciplines and both public and private industries. It is also the underlying language you can utilize to interact with both QGIS and ArcGIS. Labs will contain detailed jupyter notebooks (Online python platform), that you can interact with through the web browser. I strongly encourage all students to invest time into learning this platform as it will be the largest payoff.

Attendance/Participation

Attendance for this course is mandatory and graded. In total attendance will count for 5% of your final grade. A total of 28 classes require student attendance. Each class is worth 1/5 of a point. This means that students may miss up to **3** classes without penalty on the final grade. If all classes are attended students will receive the equivalent bonus towards their final grade.

In addition to being present in class, students are expected to participate. Engagement with the readings, assignments, and material covered in both lecture and lab class times are all expected. Students can lose points for attendance if they are not actively participating during class time, or it is clear they are not attempting to read or use software outside of class.

Assignments

This course will include six homework assignments to be completed over the semester. Each of these will count for 10% of your final grade so they are very important. Due dates for these assignments are before the **Thursday** class begins on the weeks listed in the course schedule. Specific assignment instructions will be distributed on Webcourses.

1. Complete Survey (9/5)
2. Identify two data sources to be used in your research project (9/19)
3. Research question and hypothesis (10/3)
4. Data product 1 (10/24)

5. Annotated bibliography (11/14)
6. Data product 2 (12/3)

Presentation

Students must present their research project during the week of (11/19 - 11/21). Students will have at this point already completed multiple assignments related to their project and so the presentation should largely be consolidating these assignments into a coherent discussion. This is an opportunity for students to get feedback regarding their research design and methods. The time between presentation and the due date for the final paper allows the students to implement this feedback. A template for the presentation will be available on Webcourses.

Final Paper

The final paper will be a culmination of the skills developed over the course of the semester into a singular research project. Most course assignments will be directly related to the final project and so completion of these should be advantageous to the project's development. The final paper should be roughly 10 pages of double-spaced, 12-point font text. This is not including title pages or bibliography.

While the final paper does not have to be a formal hypothesis test, students must articulate a directional argument between at minimum two variables. The argument must be answerable by geographical data, and students must provide adequate evidence of spatial expertise through the use of data visualization and geoprocessing tools. Please refer to the comprehensive final paper guidelines, in webcourses, for a full outline for project composition requirements. The final paper is due **December 5th at 7 am**.

Make-up Exams and Assignments

Per university policy, you are allowed to submit make-up work (or an equivalent, alternate assignment) for authorized university-sponsored activities, religious observances, or legal obligations (such as jury duty). If this participation conflicts with your course assignments, I will offer a reasonable opportunity for you to complete missed assignments and/or exams. The make-up assignment and grading scale will be equivalent to the missed assignment and its grading scale. In the case of an authorized university activity, it is your responsibility to show me a signed copy of the Program Verification Form for which you will be absent, prior to the class in which the absence occurs. In any of these cases, please contact me ahead of time to notify me of upcoming needs.

Activity Submissions

All submissions through the class will be done through Webcourses. Each assignment will have a Webcourses submission page with additional instructions.

Communication for an intro GIS course is very important. Please do not wait halfway through the semester to ask questions about using some of the software.

Webcourses is the best way to reach me outside of office hours. You may also reach me through email, please include POS 4764 in the subject line for any questions related to the class.

Since the course is based largely around applicable software-based skills, it can be hard to troubleshoot issues online at times. For this reason the absolute best way to get help is to see me during office hours. If you have conflicting schedules reach out to me and I can make accommodations to meet outside of these times. Please open channels of communication early and often, getting behind will make developing these skills troublesome as labs progress in a cumulative manner.

Grade Breakdown

Attendance	**5% (1/5 point per class)**
Assignments	**10% each (60% total)**
Presentation	**10%**
Final Paper	**25%**

Letter Grade	**Points**
A	90-100
B	80-89
C	70-79
D	60-69
F	59 or below

Course Outline

This course will maintain a predefined structure for the semester unless otherwise noted. On Tuesday the class will be lecture-based, where concepts are defined and reviewed. Thursday will be labs where the spatial and geographical concepts are applied.

What is GIS? (8/27, 8/29)

- Maps
- Political Research

Intro to Software + Spatial Objects (9/3, 9/5)

- ArcGIS
- QGIS

- Python
- Points, Lines, and Polygons
- Data types

Assignment 1 Due : Complete Survey

Data Sources and Design (9/10, 9/12)

- American Politics, International Relations, Conflict,
- Types of Questions asked in Political Analysis

Cartography (9/17, 9/19)

- Map Projection
- Coordinate Systems

Assignment 2 Due : Minimum of two data sources.

Descriptive Spatial Statistics (9/24, 9/26)

- Measures of central tendency
- Cross-tabulation

Merging Data 1 (10/1, 10/3)

- Tabular + Spatial Data

Assignment 3 Due : Tentative Hypothesis/Research Question

Basic Geographical Symbology (10/8, 10/10)

- Choropleth Maps

Geoprocessing Toolkit 1 (10/15, 10/17)

- Selection
- Buffers and proximity analysis

Geoprocessing Toolkit 2 (10/22, 10/24)

- Points in Polygon
- Clip, dissolve, intersect

Assignment 4 Due : Data product 1

Raster Data (10/29, 10/31)

- Columns, Rows, and Values
- Remote Sensing

Merging Data 2 (plus extra) (11/5, 11/7)

- Masking Rasters
- Spatial Joins
- Spatial Analysis

Advanced Spatial Modeling (11/12, 11/14)

1. Spatial Regression

Assignment 5 Due : Annotated Bibliography

Presentations (11/19, 11/21)

1. Student Presentations of final Project

Open Lab for Final Paper (11/26, No Class)

- Open lab for final project.

Open Lab for Final Paper (12/3)

- Open lab for final project.

Assignment 6 Due : Data product 2

Exam Period (12/5)

1. Final Paper Due Date: **December 5th at 7 am**

University Services and Resources

Academic Services and Resources

A list of available academic support and learning services is available at **UCF Student Services**. Click on "Academic Support and Learning Services" on the right-hand side to filter.

Non-Academic Services and Resources

A list of non-academic support and services is also available at **UCF Student Services**. Click on "Support" on the right-hand side to filter.
If you are a UCF Online student, please consult the **UCF Online Student Guidelines** for more information about your access to non-academic services.

Policy Statements

Academic Integrity

Students should familiarize themselves with **UCFs Rules of Conduct**. According to Section 1, "Academic Misconduct," students are prohibited from engaging in:

- *Unauthorized assistance*: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
- *Communication to another through written, visual, electronic, or oral means*: The presentation of material which has not been studied or learned, but rather was obtained through someone elses efforts and used as part of an examination, course assignment, or project.
- *Commercial Use of Academic Material*: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructors PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
- *Falsifying or misrepresenting* the students own academic work.
- *Plagiarism*: Using or appropriating anothers work without any indication of the source, thereby attempting to convey the impression that such work is the students own.
- *Multiple Submissions*: Submitting the same academic work for credit more than once without the express written permission of the instructor.

- *Helping another violate* academic behavior standards.

For more information about Academic Integrity, students may consult **The Center for Academic Integrity**. For more information about plagiarism and misuse of sources, see **Defining and Avoiding Plagiarism: The WPA Statement on Best Practices**.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCFs student handbook, **The Golden Rule**. UCF faculty members have a responsibility for students education and the value of a UCF degree, and so seek to prevent unethical behavior and when necessary respond to academic misconduct. Penalties can include a failing grade in an assignment or in the course, suspension or expulsion from the university, and/or a "Z Designation" on a students official transcript indicating academic dishonesty, where the final grade for this course will be preceded by the letter Z. For more information about the Z Designation, see http://goldenrule.sdes.ucf.edu/zgrade.

Course Accessibility Statement

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need disability-related access in this course should contact the professor as soon as possible. Students should also connect with **Student Accessibility Services** (Ferrell Commons 185, sas@ucf.edu, phone (407) 823-2371). Through Student Accessibility Services, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student.

Campus Safety Statement

Emergencies on campus are rare, but if one should arise in our class, everyone needs to work together. Students should be aware of the surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
- Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Please make a note of the guides physical location and consider reviewing the online version at **Emergency Guide**.
- Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.

- If there is a medical emergency during class, we may need to access a first aid kit or AED (Automated External Defibrillator). To learn where those items are located in this building, see http://www.ehs.ucf.edu/workplacesafety.html (click on link from menu on left).
- To stay informed about emergency situations, sign up to receive UCF text alerts by going to my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the tool bar, scroll down to the blue "Personal Information" heading on your Student Center screen, click on "UCF Alert," fill out the information, including your e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK."
- Students with special needs related to emergency situations should speak with their instructors outside of class.
- To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video. **You CAN Survive an Active Shooter**

Deployed Active Duty Military Students

If you are a deployed active duty military student and feel that you may need a special accommodation due to that unique status, please contact your instructor to discuss your circumstances.

Copyright

This course may contain copyright protected materials such as audio or video clips, images, text materials, etc. These items are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Please do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.

Third-Party Software and FERPA

During this course you might have the opportunity to use public online services and/or software applications sometimes called third-party software such as a blog or wiki. While some of these could be required assignments, you need not make any personally identifying information on a public site. Do not post or provide any private information about yourself or your classmates. Where appropriate you may use a pseudonym or nickname. Some written assignments posted publicly may require personal reflection/comments, but the assignments will not require you to disclose any personally identity-sensitive information. If you have any concerns about this, please contact your instructor.