Syllabus for GTECH 710

Introduction to Geographic Information Systems

Fall 2009

Tuesday 5:35 – 8:15 PM

Instructor: Jochen Albrecht
Place of instruction: Hunter N1090
E-Mail: jochen@hunter.cuny.edu
Office hours: Tu, 3-5 PM
Phone: (212) 772-5221

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 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.
- de Smith M, Goodchild, M and P Longley 2008. Geospatial Analysis. Leicester: Troubador. Free access at http://www.spatialanalysisonline.com/.

Pre- and co-requisites: None; however, I *recommend* that you enroll in parallel into an independent study GTECH 793 to do an individual software project. Have a look at http://giscience.hunter.cuny.edu/793/2009Spring/ to see what such GIS projects look like and feel free to contact your peers from the previous semester to see how much more they learned because of this duo of 710 and 793.

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.

Academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) is simply not acceptable. 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. Helping other students on use of the software is encouraged. However, do not help other students answer questions from the labs.

Many of the problems have a "sample" problem, which includes the answer. The best way to help your fellow students is to work the sample problem. If a sample problem is not available, create an exercise similar to the problem in the lab and solve that problem. *You can't actually learn this material unless you do the work yourself*. Therefore, do not share your calculations or measurements with other students. You must do your own work (and it is *easy* to see when students copy work from other students). Students with labs showing copied work can receive failing grades.

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.

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

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. There are no "extra-credit" assignments. 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:

10 Quizzes	30%
12 Lab exercises	50%
Midterm exam	10%
Final exam	10%

Students are encouraged to pursue an individual software project for three extra credits. The requirements are rigorous and will be discussed during our first session.

Schedule:

Class #	*Date*	*Topic*
1	09/01	Getting started; semester overview; (for some: project management)
2	09/08	Cartographic communication and geospatial visualization
3	09/15	Geodetic datums, projections, and coordinate systems
4	09/22	Organizing geographic data
5	10/06	Creating and editing spatial data
6	10/13	Secondary data sources
7	10/20	**Midterm Exam**; Exploring the geodatabases model
8	10/27	Creating and editing features in a geodatabases
9	11/03	Adding behavior to a geodatabase
10	11/10	Network analysis and geocoding
11	11/17	Geoprocessing and Modeling
12	11/24	Getting started with (raster-based) GIS analysis
13	12/01	Designing maps with ArcGIS
14	12/08	Data Quality, Social Aspects of GIS
15	12/15	**Final Exam**