Geography 3140: Introduction to Geographic Information Systems

Fall 2004, Units: 3
Prerequisites: MATH 1030, MATH 1050 or equivalent.
Fulfills Quantitative Intensive (QI) requirement

Lectures:            Labs:
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Office: 211B OSH
Phone: 581-7930
Office Hrs: W 2-3 (or by appointment)

MW 11:50 am – 1:10, MBH 302  M  2:00 - 2:50 pm, OSH 277
  M 3:05 - 3:55 pm, OSH 277
  W  2:00 - 2:50 pm, OSH 277

Chichester: John Wiley & Sons.

Course scope and objectives

This course introduces students to the use of digital geographic information in reasoning about the world. Topics include geographic data collection, geographic data models and basic geographic analysis. A variety of GIS applications will be described across a range of disciplines with an emphasis on geographic problem solving. The social, economic, and legal context of geographic information will also be examined. Principles and concepts will be provided in lectures and reinforced in an associated lab through a series of hands-on exercises. The course objectives are to:

1. Provide students with the fundamental definitions and concepts necessary to use digital geographic information to their benefit.
2. Review the wide variety of GIS applications and associated career opportunities.
3. Provide students with hands-on experience using a GIS in a lab environment.
4. Describe common analysis methods used in geographic problem solving.
5. Highlight a few of the internal procedures (algorithms) found in a typical GIS.
6. Place geographic information in a broader social, economic and legal context.

Grading: 2 midterms (15% each), labs 40%, final exam 30%.

Course policies and information:

Exams must be taken during the specified time unless a valid, documented excuse is provided before the exam.
The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TTY). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

**Course outline**

**Topic** | **Readings**
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Course overview and introduction | [http://www.gis.com](http://www.gis.com)  
| | [http://www.geographynetwork.com](http://www.geographynetwork.com)  
| | [http://www.esri.com](http://www.esri.com)  
| | [http://www.giscafe.com](http://www.giscafe.com)

What is GI and GIS? | Chapter 1
GIS applications | Chapter 2
Representing geography | Chapter 3
Georeferencing | Chapter 4
The nature of geographic data | Chapter 5

**Midterm I: Wednesday, September 22**

- Uncertainty in geographic models | Chapter 6
- Generalization, abstraction and metadata | Chapter 7
- GIS software | Chapter 8
- Geographic data modeling | Chapter 9
- GIS data collection | Chapter 10
- Creating and maintaining geodatabases | Chapter 11
- Geographic visualization | Chapter 12

**Midterm II: Wednesday, October 27**

- Geographic query and analysis | Chapter 13
- Advanced spatial analysis | Chapter 14
- Uncertainty, error and sensitivity | Chapter 15
- GIS management and business | Chapter 16
- Selecting a GIS | Chapter 17
- GIS operations and partnerships | Chapters 18, 19
- Social, legal and economic issues | Handout

**Final Review**

**Important dates (Note: these are for 2004)**

- September 3  | Last day to drop classes
- September 6  | Labor day (no lecture and lab)
- September 7  | Last day to add classes
- October 7-8  | Fall break (no effect on us)
- November 17  | GIS Day (see http://www.gisday.com)
- November 25-26 | Thanksgiving Break (no lecture)
- December 8  | Last day of class (final review)

**Final exam:** Friday, December 17, 10:30 am – 12:30 pm