Syllabus for:
GTECH 709
Introduction to Geographic Information Systems
Fall 2023
Thursdays 5:30 – 9:20 PM

Instructor: Doug Williamson, PhD
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Place of Instruction: Hunter College, Room HN1090-B
Office Hours: Thursdays 4:30pm – 5:30pm (by appointment)

Course Overview:

In this course, we will cover the whole GIS production process from data modeling and acquisition to editing, analysis, and yes, cartographic output. GTECH 709 addresses students from both geography and other disciplines. Lecture examples, as well as hands-on exercises cover a range of application areas. The course itself is divided into two equally important parts: lectures, which introduce the theory of GIScience, and lab exercises, which help you to familiarize yourself with many aspects of the software. The lectures discuss concepts, data, tools, and major aspects to assignments. The laboratory sessions introduce the geospatial data and software tools needed for accomplishing the assignments. They will start at a very basic level, requiring little more than elementary experience with the Windows operating system. Lectures and labs will be supplemented with web-based learning materials from ESRI.

Course Requirements:

Technology:
The class will use ESRI ArcGIS Pro exclusively for lab assignments. This requires access to a *Windows based computer*. The software is available on certain campus computers and a copy will be provided to students. Minimum computer specifications can be found **here**.

Optional Textbook:
Experience has shown that some students need the "security blanket" of a textbook even if the course does not follow it. If you belong into this group then you might benefit from having a **look** at any the following:

- ✓ Michael Shin, Jonathan Campbell and Nick Burkhart. 2022. *Essentials of Geographic Information Systems (v3.0)*

- ✓ Albrecht, J 2007. *Key Concepts and Techniques in GIS*. London: Sage.

- ✓ Harvey, F. 2008. *A Primer of GIS*. New York. The Guilford Press (on blackboard)

- ✓ de Smith M, Goodchild, M and P Longley 2011. *Geospatial Analysis*. Leicester: Troubador. (Free access at http://www.spatialanalysisonline.com/)

Pre-requisites: None (basic computer and numerical literacy expected).

Policies:

Attendance is crucial. Assuming that the class-learning environment is active learning, meaning that most of the student performance is practical assignments rather than tests, adherence to protocols and the course timetable is very important. Active involvement in the course is evidenced in part by undertaking the mechanics of the practical assignments systematically, and learning the tools by hours of practice. In so doing the tools soon come to be seen as a means to an end, rather than the end itself. For example, you will make many maps, and may get caught up in this creative activity, but remember that the maps are being made for particular scientific purposes. Class participation includes timely attendance, participation in organized class discussions, accomplishments of in-class tasks, and accomplishment of the assignments on time.

Electronic recording devices are allowed during class. All other personal electronics should be turned off before coming into the classroom. This includes phones.

Web-enhancement in the context of this course means that everything pertaining to this course will be communicated through BlackBoard. You are required to check the BlackBoard course site on a daily basis. All changes to the syllabus will be announced on the course home page. All lecture and lab materials are accessible through BlackBoard, and this is also the place where you upload your assignments to. Your exams and lab assignments will be graded based on what you have uploaded to BlackBoard and this is where you will find your grades and may access course statistics that help you to assess your standing at any given time.

Hunter College Policy on Academic Integrity - Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

ADA Policy - In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assistance, please call: (212) 772- 4857 or (212) 650-3230.

Hunter College Policy on Sexual Misconduct - In compliance with the CUNY Policy on Sexual Misconduct, Hunter College affirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationship. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

a.   Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, on contacting the College's Public Safety Office (212-772-4444)

b.   All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) of Colleen Barry (colleen.barr7@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link:
http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf

Lab policies are described in detail in http://www.geo.hunter.cuny.edu/techsupport/rules.html.

Assignments are due one week after they are given in class. Late labs will be downgraded by one letter grade. Labs will not be accepted if greater than one week late. It is in your best interests to keep up with the work and meet deadlines for assignments. Incomplete grades and time extensions are not an option for this course. Unless otherwise instructed, you will submit assignments in electronic form.

Syllabus change policy: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice. All changes will/would be announced on BlackBoard, which you are expected to check on a daily basis.

Criteria for evaluation:
Evaluation of your performance in this course will consider both lecture and laboratory components, using the following breakdown:

Lab exercises	40%
Midterm exam	15%
Final exam	20%
Participation	10%
Mini-Project	15%

Final grades will be determined based on the CUNY grading policy that can be found in the online graduate catalog available at: http://catalog.hunter.cuny.edu/

Expected Student Outcomes:

- Create basic map layouts
- Understand the fundamentals of Coordinate Systems, Datums and Projections
- Acquire and Prepare data for use in AcrGIS
- Work with Attribute tables in the GIS environment
- Join data and maps
- Create a variety of thematic maps
- Perform Address mapping (Geocoding)
- Basic Editing of Geographic Features
- Basic understanding of topology and its importance in GIS
- Establish relationships between tables
- Understand behavior as it relates to geographic databases (domains, topology, etc)
- Perform Attribute queries on spatial and non-spatial data
- Perform Location queries on spatial data
- Creating buffers around geographic features for spatial analysis
- Understand geodatabases and be able to create and populate them

Tentative Schedule*:

Fall 2023		GTECH 709: Intro to GIS
		SUBJECT TO CHANGE!!!
Week	**Date**	**Topic**
1	31-Aug	Introduction
2	7-Sep	Datums, projections, and coordinate systems
3	14- Sep	Organizing Geographic Data
4	21- Sep	Cartographic Fundamentals
5	28- Sep	Geographic Data Sources and Data Compilation
6	5- Oct	Working with Tabular Data & Geodatabase Design
7	12-Oct	Geocoding and Address Matching
8	19-Oct	Behavior and the Geodatabase
9	**26-Oct**	**MIDTERM EXAM**
10	2-Nov	Vector Processing
11	9-Nov	Raster Analysis
12	16-Nov	Map Design and Annotation
13	**23-Nov**	**NO CLASS** *Happy Thanksgiving*
14	30-Nov	Introduction to web mapping using ArcGIS Online
15	7-Dec	Geoprocessing and Models
16	**14-Dec**	**FINAL EXAM**