The following information is posted on the course Moodle site:

Geographic Information Systems and Spatial Analysis

Fall 2011 Syllabus

Geographic Information Systems (GIS) are computer programs capable of displaying, storing, editing, and analyzing spatial information. GIS is becoming an increasingly important tool for natural resource management and scientific research. Students will gain a practical understanding of a wide range of GIS concepts including map making and spatial data analyses using ArcGIS 10.

General Information

Instructor: Gregory Stewart, Ph.D.

Textbook: GIS Fundamentals, 3rd Ed by Paul Bolstad (*required*)

Prerequisites: Students must be proficient with file management under Windows OS, but no previous experience with GIS is required.

Software: We will use ArcGIS 10 running under Windows 7. Students are recommended to use campus computers for assignments, but educational copies of ArcGIS 10 will be available for those who want to install it on a home computer. It should be noted that ArcGIS only runs under Microsoft Windows OS.

Meeting times: Class will meet Monday nights from 6-10pm. We will start in SEM 2-E1105 and to the ACC for a hands-on lab sometime between 6:30 and 7:30.

Attendance: Students must be prepared to attend all classes and participate with a high level of engagement. The course material builds on previous assignments and students who miss early labs will have difficulty completing labs assigned later in the course.

Homework: Students will be given weekly labs and reading assignments. Labs may require use of college computing facilities during non-class hours. Labs are due by 5pm the Sunday after they are assigned. Students

who are unable to complete the assignment within the time provided should contact the instructor, as late work may result in a poor evaluation. The course will be largely paperless. Course materials will be posted electronically and students will turn to turn in assignments electronically. All assigned work must be completed to obtain full credit.

Collaboration: Student collaboration is highly encouraged; although each student is expected to produce his or her own work. Please see Evergreen's Academic Policies for more information (http://www.evergreen.edu/advising/academicpolicies.htm)

GIS Project: MES students will be asked to complete a project involving a GIS analysis for presentation to the class. The analyses are to be original and may be completed as part of an individual or group effort (up to 3 people per group). Students working in groups will be asked to provide a document outlining their contribution.

Evaluation: Evaluations are based on student performance. Weekly lab assignments act as the primary basis for evaluation, but quiz results and quality of the final project are also important components.

Tentative Schedule

Week 1 - Introduction GIS, Making maps

Lecture: Introduction. What is GIS, why is it important, and how GIS is used?

Practicum: Simple mapping exercises.

Reading: Chapters 1 & 2

Week 2 – Map Coordinate Systems

Lecture: Map projections and coordinate systems

Practicum: Working with coordinate systems.

Reading: Chapter 3 – Map Projections and Coordinate Systems

Week 3 – Imagery, GPS, and data entry

Lecture: Creating and geo-referencing data

Practicum: Working with GPS data, data projections

Reading: Browse chapters 4-7

Week 4 – Attribute tables and database concepts

Lecture: How to join tables and query data.

Practicum: Legislative exercise

Reading: Read chapter 8 and the first half of chapter 9.

Quiz: Ch 1-8 (focus on 3&8)

Week 5 – Basic spatial analysis

Lecture: Database concepts, queries.

Practicum: Location queries.

Reading: Finish chapter 9.

Week 6 – Raster analysis

Lecture: Questions only a GIS can answer; GIS analytical functions, map algebra, classification, buffering, overlays.

Practicum: Spatial queries involving buffers and overlays.

Reading: Chapter 9 – Basic spatial analysis

Week 7 – Spatial estimation and terrain analysis

Lecture: Using raster datasets for terrain analysis, working with DEMs, spatial interpolation.

Practicum: Spatial analysis and 3D tools.

Reading: Chapters 10 & 11 – Topics in raster analysis & Terrain analysis

Project description due

Week 8 – Geocoding and network analysis

Lecture: GIS for GIS users, process modeling.

Practicum: Data modeling in GIS using model builder.

Reading: Chapter 12 – Spatial estimation

Quiz: Ch 9-12

Week 9 – Data modeling

Lecture: GIS for GIS users, process modeling, creating macro's.

Practicum: Data modeling in GIS using model builder.

Reading: Chapter 13 – Spatial models and modeling

Week 10 – Putting it all together

Lecture: Project presentations.

Practicum: Data driven pages

Reading: Chapter 14 – Data standards and data quality

**** Final project due***