

Course Prerequisites:

It is strongly recommended that students take this course after having completed GEOG 323/505: Cartography and Graphics I or GEOG 412/518: Introduction to Geographic Information Systems, or its equivalent. If you have never taken a 'geographic techniques' course, you will need to be especially diligent with the readings and homework. A background with computer processing is assumed, including experience with the Windows XP operating environment, word processing and spreadsheet software.

Textbook:

There is no textbook required for this class. The suggested readings are listed in the bibliography.

Materials and Back up Media:

- An account on 'Tiger,' the student server. You will need to use this space to store your work. Go to <http://tiger.towson.edu> for more information on how to get an account.
- Each student should purchase 2-3 CD-RW *or* a USB Flash Drive for data storage and transportation. This media can be purchased at any office supply store.

Course Requirements:

This course meets once a week for lectures in class. Students are required to go over the reading materials before attending each class. If you miss a lecture, you may completely miss out on important information. The laboratory portion of this course is held in the Geography Computer Laboratory (LI 01). This room is reserved for our class use during the Fall semester on Thursday from 5:00-6:15 pm. It is also available daily, when not otherwise scheduled for instructional use. This lab is also utilized by a number of other Geography classes during the semester – please be courteous to the need of other lab users.

This course provides students with a working knowledge of commercial software commonly used for graphic-based applications such as ArcGIS, SketchUp Pro, GoogleEarth Pro, Macromedia Flash MX, MapViewer, and Adobe Illustrator. The lecture contents will be complemented by a series of lab exercises, reading assignments, and classroom presentations. Students are expected to utilize their hands on experience gained from the lab exercises to further enhance their proficiency in graphic software and design. Readings and course requirements will be concentrated in the first part of the course, allowing time near the end of the semester for working on final projects.

Please note that there is no separate lab session; operations of particular graphics software packages might not be completely taught during the lectures, and instead will be explored by students outside of scheduled class time. This course covers a lot of material and requires that students make time to do the work. In order to succeed, it is absolutely necessary that students plan to spend a considerable amount of time outside of the class honoring their skills on lab exercises.

Class Project:

All students are required to design and implement a project involving visualization of geographic data. Students may use existing software, develop their own code, or combine the two approaches. Projects may be theoretical, methodological or application-oriented but must include a visualization result. A one-page outline for the project must be submitted by October 26, 2006, and the final project is submitted on December 12, 2006 by 5 pm.

What do you need to submit?

- **Undergraduate students:**

- (1) A poster size 4 ft. high x 6 ft. wide.
- (2) A CD-ROM that contains digital files of your final project.

- **Graduate students:**

- (1) A research paper of 10-15 pages with appropriate literature reviews. The paper must include visualization results that obtained from the experiment above. Please note that this is a formal research paper designed to give you experience in scholarly writing suitable for publication. It will be evaluated under these requirements, so prepare the paper as if you were going to submit it for publication.
- (2) A CD-ROM that contains digital files of your final project.

Evaluation:

Undergraduates (GEOG 473)		Graduates (GEOG 673)	
Exam	25%	Exam	20%
Lab Exercises	25%	Lab Exercises	20%
Reading Assignment	10%	Reading Assignment	10%
Final project	40%	Final project	25%
		Research paper	25%

I reserve the right to raise or lower each grade slightly, depending on circumstances such as extraordinary progress made in the course or other mitigating circumstances. Grades will be assigned as follows:

A	93% - 100%	C+	77% - 80%
A-	90% - 93%	C	70% - 77%
B+	87% - 90%	D+	67% - 70%
B	83% - 87%	D	60% - 67%
B-	80% - 83%	F	Below 60%

Grade disputes / complaints *must be lodged within two weeks* of grades being released on Blackboard. In the case of a missing grade, you must provide evidence of having done the work. In the case of clear errors in grading, I will correct your grade on Blackboard. Failure to contact me within two weeks of grades being completed for any given assignment means that you forfeit the chance for a review of the grade.

Make-up Policy:

Make-up exams will be given only in the event of illness or other verifiable emergency. You will have 24 hours after a missed exam to contact me or leave a message. The secretary in the department (410-704-2973) will gladly take a message. If you know in advance that you must be absent on the day of a scheduled exam, please let me know so that we can schedule a make-up time. Make-up exams will be scheduled at the instructor's discretion and may not be of the exact same format. Unexcused absences from exams will result in a zero for the exam.

Absences may be excused if they are verifiable documents. Acceptable reasons for absences include but are not limited to personal or family illness or emergency, religious holidays, etc.

per Towson University Attendance Policies. Oversleeping, missing the bus, etc. are not excusable excuses. You may be required to provide written documentation in order to receive an excused absence. If your absence is excused, you may have the opportunity to make up your work.

Contact Policy:

I try to be available as often as possible during the day and evening. Feel free to contact me by phone or e-mail, particularly for immediate problems. Please do not let operational problems linger – e-mail or come by my office or call me when you are *stuck*.* I can also be available in the office for personal consultation by appointment.

**Stuck Rule: Try to figure out the problem and resolution for 10 minutes. Back up to the first, reread the book, reread the assignment, etc. Then resort to the Help menu for another 10 minutes. Ponder for 5 minutes. If still stumped, please contact me.*

Attendance Policy:

Attendance is the easiest way to do well in any class, therefore students are expected to attend lectures and labs. In the event you happen to miss a lecture, do what you need to do; then see the syllabus and get notes from your classmates to find out what you missed in class. Students are responsible for material missed during any class session. Any notes from a peer for the material covered in class should be obtained.

If there is a chance that you will not be able to attend as many as four classes, please consider dropping the course and registering a semester when you are better able to make a commitment. If you know that you will be late, please let me know ahead of time so that I can brief you on what you will miss.

Help!

All of us learn in different ways and with varying degrees of success. If you know of any factors in your life that may hinder your ability to learn up to your potential in this course, please notify me at once. If you are having difficulty with the course material, please visit me right away. Coming to see me just before a test is being given is a poor strategy for success. Like any of your other courses, the material in this course will build upon earlier concepts and information; if you fall behind, it will become harder and harder to catch up. This is what office hours are for!

Due Date Policy:

Lab exercises and assignments must be turned in **no later than one week** from when started. Submission of an assignment after the due date will be accepted with a penalty of 10% for each day they are late.

Academic Honesty:

Academic honesty and integrity is expected at all times. Students are responsible for the Scholastic Dishonesty Code, which can be found in Appendix F of the Towson University Catalog under the “Student Academic Integrity Policy” section. Scholastic dishonest includes but is not limited to: copying others' work, using notes during tests, and sabotaging others' work. Dishonesty in this class will not be tolerated. Cheating and/or plagiarism will result in an automatic failing grade for this course. Cases of academic dishonesty will be handled according to University guidelines.

Student with Disabilities:

This course is in compliance with Towson University policies for students with disabilities. Students with disabilities are encouraged to register with Disability Support Services (DSS) 7720 York Road, Suite 232, (410) 704-2638. Students who suspect that they have a disability but do not have documentation are encouraged to contact DSS for advice on how to obtain appropriate evaluation. A memo from DSS authorizing your accommodation is needed before any accommodation can be made.

Lecture and Reading Schedule:

The lecture schedule indicates the intended scope and timing of materials presented in the course. If unanticipated events occur, the lecture schedule will be modified accordingly.

Week 1 (August 31):	Geovisualization in Context
Week 2 (September 7):	Exploring Geovisualization
Week 3 (September 14):	Issues for Tool Design: Technology
Week 4 (September 21):	Cognitive Issues
Week 5 (September 28):	Issues for Tool Design: Symbolization
Week 6 (October 5):	Map Animation, Interaction, and Data Exploration
Week 7 (October 12):	Electronics Atlas and Multimedia
Week 8 (October 19):	Exam
Week 9 (October 26):	Using 3D in Visualization Outline due
Week 10 (November 2):	Virtual Reality / Virtual Environment
Week 11 (November 9):	Visualizing Uncertainty
Week 12 (November 16):	The Future of Cartographic and Geographic Visualization
Week 13 (November 23):	Thanksgiving Holiday (no class)
Week 14 (November 30):	Work on Final Project
Week 15 (December 7):	Work on Final Project
Week 16 (December 12):	Presentation 3:00-5:00 pm. Final Project due by 5:00 pm.

Related readings:

- Bertin, J. 1983. *Semiology of graphics*. Madison, WI: University of Wisconsin Press.
- Brewer, C. A. 2005. *Designing better maps: A guide for GIS users*. Redlands, CA: ESRI Press.
- Card, S. K., J. D. Mackinlay, and B. Shneiderman, eds. 1999. *Readings in information visualization: Using vision to think*. San Francisco, CA: Morgan Kaufmann.
- Cartwright, W., M. Peterson, and G. Gartner, eds. 1999. *Multimedia cartography*. New York: Springer.
- Clarke, K. C. 1995. *Analytical and computer cartography*, 2nd edition. New Jersey: Prentice Hall.
- Dent, B. D. 1999. *Cartography -Thematic map design*, 5th edition. Boston: William C Brown/McGraw-Hill.
- Dodge, M., and R. Kitchin, 2001. *Mapping cyberspace*. New York: Routledge.

- Dykes, J., A. M. MacEachren, and M.-J. Kraak, eds. 2005. *Exploring geovisualization*. Amsterdam, The Netherlands: Elsevier.
- Fraser Taylor, D.R., ed. 2005. *Cybercartography: Theory and practice*. Amsterdam, The Netherlands: Elsevier.
- Hearshaw, H. M., and D. Unwin. eds. 1994. *Visualization in geographical information systems*. Chichester, England: John Wiley & Sons.
- Kraak, M., and F. Ormelling. 2003. *Cartography: Visualization of spatial data*, 2nd edition. Harlow, England: Pearson Education.
- MacEachren, A. M. 1995. *How maps work: Representation, visualization, and design*. New York: Guilford Press.
- MacEachren, A. M., and D. R. F. Taylor. 1994. *Visualization in modern cartography*. Oxford, England: Pergamon.
- Reuter, D. D. 2002. *Computer graphics for architects, engineers, and environmental designers*, New York: Allworth Press.
- Rogowitz, B. E., and L. A. Treinish. 1996. How not to lie with visualization. *Computers In Physics* 10(3):268-273.
- Slocum, T., R. B. McMaster, F. C. Kessler, and H. H. Howard. 2005. *Thematic cartography and visualization*, 2nd edition. Upper Saddle River, NJ: Prentice-Hall.
- Tufte, E. 1990. *The visual display of quantitative information*. Cheshire, CT: Graphics Press.
- Tufte, E. 1992. *Envisioning information*, Cheshire, CT: Graphics Press.
- Tufte, E. 1997. *Visual explanations : Images and quantities, evidence and narrative*, Cheshire, CT: Graphics Press.