

GIS for Natural Resource Management Laboratory FO-4471/6471

Instructor: Joseph Fan

Syllabus Date: Oct. 2009

Time/Place: 1:00 – 4:00 Thur. Rm 308 Thompson Hall Annex

Prerequisites: Junior Standing

Co requisite: FO-4472/6472 GIS for Natural Resources Management

YOU MUST REGISTER FOR THE COREQUISITE OR YOU WILL BE DROPPED FROM THE COURSE.

Course Description:

Geographic Information Systems (GIS), are an operational component of many natural resource organizations. A GIS is a collection of geographically referenced data, personnel, and tools designed to efficiently provide information that is used to assist in spatial analysis and decision making processes. This laboratory provides hands-on experiences in geographic data handling that include: collection, encoding, storage, retrieval, and analysis. These procedures will be addressed as they pertain to computer processing of geographic information.

The instructor or lab assistant will start each lab session with a brief introduction of the material. After completion of each exercise in the Laboratory Manual (or handouts), students will use the newly acquired skills to perform simple tasks using a database of the MSU Starr Forest. If time permits, lab sessions at the end of the semester will be devoted to completion of the class project in FO-4472/6472.

Course Objectives:

1. Develop basic understanding of how geographic data can be represented;
2. Provide an understanding of the different types of geographic data and their limitations as pertains to intended uses of the data;
3. Teach techniques of data collection, encoding, editing and maintenance;
4. Teach methods of data manipulation, retrieval and presentation.

Course Topics:

1. Geographic Data Concepts and ArcGIS
2. Computer Concepts / GIS Introduction
3. Data Organization
4. Data Display
5. Data Query
6. Analysis Functions
7. Data Creation / Editing

8. Map Generation

Lab Manual: **Getting to Know ArcGIS Desktop, Second Edition, Environmental Systems Research Institute, Inc. (Version 9)**

Materials for Lab: Printer paper (when we work on outputs).

Grading: Student grades will be based on weekly lab quizzes/assignments based on the current and/or previous week's exercise.

Office Hours: Tues., Thurs. or by appointment.

Student Responsibilities:

Students will comply with all responsibilities outlined in the College of Forest Resources Handbook and the MSU Bulletin. Students are reminded to adhere to the code of conduct of MSU and that misconduct will be dealt with in accordance with guidelines and procedures outlined in the Academic Misconduct Policy that is accessible at:
http://www.msstate.edu/web/student_policies.html.

I expect each student to make every effort to fully participate in all aspects of the lab. Lab assignments and pertinent lecture material should be reviewed in advance of each lab period. Access to workstations will be limited so it is imperative that your time be spent doing the lab exercise in an efficient manner. Students accept responsibility of class attendance. If an absence is essential, the student must provide satisfactory evidence to substantiate the reason for the absence. Makeup labs and quizzes will not be given without approval of an excused absence.

Assistance outside of regular class hours may be obtained either in regular office hours or by appointment. I welcome suggestions on how to improve the course. This will help me refine the course both for you and students who will take it in future years. You need to take every opportunity to get the maximum benefit out of this learning experience. The quizzes will be based largely on the procedural concepts of the laboratory exercises. Therefore, you are encouraged strongly to spend time reviewing materials and/or work on your lecture class project at the end of each lab exercise and at other times during the week to become completely familiar with the computer processing concepts.

Computer Lab Rules:

- No eating, drinking, smoking, chewing, dipping, etc.
- Don't abuse equipment (i.e. do not pound on keyboards, yank paper out of printers, etc.).
- DO NOT turn off your machine.
- Scan all diskettes before use with virus scanning software.
- **Remember to back up your work:** "Computers fail at a rate that is directly proportional to the desperation of their users."
- DO NOT remove software documentation from the lab.
- Drafting tape only on digitizers.
- **SEE LAB RULES HANDOUT** for other information.

GIS Lab Topic Outline:

<u>Lab Topic</u>	<u>Reading</u>	<u>Lab</u>
Geographic Data Concepts and ArcGIS	Chapters 1-2	0
Computer Concepts / GIS Introduction Course requirements / grading Rules for lab and machine use Windows basics Saving your work Overview of digital GIS ArcMap Basics ArcMap vs. ArcView	Syllabus Chapter 3	1
Data Organization ArcCatalog Data Types Finding Data Use with ArcMap	Chapter 4	2
Data Display Symbology Layer Files Raster Data	Chapter 5	3
Data Display Cont'd. Classifying Features Chart Symbols Labeling	Chapters 6 & 7	4

Data Query	Chapters 8 & 9	5
Feature Selection		
Reports		
Table joining/relating		
Analysis Functions	Chapters 10 & 11	6
Location Queries		
Data Preparation Functions		
Analysis Functions Cont'd	Chapters 12 & 13	7
Buffers		
Data Overlay		
Data Creation / Editing	Chapter 14 & 15	8
Geodatabases		
Data Creation / Editing Cont'd	Chapter 16 & 17	9
Data Edit Procedures		
Address Geocoding		
Map Generation	Chapter 18	10
Template Usage		
Map Generation Cont'd	Chapter 19	11
Page Layout		
Annotation and Map Components		
Work on Group Projects		12+