Geography 686
Spring 2007

GIS in Social Science and Business Research

Instructor:

      Dr. Mei-Po Kwan
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      Office hours: By appointment

Time: Tuesday and Thursday 1:30 - 2:48PM in DB 0140

Lab Session Time: Monday 1:00 PM – 2:48 PM or
                  Wednesday 1:00 PM– 2:48 PM in DB 0140

GTA:

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      Office hours: Monday, Wednesday 12:00 PM – 1:00 PM or by appointment

Course objective

The objective of this course is to apply GIS techniques on social science and business research. More specifically the goals are: (1) to provide students with an understanding of how GIS can be applied in social science and business research; (2) to familiarize students with advanced GIS and modeling techniques; (3) to provide students with hands-on experience in working with various data sources through a project related to their own research interest.

Format of the course

This course will rely heavily on both lecture and reading and discussing the literature on applications of GIS. Students will also be asked to gain hands-on experience in GIS applications by attending lab sessions, working on lab assignments and a major project related to their own area of interest. For the project, students will have to define their research/application problem, explain how modeling and GIS techniques are used and produce output from the results of the project. Students will have flexibility in defining the application area and choosing software for their application.

Course readings

Required readings for this class are also from a variety of journal articles and GIS magazines. They will be kept in Carmen. Students are required to obtain the readings. The following optional materials will also be helpful for this class and lab exercises.

(1) Environmental Systems Research Institute, Inc., 1999. *Transportation GIS.*

(2) Environmental Systems Research Institute, Inc., 2000. *GIS for Health Organization.*

(3) Grant Ian Thrall, 2002. Business Geography and New Real Estate Market Analysis. Oxford University Press.

(4) Environmental Systems Research Institute, Inc., 2004. *Getting to know ArcGIS.*

(5) Environmental Systems Research Institute, Inc., 2003. *Advanced Spatial Analysis*

(6) Wang, F. 2006. *Quantitative Methods and Applications in GIS.* London: CRC Press

Course requirements and prerequisites

Geog 607 and Geog 685 are the prerequisites for the class, or permission by the instructor. The distribution of your grade is as follows:

> 25% Mid-Term examination
> 15 % Class participation
> 30% Laboratory exercises
> 30% Class project

Class Participation and Lab Assignments

Students are expected to actively participate in classes and lab sessions. Above half of the class sessions will be lectures and the rest will be devoted to discussions of GIS applications. Students are expected to read the required materials before class and participate in discussion. There will also be presentations by GIS practitioners from private organizations such as Nationwide Insurance. Students are required to attend these presentations.

We will be using mainly ArcGIS in the labs.

For lab assignments, there will be a **5%** penalty per day if late. Work handed in more than **2-days** late will **NOT** be accepted. Unless specified, labs are due one week from when they are introduced and are due by the end of the students' enrolled lab session – any labs turned in after the end of class will be considered late.

Academic Misconduct

Academic misconduct in any form will not be tolerated. This includes, but is not limited to, cheating and plagiarism. Students are referred to the definitions of academic misconduct found here: http://oaa.osu.edu/procedures/1.0.html. Plagiarism is the representation of another's works or ideas as one's own: it includes the unacknowledged word for word use and/or paraphrasing of another person's work, and/or the inappropriate unacknowledged use of another person's ideas. All cases of suspected misconduct, in accordance with university rules, will be reported to the Committee on Academic Misconduct.

Students also need to keep and handle their own lab work appropriately to avoid being copied by someone else. All the students are responsible for removing their own lab work from public-access hard drives and store the data in their own media (e.g., jump drive). Those who fail to protect their own work and result in copied lab work will also be treated as involvement in plagiarism.

Students with Disabilities

Any student who feels s/he may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Office for Disability Services at 614-292-3307 in room 150 Pomerene Hall to coordinate reasonable accommodations for students with documented disabilities.

Examination and Class project:

There is a mid-term examination to be held about the later part of the quarter. There is no final examination in this course. Part of the evaluation (30%) will be based on a class project. Students are required to formulate a project through defining an application or research problem and carrying out analysis using GIS techniques.

You can work on an individual project. You are also welcome to work in teams (1-2 students in one project usually). Students can also use software other than the ones introduced in the lab exercises such as TRANSCAD, etc.

A project proposal (1-2 pages) is due on April 17 (Tuesday). The proposal should include the name(s) of the student(s) involved, the problem to be solved, and different data sets, techniques and software to be used. A written report is required.

Spring 2007 Course Schedule*

	Tuesday	Thursday	Lab Sessions
Week 1 Mar 27 and 29	Introduction: GIS applications	Application issues: Scale	**Lab1:** Introduction to ArcGIS, GIS Tutorial, Resources and Techniques
Week 2 April 3 and 5	GIS applications In Transportation	Location Allocation Models (Dr. Ningchuan Xiao)	**Lab2:** Spatial Interaction Models
Week 3 April 10 and 12	GIS applications In Transportation	GPS	**Lab3:** Processing GPS Data
Week 4 April 17 and 19	GIS Application by Practitioner (Ohio Department of Transportation)	GIS Application by Practitioner (Nationwide Insurance)	**Lab4:** Measuring Spatial Accessibility to Primary Care Physicians
Week 5 April 24 and 26	GIS Application on Health Issues I	GIS Applications on Health Issues II	**Lab5:** Disease Mapping and Analysis Program (DMAP)
Week 6 May 1 and 3	GIS Application on Urban Issues I	GIS Application on Urban Issues II	**Lab6:** Spatial Analysis of Homicide Patterns
Week 7 May 8 and 10	GIS and Spatial Analysis of Market: Customer targeting and geodemographics approach	GIS Applications on Sale forecasting and Store-assessment	**Lab7:** Site Selection Using ArcGIS
Week 8 May 15 and 17	**Mid Term Exam May 15**	Class Project	Class Project
Week 9 May 22 and 24	Class Project Presentations	Class Project Presentations	Class Project
Week 10 May29 and May 31	Class Project Presentations	Class Project Presentations	Class Project
Final Exam week	-		

* Due to uncertainty in scheduling of GIS practitioners, this weekly schedule is tentative and subject to change. Check the course web site for the most updated schedule.