GTECH 361/710
Introduction to Geographic Information Systems

Fall 2013
Tuesday 5:35 – 9:15 PM

Instructor: Carsten Kessler, carsten.kessler@gmail.com
Place of Instruction: Hunter North, Room 1090B, large lab
Office Hours: By arrangement

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 361/710 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. The course utilizes a variety of resources, including the energy and creativity of students in the class.

Required textbook

None – and there are good reasons, which we will discuss during our first session. However, experience has it 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:

- 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 2008. *Geospatial Analysis*. Leicester: Troubador. (Free access at http://www.spatialanalysisonline.com/)
- Ormsby, 2010 *Getting to Know ArcGIS – 2nd edition for ArcGIS* 10, ESRI Press, Redlands Ca
- Chang, Kang-tsung 2006. *Introduction to Geographic Information Systems*. New York: McGraw-Hill
- deMers, Michael 2004. *Fundamentals of Geographic Information Systems*. New York: Wiley.

Pre- and co-requisites

none.

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. Lateness in arriving at class, both lectures and laboratory/discussion sections will not be tolerated. 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 at laboratory sessions, participation in organized class discussions, accomplishments of in-class tasks, accomplishment of the preliminary assignment on 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.

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. For all labs, you are expected to show all the work you did in order to complete the assignment. It is more important how you did the work, than whether you got the right answer. Partial credit will be given for good work but incorrect results.

Criteria for evaluation

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

	Undergraduate Students	Graduate Students
Quizzes	20%	20%
Lab exercises	40%	30%
Midterm exam	10%	10%
Final exam	20%	20%
Participation	10%	10%
Mini-Project	–	10%

The course will follow the CUNY grading policy that can be found in the online undergraduate/graduate catalog 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 ArcMap
- Work with Attribute tables in and outside of the GIS environment
- Join data and maps
- Create a variety of thematic map
- 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) Use Aerial photography as the basis for data capture (head's up digitizing)
- 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 them and populate them

Tentative Schedule – subject to change!

Week	Date	Topic
1	3-Sep	Introduction
2	10-Sep	Cartographic fundamentals
3	17-Sep	Location Reference Systems (datums, projections, and coordinate systems)
4	24-Sep	Organizing Geographic Data
5	1-Oct	Geographic Data Sources and Data Compilation
6	8-Oct	Working with Tabular Data
7	15-Oct	No class – classes follow Monday's schedule
8	22-Oct	Geocoding and Address Matching
9	29-Oct	Geodatabase Design
10	5-Nov	Behavior and the Geodatabase
11	12-Nov	Raster GIS
12	19-Nov	Vector Overlays
13	26-Nov	Geoprocessing and Models
14	3-Dec	Map Design and Annotation
15	10-Dec	Grad Student Final Project Presentations
16	**17-Dec**	**Final exam – 5:35-8:15 PM**