

GIS Vector Analysis

GEO429/529: Spring 2007, Section 201 - CRN 2554 or CRN 2572

Prerequisite: GEO4/526 or any introductory GIS course

3 credit hours

Instructor: James Leonard, Ph.D.	Time: M 6:30-9:00pm
Phone: (304) 696-4626	Place: HH202
Office HH208: MWF 9:30-11:00am; T 2:30-4:00pm	leonard@marshall.edu

Course objectives:

- Learn vector analysis and geoprocessing concepts
- Employ GIS vector analysis techniques to solve a variety of exercise problems
- Apply GIS vector analysis to complete an analysis and written project

Required readings:

- Price, Meribeth. 2005. Mastering ArcGIS, 2nd ed. NY: McGraw-Hill.
- Readings and lectures posted online. Free to download and use only in GEO4/529.

Organization of Class Time:

Class time will consist of one or more of the following: 1) GIS exercises; 2) presentations of vector analysis concepts; 3) lab time; 4) project meetings and composition.

Time Outside of Class:

You must attend every class! This class, though, consists of more than simple class attendance. **Expect to spend about nine hours each week** reviewing the lessons, reading the text and articles, studying for exams, completing exercises, and preparing your project. You may require extra practice with the ArcGIS software on your own time. The software is available campus-wide in University Computing Facilities Labs and remotely from your home. The exercise data is available on a network drive (\\marshall.edu \munet\geography\).

Grading:

Grades will be based on ten exercises assigned during class (20 points each) for 200 points; two exams (100 points each) for 200 points; ten online ESRI Virtual Campus Modules (10 points each) for 100 points; and a final project for 100 points. Graduate students will have more extensive graded exercises, exam questions, and projects. Final grades will be determined by the total number of points you have earned:

- A = 600 - 540 points (100-90%)
- B = 539 - 480 (89-80%)
- C = 479 - 420 (79-70%)
- D = 419 - 360 (69-60%)
- F = 359 and below (less than 60%)

Make the best use of the assignments and exams, because there will be **no extra credit** and **no grades will be scaled or curved**.

- This is a senior-/graduate-level course. You will be expected to perform at a high level.
- You must be thorough and complete on all exercises to receive full credit.
- You must master all exercises, textbook and article readings, online ESRI Virtual Campus course material, lecture material, and ArcGIS skills and concepts to do well on the exams.
- The ESRI Virtual Campus course modules can only be completed by taking mini-exams. You may take each mini-exam as often as you like. As long as you complete the module when assigned, you will get full credit for that module.

Attendance Policy:

You must attend every class. Exercises assigned during class will most frequently be turned in during the next class period. You must submit assignments by the announced deadlines or you will receive zeros for any such assignments. If you will not be present for an excused reason on a day an exercise is due, you **MUST** turn it in early. **Failure to follow these instructions will result in a ZERO on the missed exercise or project.**

I do not accept unexcused absences. I follow University policy for excused absences. You must provide adequate documentation for any excused absence. Missing 2 days or more (excused or unexcused) probably means failure in this class. **You will be held to the highest standards in regard to academic attendance, participation, and punctuality.**

Academic Honesty and Plagiarism:

University policy states that any act of a dishonorable nature which gives the student engaged in it an unfair advantage over others engaged in the same or similar course of study is prohibited. You must do your own work inside and outside of this class. Cheating/plagiarism in or out of this class is prohibited. **You will be given a final grade of F for any instance of academic dishonesty.** I am happy to assist you with anything you do not understand or have questions about.

Withdrawal Policy:

A drop slip signed by me or the chairman of the Geography Dept. must be submitted to the Registrar to receive a W during the period set by the university. After the W period, you may only drop this class by complete university withdrawal. **Failure to follow these university procedures will result in a final grade of F.**

Tentative Schedule (subject to change):

Assignments are due at the BEGINNING of the next class period after they are assigned, unless otherwise stated in class.

- Jan. 8: What is Vector Analysis?; Review Chapters 3 & 6 - Coordinate Systems, Map Projections, Queries; Jobs in GIS
 - Assignment #1 - Jobs in GIS; Handout
 - ESRI Virtual Campus *Geoprocessing with ArcGIS Desktop*: Modules 1 & 2
- Jan. 15: Holiday!
- Jan. 22: Chapter 7 - Spatial joins
 - Assignment #2 - Textbook Exercises
 - ESRI Virtual Campus *Geoprocessing with ArcGIS Desktop*: Modules 3 & 5
- Jan. 29: Chapter 8 - Map Overlay; Meet with Prof. Leonard about project
 - Assignment #3 - Textbook Exercises
- Feb. 5: Chapter 9 Review - Presenting Data;
 - ESRI Virtual Campus *Cartographic Design Using ArcGIS 9*: Modules 1 & 2
- Feb. 12: Chapter 10 - Geocoding;
 - Assignment #4 - Textbook Exercises
 - ESRI Virtual Campus *Cartographic Design Using ArcGIS 9*: Modules 3 & 4
- Feb. 19: Exam review; tie up loose ends
 - ESRI Virtual Campus *Cartographic Design Using ArcGIS 9*: Modules 5 & 6
- Feb. 26: Exam #1
- Mar. 5: Chapter 11 - Editing 1
 - Assignment #5 - Textbook Exercises
- Mar. 12: Metadata
 - Assignment #6 - Metadata Handout
- Mar. 19: Spring Break!
- Mar. 26: Using GPS with GIS; Table Digitizing; Importing data
 - Assignment #7 - Handout
 - Meet with Prof. Leonard about project completion
- Apr. 2: Chapter 13 - Geodatabases
 - Assignment #8 - Textbook exercises
 - Project Part 1 (including source data, finished data, and metadata) due today
- Apr. 9: Chapter 14 - Networks

- Assignment #9 - Textbook exercises
- Project Parts 2 (including geoprocessing model) and 3 due today
- Apr. 16: Terrain analysis
 - Assignment #10 - Handout
 - Project Part 4 due today
- Apr. 23: Project presentations
- Apr. 30: Exam #2