

GEO4930 04/ 5934 04
Intermediate GIS
(Fall 2003)

Instructor:

Professor Xiaojun Yang, 304 Bellamy, Phone: 644-8379, Email: xyang@fsu.edu

Class Hours:

Tuesdays and Thursdays: 11:00 – 12:15 p.m., 320 Bellamy Building

Office Hours:

Thursdays: 1:00 – 3:00 p. m. or by appointment.

Teaching Assistant:

Erin Westfall (erintg17@hotmail.com)

Computing Lab Manager (any problem related to computer system):

Mr. Shawn Lewers (SWL2727@mailr.fsu.edu)

Course Description and Objectives

The goal of this course is to introduce students with selected advanced topics and cutting-edge techniques in Geographic Information Science (GISci), both in theory and in practice. This will take students beyond the development of geographic mapping technology that simply answers the question, “Where is it?” to integrated systems that help us answer the question, “Why it is?”. Designed as the “sequel” to the introductory course in GIS (GEO4151), this course will cover a few major topics such as data models, spatial data quality and uncertainty modeling, network analysis and modeling, digital terrain modeling, spatial interpolation, 3-D mapping and visualization, mobile GIS mapping, and internet GIS. Students will need to complete a project and present the result to the entire class.

Prerequisite

GEO4151 Geographic Information Systems or equivalent.

Computing Environment and Software

Windows based ArcGIS (and extensions), ERDAS Imagine, and IDRISI software packages will be used for class assignments. **However, you must be aware that this is not a software training course. If you are looking for such a course (learning a specific software package), you should visit the homepages for specific software packages. These vendors may provide short training courses or more software-specific training materials.**

When you are at the computer lab, you must observe our lab and FSU's related policies. It is your responsibility to check appropriate documents for these policies.

Course Website and Materials

I will develop a website for this course and you will be notified with details shortly. I will post the course materials there. You should check that site from time to time as I might post some important announcements there.

Grading

System: A (> 94), A- (90-93), B+ (87-89), B (84-86), B- (80-83), C+ (77-79), C (72-76), C- (70-71),

D+ (66-69), D (62-65), D- (60-61), F (< 59)

Components:

For undergraduate students

<u>Attendance:</u>	10%
<u>Exam:</u>	30%. There is one mid-term exam.
<u>Lab Assignments:</u>	30%. There are a number of lab assignments and you will need to complete them within a fixed period.
<u>Research Project:</u>	30%. You will need to complete a project, prepare a report, and present it to the entire class.

For graduate students

<u>Attendance:</u>	10%
<u>Exam:</u>	25%. There is one mid-term exam.
<u>Lab Assignments:</u>	30%. There are a number of lab assignments and you will need to complete them within a fixed period.
<u>Research Project:</u>	35%. You will need to complete a project, prepare a report, and present it to the entire class.

Attendance:

Students are required to attend all classes. Missing even one lecture can affect your grade substantially. Announcements regarding the course outline and the schedule of the lectures, labs and exam (including changes of these) may be made in class. All organizational/administrative announcements made during the class period are assumed to be known by all students.

Exam:

The exam can involve any material covered in lectures, reading assignments, and labs. There is no provision for extra credit work. No make-up exam is allowed. If you miss the exam, you must present a signed physician's excuse or, if the exam is missed due to a family funeral, a dated newspaper obituary. Most other excuses for missing the exam are not acceptable. This policy will be applied stickily.

Lab grading policies:

Grades of your lab exercises are based on the quality of your answers. Any answer should be concise and be well organized. They must be in print. The grade for each of the exercises is reported as points_scored / total_points_of_exercise. For example, if an assignment is worth 20 points and your answers score 16 points then you should see 16/20 on your marked assignment.

Each of the assignments will have a due day clearly written on the first page of your lab assignment. The due time is 5:00 p.m. on the due day. Any assignment that is turned in after the due time on the due day is considered late, which will receive penalty strictly.

The penalty for a late assignment is based on the number of days late (including weekends). If an assignment is late less than 24 hours, it is considered 1 day late. If an assignment is late less than 48 hours but more than 24 hours, it is considered 2 days late, and so on. Late assignments are penalized 20% per day. Here is the formula for calculating the points of a late assignment:

$$\text{Points}_{\text{get}} = \text{Points}_{\text{scored}} - 0.20 * \text{num_days_late} * \text{Points}_{\text{scored}}$$

The minimum value of Points_get is 0. Assignments handed in after I have returned the graded assignment to class (usually one week after the due date) will receive no points. Again, you must provide acceptable excuse (see exam section) in order to receive more time for you to complete lab exercises without penalty applied. You should discuss with me about your situation no later than the due day. This policy will be applied

stickily.

Research project:

Will be discussed in a separate document.

Course Materials

Because this course covers various topics and there is no any single textbook providing There is no required textbook for this course. However, selected chapters from the following books and other journals will be used as reading assignments.

- Burrough, P.A. and R. A. McDonnell, 1998. *Principles of Geographic Information Systems*. New York: Oxford University Press, 333 p.
- Camara, A. S. and J. Raper (eds.), 1999. *Spatial Multimedia and Virtual Reality*. Taylor & Francis, London, 159 p.
- Chrisman, N. R., 2001. *Exploring Geographic Information Systems (2nd)*. John Wiley & Sons, New York.
- Fotheringham, S. and M. Wegener, 2000. *Spatial Models and GIS : New Potential and New Models*. Taylor & Francis, London, 279 p.
- Gurnell, A. M. and D.R. Montgomery (edited), 2000. *Hydrological Applications of GIS*. John Wiley, New York, 176 p.
- Harmon, J. E. and S. J. Anderson, 2003. *The Design and Implementation of Geographic Information Systems*. John Wiley, New York, 264p.
- Heywood, I., S. Cornelius, and S. Carver, 1998. *An Introduction to Geographical Information Systems*. Prentice Hall, New Jersey, 279p.
- Lo, C. P. and A. K. W. Yeung, 2002. *Concepts and Techniques of Geographic Information Systems*. Prentice Hall, New Jersey, 492p.
- Longley, Paul and Michael Batty (eds.), 1996. *Spatial Analysis: Modelling in a GIS Environment*. GeoInformation International, Cambridge, UK, 392 p.
- Malczewski, Jacek, 1999. *GIS and Multicriteria Decision Analysis*. John Wiley, New York, 392 p.
- O’Sullivan, D. and D. J. Unwin, 2003. *Geographic Information Analysis*. John Wiley & Sons, New Jersey, 436p.
- Peng, Z. R. and M. H. Tsou, 2003. *Internet GIS: Distributed Geographic Information Services For the Internet and Wireless Networks*. John Wiley & Sons, New Jersey, 679p.
- Zeiler, M., 1999. *Modeling Our World: The ESRI Guide to Geodatabase Design*. ESRI Press, Redlands, California, 199p.

Honor Code

Students are expected to uphold the Academic Honor Code. The Academic Honor System of The Florida State University is based on the premise that each student has the responsibility to:

- Uphold the highest standards of academic integrity in the student’s own work,
- Refuse to tolerate violations of academic integrity in the University community, and
- Foster a high sense of integrity and social responsibility on the part of the University community.

ADA Requirements

Students with disabilities needing academic accommodations should:

Register with and provide documentation to the Student Disability Resource Center (SDRC).

Bring a letter to the instructor form the SDRC indicating you need academic accommodations. This should be done within the first week of class.

For more information about services available to FSU students with disabilities, contact the Assistant Dean of Students: sdrc@admin.fsu.edu, Disabled Student Services, 08 Kellum Hall, Florida State University,

Tallahassee, FL 32306-4066, (850) 644-9566.

Tentative Schedule
(Fall 2003)

Week	Dates	Lectures	Lab Assignments	Reading Assignments
1	Aug. 25-29	Introduction; Data models (I)	NA	What is ArcGIS? ArcGIS Review
2	Sept. 2-5	Data models (II)	Lab 1: Introduction to ArcGIS	Zeiler chapters 2, 3 and 4
3	Sept. 8-12	Spatial data quality and metadata	Lab 2: GIS Data Models	Lo and Yeung chapter 4
4	Sept. 15-19	Uncertainty modeling	Lab 3: Database Uncertainty Modeling	Journal papers
5	Sept. 22-26	Spatial analysis	Lab 4: Simple spatial analysis	Lo and Yeung chapter 10
6	Sept. 29-Oct.3	Network modeling	Lab 5: Network analysis and modeling	Zeiler chapter 8
7	Oct. 6-10	Digital elevation modeling	Lab 6: Surface analysis and modeling	Lo and Yeung chapter 9
8	Oct. 13-17	Spatial interpolation	Lab 7: Spatial Interpolation	Journal papers
9	Oct. 20-24	Mid-term exam (Oct. 24)	One unit reserved for lab exercise	
10	Oct. 27-31	3-D mapping and visualization	Lab 8: 3-D Mapping and visualization	Journal papers
11	Nov. 3-7	Mobile GIS	Lab 9: Mobile GIS (ArcPad/GPS)	Journal papers
12	Nov. 10-14	Nov. 11 (no class); WebGIS	Lab 10: ArcIMS (demo only)	Web materials
13	Nov. 17-21	Project presentations (Free Pizza on Thursday)	NA	NA
14	Nov. 24-28	SEDAAG Meeting and Thanksgiving Week	NA	NA
15	Dec. 1-5	Project presentations (Dec. 2 only)	NA	NA
16	Dec. 8-12	Final Week	Term paper and project report due by Dec. 12	NA