

Florida International University, Department of Earth Sciences

**GLY 3759: Visualizing our World with GIS (2 credits)**

Summer A Term, 2007

Time T/H 3:30-6:15 PM

GIS Teaching Lab, GL 274 (2<sup>nd</sup> floor of the Green Library)

Instructor: Dr. Dean Whitman  
Office: PC 325A, Tel: 348-3089  
E-mail: whitmand@fiu.edu

Office Hours: W: 2-3 PM in PC325  
Th: 2-3:30 in GL 274 or by appointment

**Course Syllabus**

The material below contains important information for this course. Please read this material and retain this document for future reference.

**Course Description/Learning Outcomes**

This course will explore important topics in the earth sciences through the use of Geographic Information System (GIS) software. Topics will include: Plate Tectonics, Earthquake, Volcano, and Hurricane Hazards, and Analysis of Urban Sprawl with Satellite Imagery and Aerial Photography. Students will be introduced to the various geospatial data types and functions of GIS.

This course is meant for students with minimal or no previous GIS experience. Hands on exercises will be performed with the popular and simple to use ArcView 3x software in the FIU GIS teaching laboratory.

**Prerequisites:**

College Algebra and Trigonometry (MAC 1105 & MAC 1114), Microcomputer experience (MS Windows, MS Office).

**Required Textbooks:**

- A. Hall-Wallace, M. K., C. S. Walker, L. P. Kendall, C. J. Schaller, and R. Butler, *Exploring the Dynamic Earth: GIS Investigations for Earth Sciences*, Thompson Brooks/Cole, 2003. ISBN 0-534-39138-9
- B. Hall-Wallace, M. K., C. S. Walker, L. P. Kendall, and C. J. Schaller, *Exploring the Tropical Cyclones: GIS Investigations for Earth Sciences*, Thompson Brooks/Cole, 2003. ISBN 0-534-39147-8

These books are **required**. You will need to bring the text to class every day and complete and turn in the assigned exercises in the book. I strongly recommend that you purchase a new text. If you purchase a used text, make sure that the previous owner has not written in it. You **must** purchase textbook A before the 2<sup>nd</sup> class.

Each days reading assignment should be read before the start of the next lecture.

**Lecture attendance:**

Attendance at all lectures is required. Students will be allowed to miss a total of one class and only for a valid emergency reason and with prior notification. I will be taking roll at the beginning of each class. Please be courteous to others and me in class: arrive on time to lectures, and **turn off all beepers and cellular phones while in class.**

**Course Organization and Grading:**

The course will consist of alternating lectures on theory and hands-on GIS mapping exercises. Exercises will be due at the beginning of the next day's lecture, but may be turned in as soon as they are completed at the end of each day's class. Exercises will be graded for completeness and passed back the next day. The course grade will be based on attendance (25%), exercise reports (50%), and quizzes (25%)

**Schedule: (Revised 5/8/07)**

|        |   |
|--------|---|
| May 8  | Organization: Introduction to GIS and computerized mapping. Map Concepts<br>Geospatial data. Guided Tour of ArcView GIS software<br>Introduction to Plate Tectonics<br>Reading assignment: <i>Exploring Dynamic Earth</i> :<br>Introduction, pg: iii-iv<br>Unit 1: pg 1-26  |
| May 10 | Evidence for Plate Tectonics: Topography, volcanoes and earthquakes<br>GIS Exercise: Activity 1.2, Investigating Earth's Clues, pg 5-17<br>Reading assignment: <i>Exploring Dynamic Earth</i> : Unit 2: pg 27-43  |
| May 15 | Measuring Plate Motions<br><i>GIS Exercises: Exploring Dynamic Earth</i><br>Activity 2.2, Investigating Seafloor Age, pg 31-32<br>Activity 2.4, Investigating plate motion, pg 37-44<br>Reading Assignment: <i>Exploring Dynamic Earth</i><br>Unit 3: Earthquake Hazards, pg. 45-58   |
| May 17 | Earthquakes and Earthquake Hazards<br><i>GIS Exercise: Exploring Dynamic Earth</i><br>Activity 3.2, Deadly earthquakes, pg 53-58<br>Activity 3.4, Seismic risk and society, pg 65-70<br>Reading Assignment: <i>Exploring Dynamic Earth</i><br>Unit 4: Volcano Hazards, pg. 73-94  |
| May 22 | <b>15 min Quiz 1: Plate Tectonics (beginning of class)</b><br>Volcanoes and Volcanic Hazards<br><i>GIS Exercises: Exploring Dynamic Earth</i><br>Activity 4.2, Deadly volcanoes, pg 79-82<br>Activity 4.4 Volcanoes and climate, pg 89-94<br>Reading Assignment: <i>Exploring Dynamic Earth</i><br>Unit 5: Tsunami Hazards, pg 95-118 |

|        |   |
|--------|---|
| May 24 | <p>Tsunami Hazards</p> <p>GIS Exercise: <i>Exploring Dynamic Earth</i></p> <p>Activity 5.2, Deadly Tsunamis, pg. 103-107</p> <p>Activity 5.4 Tsunami Warning, pg. 115-118</p> <p>Reading Assignment: <i>Exploring Tropical Cyclones</i></p> <p>Unit 1, Recipe for a Cyclone, pg 1- 24</p> |
| May 29 | <p>Tropical Cyclone Formation</p> <p>GIS Exercise: <i>Exploring Tropical Cyclones</i></p> <p>Activity 1.2, pg 11-14</p> <p>Activity 1.4, 19-21</p> <p>Reading Assignment: <i>Exploring Tropical Cyclones</i></p> <p>Unit 2, The Life of a Cyclone: pg 25-41</p>                           |
| May 31 | <p>The Life Cycle of a Tropical Cyclone</p> <p>GIS Exercise: <i>Exploring Tropical Cyclones</i></p> <p>Activity 2.2, pg 29-34</p> <p>Activity 2.4, pg 39-41</p> <p>Reading Assignment: Handouts</p>   |
| June 5 | <p><b>15 min Quiz 2: Natural Hazards (beginning of class)</b></p> <p>Understanding remote sensing data: Aerial photography and satellite imagery</p> <p>GIS Exercise: Investigating South Florida's environment with satellite imagery and aerial photographs.</p>                        |
| June 7 | <p>South Florida Environment and water resources. Introduction to ArcGIS and other software.</p> <p>GIS Exercise: TBA</p>   |