Syllabus for:

GTECH 385/785
Mapping Earth's Surfaces

Fall 2009

Wednesday 5:35 – 8:15 PM

Instructor: Doug Williamson, PhD
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Place of Instruction: Hunter N1090

Course Overview:

This course presents an overview of the history, recent trends, current techniques and modern applications of terrain representation. It focuses on the theory and methods of the generation, compilation, analysis, and applications of digital elevation data. Specific topics include GIS terrain data models, LiDAR processing, terrain surface modeling, and terrain visualization. The course includes hands-on, computer based exercises in the generation and processing of digital elevation data using GIS tools, including but not limited to, ArcMap, ArcGIS 3D Analyst, and ArcScene.

Course Structure and Format:

The course utilizes a variety of resources, specifically the energy and creativity of students in the class. The course will follow a seminar format which will require Graduate level students to present course material in a lecture format, as well as develop and demonstrate a related lab assignment. In other words, each graduate student will be responsible for lecturing on one topic and providing a hands-on exercise for the rest of the class.

Required Textbook:

- ✓ Imhof, Eduard, 2007. *Cartographic Relief Presentation* (Paperback), ESRI Press, Redlands Ca. ISBN-10: 1589480260

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. 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 class discussions, accomplishments of in-class tasks, and accomplishment of the assignments on time.

Academic dishonesty is simply not acceptable. 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. 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.

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. Unless otherwise instructed, you will submit assignments in electronic form.

Criteria for evaluation:

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

Undergraduate Students	
Lab exercises (10 total)	40%
Final Project	50%
Participation	10%

Graduate Students	
Lab exercises (9 total)	30%
Final Project	50%
Participation/Presentation	20%

Tentative Schedule:

Fall 2009		GTECH 385/785 SUBJECT TO CHANGE!!!
Week	**Date**	**Topic**
1	2-Sep	Class Introduction
2	9-Sep	Acquiring and Downloading Digital Terrain Data
3	16-Sep	Presentation@NYPL (Subject to Change)
4	23-Sep	ESRI Tools Demonstration (Subject to Change)
5	30-Sep	Overview of DEMs
6	7-Oct	Overview of LiDAR
7	14-Oct	NO CLASS
8	21-Oct	Overview of TIN and Terrain Datasets
9	28-Oct	Contours (Index Contours, Labeling, Smoothing and Generalizing)
10	4-Nov	Illuminated Contours
11	11-Nov	Advanced Hillshading (eg., Swiss Model)
12	18-Nov	Hatchures
13	25-Nov	Block Diagrams
14	2-Dec	Bump Mapping
15	9-Dec	Other Tools (Google Earth, Sketch Up)
16	16-Dec	Final Project Presentations