

**Passaic County Community College
Science Department
SC 108 – Applications of GIS**

Course Syllabus (Spring 2007)

Course Title: Applications of GIS
Catalog / Ref. No.: SC 108
Class Times: Wednesday Evening 5:30-7:50 Lecture, 8:00-9:00 lab (An on-line Component makes up the rest of the lab time)
Room: PCCC Community Technology Center, Room-102B
Prerequisites: Basic computer proficiency and/or instructor permission
Instructor / Office: Dr. William W. Montgomery / New Jersey City University
Telephone / Email: (201) 200-3367 / wmontgomery@njcu.edu
Office Hours: Mondays 7-9 PM through WebCT Chat
For Information: Contact Prof. Mike Mikhael at 973-684-6827 or Dr. Bill Montgomery at 201-200-3367 or 908-313-1311
WebCT Support: rperdew @pccc.edu; 973-684-5790

Catalog Description: Geographic Information system (GIS) computer technology allows one to store, retrieve, map, and analyze different types of data (scientific, political, cultural, economic, etc.). GIS skills are utilized in a variety of job settings. Students will learn the basic theory behind GIS and be exposed to applications in various disciplines.

Expanded Course Description: Geographic Information Systems (GIS) technology combines mapping with spreadsheet / database storage and computing power, making it an outstanding tool for visualization, analysis, and problem-solving in many disciplines, including environmental science, health science, criminal justice, political science, and business. This course will introduce you to GIS systems: what they are, the kinds of data they need and produce, and ways that objects and data are retrieved, stored, edited, and mapped. We will also examine analytical techniques and evaluate data output (maps, tables, etc.). Lab exercises are a critical part of the course. You will "roll up your sleeves" and learn much about GIS theory by practicing its application. Lab exercises will require independent work outside of class that will entail WEB-based activities supported by WebCT and facilitated by ESRI® ArcGIS software.

Course Objectives / Expected Learning Outcomes: The student will:

- Develop technological competence and improved self-confidence
- Improve critical thinking, analytical, and problem-solving skills
- Develop new knowledge about database development and spatial analysis
- Develop judgment concerning appropriate applications of GIS to problem-solving
- Develop knowledge about the use of GIS in the student's area(s) of interest
- Develop presentation and communication skills through completion of an independent project to be presented in both written and oral form.

Texts: **Lec:** Heywood, Cornelius, and Carver, 2002, *Introduction to Geographic Information Systems*, Pearson Publishing; ISBN 0-1-3061198-0

Lab: Ormsby et al, *Getting to Know ArcGIS*, ESRI Press; 2nd ed (for AV9.x): ISBN 158948083x

NOTE: For Lab Text, buy **NEW TEXT ONLY** (6-month software CD included for home use)

Lecture notes, assignments, exercises, and review questions may be found at <http://webct.pccc.edu>

Course Calendar (see WebCT Calendar for more details):

Week	Dates	Subject / Task / Exam Due	Read	Assignment, Exercise, Project Due
01	01-24	Intro, Basic data mgmt	----	Asst01 (Evaluation) due
02	01-31	What is GIS;	Ch 1	Exr01-Map your home
03	02-07	Spatial Data	Ch 2	Exr01 due
04	02-14	Pick indep. rsch topics	"	Exr02-Map your car w/ GPS
05	02-21	Spatial Data Modeling	Ch 3	Asst02 (Features & attributes) due
06	02-28	"	"	Exr02 due
07	03-07	Exam 1 Due		Exr03 - Map rainfall w/ spreadsheets
08	03-14	Attribute Data Mgmt	Ch 4	Asst03 (Coordinate systems) due
03-18 to 03-25 PCCC Spring Recess				
09	03-28	Attribute Data Mgmt	"	Exr03 due; Asst04 (Research Project Plan) due
10	04-04	Data Input & Editing;	Ch 5	Exr04 - Site new business in NJ
11	04-11	Data Analysis;	Ch 6	Exr04 due
12	04-18	Analytical Modeling	Ch 7	Exr05 - Map assets and demographics
13	04-25	Research Project	None	Asst05 (GIS Usage in Your Discipline) due
14	05-02	"	None	Exr05 due
15	Mon 05-07	"	None	Project and Paper Due 6 PM on WebCT
15	Wed 05-09	Exam 2 Due 6 PM		Peer Evaluations Due 6 PM
15	Fri 05-11	PCCC Grades Due		

Evaluation & Assessment Measures

- 5 exercises @ 30 pts each = 150 pts
- 5 assignments @ 10 pts each = 50 pts
- 2 exams @ 100 pts each = 200 pts
- Research project: 500-word paper & Powerpoint presentation = 50 pts
- Participation: online chat & peer evaluation of Ppt presentations = 50 pts
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- Total = 600 pts

Grading System

- Traditional point system modified by bell curve analysis and test score clusters
- +/- 90-100% = A-, A
- +/- 80-89% = B-, B, B+
- +/- 70-79% = C-, C, C+
- +/- 60-69% = D
- < 60% = F

Exercises, Assignments, and Writing Requirements

5 exercises involving work with data, with computer programs (MS Excel, MS Word, MS Powerpoint, ArcGIS), and with maps will hone your critical thinking and problem-solving. You will describe your methodology and results in a 250-word (minimum) write-up accompanying each exercise. 5 assignments will test / reinforce conceptual knowledge.

Research Project & Presentation

For an independent research project, you'll select a topic that will benefit from GIS mapping and analysis, hopefully a real problem related to your major field of study. You may choose to work in teams of 2 if you find common interest in a problem or issue, and if your project is large enough in scope. A written summary of at least 500 words describing purpose, methodology, data, and results will accompany your maps and data. You will also create a powerpoint presentation that summarizes your work and post it in WebCT for instructor and peer evaluation.

Attendance

16% of your final grade is based upon attendance and class participation, both in-class and online. Attendance is taken at the beginning of each class; be present at the time your name is called or you will receive an unexcused absence. More than 3 unexcused absences from class will result in a drop of one full letter from your course grade. Absences due to work, family, or other scheduling problems will be excused if adequate documentation is provided. Students are also expected to attend at least 10 WebCT open chat sessions that will be held 7-9 PM Mondays in the main chat room with your instructor or at times that work for you with your peers in Chat Rooms 1-4.

Expectations of Behavior

- Treat yourself and others with respect – the only dumb question is the one you don't ask.
- Attend class – you'll enjoy yourself and earn points too.
- If you miss an exam, you must contact the instructor prior to the exam, document the nature and severity of your illness, and take the exam immediately upon your return to class.
- Integrity is critical in business and in life – cheating on exams will not be tolerated. If you are a party (willing or unwilling) to cheating, your exam score will be zero and you may be subject to academic discipline.
- Plagiarism is a form of cheating; it is theft. There is nothing wrong with using someone else's work, but you must clearly indicate that it is not yours by referencing the original author and using quotation marks for any writing that is not your own.
- Class sessions should be lively, but disruptive behavior negatively affects the entire class. In these cases, the instructor will request that the disruption cease. If it doesn't, the offending student(s) will be asked to leave the class and will receive an unexcused absence for that class period.
- Cellular telephones: Please ***turn them off or switch to "vibrate"***.

Students with Disabilities:

If you have a disability and believe that you need accommodations, please see a counselor in the Center for Student Success. If you require testing accommodations, please notify your instructor at least one week in advance of the test.