

GEOL 4385

-- Introduction to Geographic Information Systems -- Spring 2009

http://www.geo.utep.edu/pub/bkonter/geol_4385

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Class meetings

Lectures: Tuesday and Thursday 9:00 - 9:50 am (GEOL 409, or other)

Lab: Thursday 10:00 am – 12:50 pm (GEOL 409)

Office Hours: Bridget: Wednesdays and Fridays 11- 12, or by appointment
Carlos: Thursday 10 -12:50p⁺ or by appointment

Text

Kang-tsung Chang, *Introduction to Geographic Information Systems* (4rd Edition)

Handouts and supplemental materials from a variety of sources will also be provided throughout the course.

Course Ref. Number

23708 (UG), 23319 (M), 24724 (PhD)

Course Description

The purpose of this course is to provide an introduction to the principals, practice, and applications of Geographic Information Systems (GIS). Topics include the importance of GIS design, producing map products, data structures, and spatial analysis. The laboratory will focus on the applications of common GIS and visualization software packages (ArcGIS, Google Earth Pro, Fledermaus, GMT, and GRASS GIS) to science and engineering projects. Prerequisites: GEOL 1313-1103 or GEOL 1311 or GEOG 1306-1106.

Course topics will include:

- GIS basics
- History of maps and cartography
- Map making techniques
- Coordinate systems and map projections
- GIS data exploration
- Geographic data editing and analysis
- Using remote sensing and GPS data in GIS

- GIS data resources
- Data visualization
- Professional GIS software packages: ArcGIS, Fledermaus, Google Earth Pro
- Freeware GIS packages: Google Earth, Generic Mapping Tools (GMT), Geographic Resources Analysis Support System (GRASS GIS)

Class Policies

Class Website: http://www.geo.utep.edu/pub/bkonter/geol_4385

Please check the class website frequently for daily updates and important announcements. The website will be a key part of this course, where you will be able to download notes, lab assignments, reading material, and other class items.

Computer stuff:

Most assignments will be turned in electronically. Storage space, data, and software for lab assignments will be made available to you on the Geology department computer system. You will need UTEP accounts to access the UTEP open-lab on the Geology 4th floor. Contact Dr. Konter or the system administrator (Carlos Montana, montana@geo.utep.edu) if you do not have access already.

*note: If you are not a Geology student, or do not currently have after-hours access to the Geology building or the 409 computer lab, please send Dr. Konter an email requesting that you receive access.

Attendance: While attendance will not be taken in class, class participation is worth 10% of your final grade. Thus it is highly recommended that you attend every class lecture and lab, and that you show an interest in learning the class material. In addition, *many aspects of the course material will be covered in more detail in class than is given the text*, so it is highly recommended that you not only bring your body to class, but your mind and your concentration as well.

PLEASE BE ON TIME. Please contact Dr. Konter about any concerns, scheduling conflicts, missed work, etc. as soon as possible, and in advance.

Grading: See below for more information on grading policy.

Class Participation	10%
Section Quiz 1 (ArcGIS)	10%
Section Quiz 2 (GMT)	10%
Section Quiz 3 (Google Earth)	10%
Section Quiz 4 (Fledermaus & GRASS)	10%
Lab assignments	40%
Final Project	10%
	100%

Letter grade breakdown:

A	= 90%+
B	= 80 – 89%
C	= 70 – 79%
D	= 60 – 69%
F	= < 60%

Section Quizzes: There will be 4 Section Quizzes given throughout the semester. These will be in-class exercises that you will be required to complete, working on your own, over one class period. You must be in class for each Section Quiz. Make-up quizzes will not be given except when a student misses the quiz for a legitimate reason, such as illness, university business, or a family emergency, all of which will require documentation. Please contact Dr. Konter or Carlos as soon as possible if such a situation arises.

Note that make-up and/or early quizzes will be substantially more difficult than any in-class quiz given to the rest of the class.

Lab assignments: Lab assignments will be assigned semi-regularly and each will be worth 100 pts. Each assignment will have a specified due date, which will typically be one week after the assignment is given. Labs must be turned in at the BEGINNING of class. NO LATE LABS WILL BE ACCEPTED. You will be given further instructions for how to electronically turn in your lab materials.

Free-lab-pass: Your lowest graded lab will not be counted in your final grade tally. This means that you have ONE no-questions-asked excused lab, *so use it wisely.*

Working together on labs: Studies have shown that students learn best when they work together. I encourage you to work with each other on assigned labs, however, each student must turn in his or her own assignment, written/computed using his or her own words/skills = **all work is expected to be your own.** Any student who fails to follow this rule will receive zero credit for the assignment. University guidelines for acceptable student conduct are very specific and will be strictly followed. Please read the guidelines (<http://studentaffairs.utep.edu/dos>) and contact the Dean of Students or Dr. Konter if you have any concerns.

Exams: No exams!

Drop Policy: The course drop deadline is April 3. The last day to completely withdraw from all courses is May 7. You will need to fill out a Drop Card with the Registrar's Office to drop the course. Non-attendance will NOT result in being dropped, but you will get zeros for the remaining work.

Students with Disabilities: If you think that you may have a disability or if you are experiencing learning difficulties, please contact the Disabled Student Services Office (915-747-5148, voice or TTY), in the Union East, Room 106.

Tentative Lecture Schedule

Week	Dates	Lecture Topic	Chapter
1	1/20	Course Introduction	Ch 1 + handouts
	1/22	History of Maps	Ch 1 + handouts
	LAB	<i>Lab 1: Getting Started with ArcGIS</i>	
2	1/27	Cartography & Map Design 1	Ch 10 + handouts
	1/29	Cartography & Map Design 2	Ch 10 + handouts
	LAB	<i>Lab 2: Map Symbolology and Design</i>	
3	2/3	Coordinate Systems & Projections	Ch 2 + handouts
	2/5	Coordinate Systems & Projections	Ch 2 + handouts
	LAB	<i>Lab 3: Coordinates & Projections</i>	
4	2/10	Geographic Data: Vector and Raster	Ch 3-5 + handouts
	2/12	Geodatabases	Ch 6,9 + handouts
	LAB	<i>Lab 4: Organizing Geographic Data</i>	
5	2/17	Data editing	Ch 6,8 + handouts
	2/19	Data editing	Ch 6,8 + handouts
	LAB	<i>Lab 5: Creating and Editing Data</i>	
6	2/24	Data analysis	Ch 11 + handouts
	2/26	Data analysis	Ch 11 + handouts
	LAB	<i>Lab 6: GIS Data Analysis</i>	
7	3/3	Section 1 Quiz: ArcGIS	
	3/5	Introduction to GMT/Unix	handouts
	LAB	<i>Lab 7: GMT: Basic Maps</i>	
8	3/10	<i>Lab 8: GMT: Projections</i>	
	3/12	Section 2 Quiz: GMT	
	LAB	<i>No Lab</i>	
9	3/17	Spring Break – no class	--
	3/19	Spring Break – no class	--
10	3/24	Intro to Google Earth	Digital Explorer
	3/26	KLM: Points, Organization, and Styles	Digital Explorer
	LAB	<i>Lab 9: Introduction to KLM</i>	
11	3/31	Cesar Chavez Holiday – no class	
	4/2	KLM: Multipoints, Views, Images	Digital Explorer
	LAB	<i>Lab 10: KLM Multipoints Views, Images</i>	
12	4/4	Section 3 Quiz: Google Earth	
	4/9	Using GPS	Digital Explorer
	LAB	<i>Lab 11: Acquiring & analyzing GPS data</i>	
13	4/14	Introduction to Fledermaus visualization	
	4/16	Introduction to Fledermaus visualization	

	LAB	Lab 12: Fledermaus	
14	4/21	Introduction to GRASS GIS	
	4/23	Introduction to GRASS GIS	
	LAB	Lab 13: GRASS GIS	
15	4/28	Section 4 Quiz: Fledermaus & GRASS	
	4/30	Work on projects	
	LAB	Work on projects	
16	5/5	Project presentations	
	5/7	Project presentations	
	LAB	Project presentations	
17	5/14	Final Exam Week – no class	