GTECH 70900 - Introduction to GIS
Spring 2017
Fridays, 5:35 to 9:25 PM
Hunter North 1090B-2

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Office hours: Monday and Thursday, 11:30AM to 12:00PM and by appointment

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Office location: 1032 HN (Geography Adjunct Office)
Office hours: Friday, 3:30 PM - 4:30 pm

Goal/Rationale:

We will cover the whole GIS production process from data modeling and acquisition to editing, analysis, and yes, cartographic output. GTECH 70900 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 concepts underlying all GIS, and lab exercises, which help you to familiarize yourself with many aspects of several software packages. The laboratory sessions will start at a very basic level, requiring little more than file handling and basic manipulation of Excel data. The mode of instruction is known as a flipped classroom: the course utilizes a variety of resources, including a lot of **online** materials that students are expected to peruse both before and after each week's class meeting times.

- *Goals*: This course is an introduction to GIS in general. We will be using a variety of **online**, web-based and desktop GIS in your lab assignments but the lectures concentrate on general principles and will note software-specific exceptions were applicable.
- *Objectives*: You learn to see GIS as a process from conceptualizing spatial problems to different representations of spatial data, data sources, data organization, vector and raster analysis, and map production.
- *Outcomes*: By the end of this course, you will be able to work independently with GIS, determine what is easy to do with GIS, what will take you considerable amounts of time, and which spatial research questions do not lend themselves to a GIS solution.

Textbooks: required: ***none***.

Recommended:

- Albrecht, J 2007. Key Concepts and Techniques in GIS. London: Sage. ISBN 978-1412910163
- de Smith M, Goodchild, M and P Longley 2016. Geospatial Analysis. Leicester: Winchelsea Press. Free access at http://www.spatialanalysisonline.com/ or as Amazon Kindle ebook (no ISBN).
- QGIS 2016. A Gentle Introduction to GIS. Free (like the software) and available online at http://docs.qgis.org/testing/en/docs/gentle_gis_introduction/
- Rowlings B 2015. Spatial Cheatsheet

Pre-requisite: Basic computer and numerical literacy is expected; i.e., you should be able to work with zip archives and be fluent in the use of files and folders. You should also have no doubt about the difference between the use and purpose of a data versus an executable program file.

Policies:

Attendance is crucial and adherence to protocols and the course timetable is very important. The class-learning environment is *active learning*, meaning that most of the student performance is practical assignments rather than tests. 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 purposes. Class participation includes timely attendance at laboratory sessions, and participation in BlackBoard discussion fora. Of course, you are expected to behaverespectfully towards the instructor and the other students, by not imposing a dominating or threatening presence.

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 well ahead of time, 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.

All email messages about this course should include GTECH 70900 in the subject line and be signed with your full name as it appears in CUNYfirst. You are addressing me professionally and I will not answer messages coming from “fun” addresses such as “sweetheart4u” or “slamdunk23”…..

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. *Academic dishonesty* (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) is simply not acceptable. Helping other students on use of the software is, however, encouraged.

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

Special accommodations for persons with disabilities are provided upon request. Please see the instructor if you feel the need for them.

Assignments are always posted with their respective due date. 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. There are no "extra-credit" assignments. 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 academic performance is based on your lab exercises, your software project and your participation according to the following breakdown:

Weekly quizzes	14%
Lab exercises	40%
Midterm exam	15%
Final exam	15%
Project	16%

Table 1: Grading rubric for lab assignments

	Unsatisfactory (0)	**Fair (50)**	**Good (80)**	**Excellent (100)**
Content (50%)	Data not visible; calculations, derived fields, or analyses improperly done; no demonstration of understanding; no submission.	Correct data not properly displayed or easily visible; calculations, derived fields, and analyses mostly improperly done.	Correct data displayed and visible; calculations, derived fields, and analyses mostly properly done	Correct data displayed and visible; calculations, derived fields, and analyses properly done
Cartography (25%)	Proper cartographic technique not followed; no submission.	Most cartographic elements present and properly displayed; layout lacks clarity.	All cartographic elements present and mostly properly displayed; layout is mostly clear and understandable.	All cartographic elements present and properly displayed; layout is clear and understandable.
Aesthetics (25%)	No submission or otherwise unacceptable / unreadable.	Messy, confused, or unbalanced.	Mostly pleasing and balanced aesthetics.	Good use of space with pleasing and balanced aesthetics.

Numeric scores will be used throughout the semester. The course letter grade will be determined only at the end of the semester, although guidance as to letter grade standing will be given along the way.

The lecture and lab material of traditional classroom sessions has been split into more than fifty smaller units. You are expected to work through these ahead of each session. Our Friday evening classes will then consist of (a) a short review of the material that you are supposed to have worked through ahead of time, (b) a Q&A session to clarify any remaining doubts about the theoretical material of the week, (c) a quiz on that same material, and (d) about two hours of lab time, where you work at your own pace through the lab exercise. It is unlikely that you will be able to work through the entire lab exercise in those two hours but you should be well on your way and, if necessary with the help of the instructor, familiarized yourself with the particulars of that lab. Many of these lab exercises have an in-lab and a homework component, i.e., after learning by example, you are then expected to perform a similar task on your own either with different data or using another software package. You should plan to spend on average some ***ten*** hours a week working on GTECH 70900-related material – less in the beginning and more toward the end of the semester when in addition to the four components mentioned above, you will also be working on your cartographic studio project (see next paragraph). It is your responsibility to reserve these many hours in your personal life.

Each student conducts an individual software project that involves GIS analysis of a substantial geographical problem. There are no requirements with respect to what software the student uses. In a similar vein, the application area (field) is to be chosen by the student, who is also responsible for gathering the necessary data. Basically, you can choose whatever topic you want, provided it has to do with *geographical*

analysis; the stress is on both words! It is your responsibility to find a suitable project, which will have to be accepted by the instructor. A few ready-made projects made available on BlackBoard will provide you with some guidance but experience shows that motivation increases when students take pride in their own project.

I will not accommodate students who are late in their work or do not show up for the final exam. And, unless you produce a medical certificate or letter from the Office of AccessABILITY, I will not give the final grade of IN (incomplete).

Tentative Schedule

Date: FRIDAY	Session	Lecture Topics	Lab Topics
Feb. 3	1	Introduction; semester overview; The opportunities of GIS	
Feb. 10	2	Principles of GIS	
Feb. 17	3	GIS data formats	Lab 1: First steps with ArcGIS Online
Feb. 24	4	Data input; where to find data;	Lab 2: First steps with Quantum GIS
Mar. 3	5	US Census data and mapping;	Lab 3: Joining data with Quantum GIS
Mar. 10	6	Address matching and georeferences;	Lab 4: Introduction to CartoDB
Mar. 17	7	Organizing data in geospatial databases;	Lab 5: Introduction to ArcCatalog
Mar. 24	8	**Midterm Exam;**	Setting up a GIS project
Mar. 31	9	Projections and coordinate systems;	Lab 6: Introduction to ArcMap
Apr. 7	10	Basic GIS analysis operations;	Lab 7: Spatial selection with ArcMap
Apr. 14		NO CLASS- Spring Break	NO CLASS- Spring Break
Apr. 21	11	Geoprocessing and modeling;	Lab 8: Geoprocessing with ArcMap
Apr. 28	12	Getting started with raster-based GIS analysis;	Lab 9: Choice of ArcMap or SAGA GIS
May 5	13	Designing maps with GIS;	Lab 10: Choice of ArcGIS Online, ArcMap, Quantum GIS or CartoDB
May 12	14	Project work and submission	
May 26	**15**	**FINAL EXAM, 5:35 to 9:25 PM**	

It is the student's responsibility to regularly check the course website to become aware of changes to the schedule or other announcements.