ENGR 598: Special Topics in Engineering Science
Section 42
GIS Applications Programming
Spring Semester 2014

Instructor: Dr. Louis Zachos, 118G Carrier Hall, 915-8827, lgzachos@olemiss.edu

Office hours: TBA

Class Meeting Times: TBA

Classroom: Brevard Room 238 (GLL)

Textbooks:
    Required
        Getting to Know ArcGIS ModelBuilder by David W. Allen
        Python Scripting for ArcGIS by Paul A. Zandbergen
    Recommended
        A Python Primer for ArcGIS® by Nathan Jennings

Course Description: The course will offer students the opportunity to develop a thorough understanding of the design, construction and implementation of high-level custom ArcGIS applications and user interfaces. Emphasis will be placed on methods to automate typical GIS tasks using ModelBuilder and ArcPy (Python) scripting.

Course Objectives: Students successfully completing this course will …
    1. Be able to automate ArcGIS processes using ModelBuilder.
    2. Be able to automate ArcGIS processes in Python using ArcPy and other modules.
    3. Be able to develop user interfaces for custom ArcGIS tools.

Prerequisite Knowledge and Skill: Students should have fundamental understanding of GIS concepts and working knowledge of the ArcGIS suite of GIS software. Completion of GE 470/GEOL 500 or other introductory course in GIS should provide the requisite knowledge for this course. The student does not need to know how to program in Python, but a familiarity with programming concepts and facility with various software utilities available in a Microsoft Windows operating environment will be helpful.

Grading:
Class participation 50%
Assignments (25% undergraduates, 20% graduate students
Final project (25% undergraduates, 30% graduate students)

Assessment variations for undergraduate and graduate students: Graduate students are expected to demonstrate significant understanding and critical analysis of the material in applications beyond those presented in class. Graduate student final projects are also given added weight in grading policy.

Assignments: There is no separate laboratory associated with this course, but hands-on exercises will be an integral part of the lecture. Access to the GLL and its computers and software will be made available outside of class periods for completion of assigned work and projects. Students should be prepared to schedule several hours per week to complete assignments.

Final Project: Students enrolled in the course will complete a project on a selected or assigned topic involving the use of advanced GIS programming methodology, including a written project report stating objectives, materials and methods, results, and conclusion. Depending on the number enrolled, this may also include oral presentation of the student projects.