INFO 530
Geographic Information Systems for Public Health

Number and title: INFO 530
GEOGRAPHIC INFORMATION SYSTEMS FOR PUBLIC HEALTH

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Time and location:
Monday & Wednesday, 3-4:50, P13 GCR

Prerequisites: Experience with Windows-based computing is essential to successful completion of the course.

Brief description: The course introduces the use of geographic information systems (GISs) in the analysis of public health data. We develop GIS skills through homework and case studies, and particularly address basic GIS operations such as buffering, layering, and spatial queries. In addition to GIS issues we address introductory cartography, and basic statistical aspects of spatial analysis.

For whom intended: The course is designed for graduate students in Biostatistics/Public Health Informatics, but we expect students from throughout the Rollins School of Public Health.

ASSIGNMENTS:
There will be weekly lab assignments addressing a public health issue using GIS. The assignments will mostly come from the textbook and articles. Each assignment will require a brief written report.

- GIS assignments build upon each other, so it is very important to be up to date on your assignments.
- Assignments are due at the beginning of the lab session on Wednesdays (3pm).
- Late assignments will be dropped one letter grade per day after the due date, starting with the due day.
• No assignment will be accepted after the due date without penalty unless previously arranged with the instructor.

• There will be a final project, which is a case study.


Supplementary articles will be posted on BlackBoard

SOFTWARE:
• **ArcGIS 9.2** (available in GCR computer labs and three-month trial version with textbook)
• **Word processing package** (MS Word) - needed for answers to some assignments
• **Spreadsheet package** (MS Excel) – for working with data tables
• **Adobe Acrobat PDF Viewer** to read assignments and course slides (download from http://www.adobe.com)
• **Web browser**- for access to supplemental data files
• **7-Zip, PKZip, WINZIP** – to compress multiple files and folders into a single file for e-mailing

Evaluation:  Quizzes, 10%
Lab Assignments, 60%
Final project, 30%

**GRADING POLICY:**
While each student must submit his or her own homework assignment, discussion among students on homeworks and cases is encouraged for clarification of assignments, technical details of using software, and structuring major steps of solutions. The Final Project is an individual exercise, and students may only discuss problems and issues related to it with the Instructor or TA. Cheating is strictly forbidden and includes but is not limited to: plagiarism, submission of work that is not the student's own, submission or use of falsified data, unauthorized access to assignment solution, supplying or communicating unauthorized information for an assignment.

**DISCUSSION BULLETIN BOARD:**
A discussion board for the course is on Blackboard. This bulletin board is for you to interact with others in the course. Please post questions of general interest on this bulletin board. To access this bulletin board you must enter your Blackboard ID and password. Personal questions regarding the course should be directed to the instructor and teaching assistant.
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Topic list:

1. Basic Cartography
   ² Elements of maps. Scale, projections, and generalization.
   ² Map symbolization and display.

2. GIS Fundamentals
   ² Vector versus raster GIS.
   ² Locations and attributes.
   ² Points, lines, and areas.
   ² Spatial queries, distances, buffers, summaries
   ² Relational joins, map layering.

3. Public Health applications
   ² Site selection.
   ² Assessment of the spatial pattern of disease locations (points), and disease rates (choropleth mapping and rate uncertainty).
   ² Spatial interpolation of exposures.
   ² Environmental justice assessments.

Evaluation methods:

1. Two quizzes will be given to test for major GIS concepts, issues and problems.

2. Labs involve guided exercises using ArcGIS-ArcEditor. Most lab work can be completed during the schedule lab sessions, but may also be completed on your own time. Each lab requires a short written report to be submitted on Blackboard in the ‘Assignments’ section.

3. Final individual project. Written project report.
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<th>Week</th>
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<th>Lecture Topic</th>
<th>Book Reading</th>
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<td>2</td>
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<td>Projections, Visualizing health data</td>
<td>Chapters 1 &amp; 2</td>
<td>Assignment 1 (Due 1/27)</td>
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<td>Visualizing health data, GIS operations</td>
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<td>3</td>
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<td>Designing maps</td>
<td>Chapter 5</td>
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<td>4</td>
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<td>Geocoding data</td>
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<td>Assignment 6 (Due 3/3)</td>
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<td>7</td>
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<td>Application summaries</td>
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<td>Quiz</td>
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<tr>
<td>7</td>
<td>3/3</td>
<td>More GIS operations &amp; tricks</td>
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<td>Final Project (Due 3/17 at 5pm)</td>
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