GEOG471/671 Advanced GIS Syllabus

This course is designed to advance student's knowledge in the rapidly developing field of Geographic Information Science and Systems (GIS). GIS provides a means of integrating information in ways that help us understand and address pressing problems facing us today, such as tropical deforestation, rapid urbanization, spread of diseases, and impacts of climate change. Important principles and concepts of GIS are expanded beyond those introduced in GEOG 372 Intro GIS course with hands-on experience in one or more specific GIS software packages. Emphasis will be placed on concepts and spatial reasoning of the analysis techniques, rather than simply providing skills training in the use of GIS software. By the end of the course, students are expected to have a thorough understanding of GIS functionality, methodology for implementing the technology, and its potential usefulness in geographic and environmental studies.

Class Meetings:

Classes are scheduled at 11:15 -12:45pm on Monday and Wednesday in the GIS Lab, recently moved to Pearson Hall 218.

Prerequisities

Students should have completed *GEOG271 Geographic Data Analysis* or *GEOG 250 Computer Methods in Geography*, *GEOG372 Geographic Information Systems* or an equivalent introductory GIS course, and *MATH115 or MAT117*. If you lack this prerequisite, please talk with Instructor before enrolling.

Text Books and Readings

Longley, Paul A., Michael F. Goodchild, David J. Maguire, David W. Rhind. 2005. *Geographic Information Systems and Science*, *Second Edition*. John Wiley & Sons, New York. 517pp.

Additional reading assignments will be announced as the semester progresses and available *Online* or on the file cabinets outside the Instructor's office.

Class Sessions

The course will be broken into instructor led lectures and demos, student led presentations, and lab working sessions. In-class and out-of-class computer exercises will be completed on a weekly basis. These exercises are designed to provide advanced, hands-on experience with GIS technology and a methodology for implementing a GIS project.

Research Project

A project is to be completed using the GIS techniques learned throughout the semester to address a particular problem of interest to the student(s). Students may work independently, although it is encouraged for undergraduates to work in teams of 2 to 4 students. The Instructor will suggest a number of research topics. The project will entail the students to collect data, input the data to the GIS, and perform GIS analysis to obtain a solution to the research question. A well illustrated poster is to be completed that defines the problem, explains why GIS is an appropriate tool to achieve a solution, and discusses the data layers, method of analysis and summary of results. Project presentations will be given either *Friday, May 16th* or during the last class on *Wednesday, May21th*.

Evaluation

Grades will be based upon total points accumulated by the end of the semester.

Assignments	Total Points
Class Assignments (5-10 points)	25
Exercises (10-25 points)	150
Web Mapping Application	50
Project	100
Total	**325**

Class Policies

Assignments and lab exercises will be accepted late. However, a deduction of 1 point will be applied for each day the assignment is late excluding the weekends up to a maximum of 50% deducted. ***Exercises may be turned in on or before Wednesday, May 21st*** (last day of classes).