

**LOCK HAVEN UNIVERSITY**  
**GEOS 213 – Introduction to GIS Lab**  
**Fall 2009**

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**Homepage:** <http://www.lhup.edu/mkhalequ> (Study guides, instructions for term paper & student project, evaluation rubric for the project will be posted online)

**Lab:** **Thurs.** 2:10-4:00 pm in Ulmer 311

**Textbook:** Chang, Kang-Tsung, 2010, Introduction to Geographic Information Systems, McGraw-Hill

**Objectives:** GIS deals with **spatial information** organized as “**themes**” or digital maps. Each theme deals with just one type of information (e.g. one theme shows streams in an area, while another theme shows the rock types, yet another theme deals with the vegetation cover in an area). Each theme also has attribute data **tables** that list pertaining information about that theme (e.g. the table related to streams theme will list length, width, depth, bank conditions, etc. for different stream segments). GIS uses “layers” of maps of a certain area to visualize/analyze/evaluate inter-relationships between processes and/or factors that affect each other by overlaying those layers. If you have the required database/maps of an area in form of GIS themes, and if you can ask the right questions, then there is almost no limit as to what you can do with GIS (of course, you have to learn how to use GIS!). Applications of GIS are limitless, stretching anywhere from law enforcement, emergency response, planning, resource allocation, protection of ecosystems, business, recreation to natural resources exploration & management. When overlaid and analyzed properly, one can start to see how various factors influence on another (e.g. role vegetation or rock types play in protection of riverbanks against erosion). In this course we will emphasize on the use of geologic themes to solve real-world problems. As you learn about various aspects of GIS through hands-on experiences you need to think how you could use that knowledge to solve a real-world problem. As the semester progresses, **apply the knowledge gained from a lab exercise into your project** right away. If you wait to the end of the semester to work on your project you will not remember the details.

**Note:** If you are unable to attend a lab, you must make arrangements with me **prior** to the lab. You will be responsible for finishing missed work on your own. You will be **expected** to come prepared (i.e. you will have to read the pertinent chapter in the textbook, assigned journal articles, and lab exercises) **before** coming to the class. **Keep in mind that most lab assignments (Laboratory Tasks from the textbook) listed below will be supplemented by additional exercises (handout).**

**Grading:** 50% of the total grade for GEOS213 – Intro to GIS course

**Breakdown:** Weekly lab exercises = 25%

Project proposal, Term paper, and Project presentation = 25%  
(5%+10%+10%)

**Extra Credit:** You can earn up to 5% of the total grade for the course by completing one of ESRI’s free course module (<http://campus.esri.com/support/faq/>) that relate to your field (save your work), take their test, and turn in the completion certificate and answer sheets (<http://campus.esri.com/campus/myoffice/index.cfm?>) issued by the ESRI to me for credit. Keep in mind that you will have to register before you can work on the free module. Let me know if you have any problem with this bonus task.

**Research Project:** As a part of the student project, you will need to submit a short (1-2 pages) proposal outlining your hypothesis (if any), objectives or goals, data sources, and approach you will take (type of analysis you will do) to achieve your proposed goals before the mid-term.

**GEOS 213 – Introduction to GIS (Lab)**  
**Course Schedule – Fall 2009**

<b>Date</b>	<b>Topics</b>	<b>Reading (chapters)</b>	<b>Laboratory Tasks</b>
Sept. 3	Introduction: Overview of GIS	1	Chapter 1:Task 1-2
10	Supplement to Chapter 1	1	ArcTutor Supplement
17	Coordinate Systems	2	Supplement to Chapter 2: Tasks 1-4
24	Creating Folders & Layers	3 & 4	ArcGIS/ArcTutor
Oct. 1	Geodatabase & On-screen digitizing	4 & 6	Chap 4: Task 1-2 & Chapter 6: Tasks 1& 2
8	Continued from Sept. 25		
15	Creating New Themes	7	Chapter 7: Tasks 1-2
22	Continued from Oct. 9		
29	Attribute Data Input	9 , 11, & 12	Chapter 9: Tasks 1; Chapter 11: Task 5, and Chap 12: Task 1; <b>Proposal for project due</b>
Nov. 5	Project		Start working on your research project
12	Project	Journal articles	Project (cont'd)
19	Project	Pertinent papers	Data acquisition for project
<b>26</b>	<b>No Classes</b>		<b>Thanksgiving</b>
Dec. 3	Project	Pertinent papers	Data acquisition for project & Layout
10			<b>Presentation of projects</b>

**Note:** GIS is a computer-based course; and most likely than not, the Murphy’s Law (i.e. if something can go wrong, most likely it will) is going to strike you (and me) as the semester progresses. Don’t let those frustrating experiences wear you down – that’s just an integral part of working with computers. We’ll work together, and will get things done. Please keep a log of your problems and how they were fixed.

You have to realize that the research will require quite a bit of your time outside the classroom. Sooner you start working on a project better it is at the end. My experience shows that many students put away the project until very last minute and then start panicking when they can’t find enough data to complete their projects. I couldn’t emphasize you enough the need for an early start. Keep in mind that data collection (i.e. finding the right themes from various sources) is the most time consuming part of any GIS project. Strictly, follow the timeline shown in the course schedule above. I would like to know immediately if something is not working for you.