SOCL 7213: Geographic Information Systems (GIS)
Spring 2015

Instructor: Prof. Matthew Valasik
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Office: 17B Stubbs Hall

Office Hours: Mondays, 4pm - 5pm or Appointment
Class Time / Location: Thursdays, 1:30pm - 4:20am
0015 / 0026 Stubbs Hall

COURSE DESCRIPTION:

This Geographic information systems (GIS) are computerized systems designed for the storage, retrieval, and analysis of geographically referenced data. GIS uses advanced analytical tools to explore spatial relationships, patterns, and processes of cultural, biological, demographic, economic, geographic, and physical phenomena.

This course covers underlying geographic concepts (world coordinate system and projections, vector map topology, tiled and layered maps, etc.), map design and outputs, geodatabases, importing spatial and attribute data, digitizing, geocoding, spatial data processing, and advanced spatial analysis. Additional emphasis will be on crime mapping and analysis. The technical focus of the course includes computer lab tutorials and case studies using the leading desktop GIS software, ArcGIS from ESRI.

Application areas covered in this course include city and regional planning, community planning, economic development, education, election, and environmental studies, housing and property evaluation, transit and transportation issues, land use, historic studies, crime analysis and policing, emergency management, public works utilities, census population and demographic studies, health, and business applications, including marketing, advertising, and site selection.

By the end of the course, students will have sufficient background to identify spatial characteristics of diverse application areas, enabling them to integrate spatial thinking and GIS analysis into their academic research and careers.

COURSE MATERIALS:


* Additional readings will be provided as pdfs on Moodle

**Thumb drive or other backup device—needed to copy GIS data to and from computer labs
COURSE REQUIREMENTS & GRADING POLICY

Students are expected to come to class on time and remain for the entire class. Attendance is mandatory. This course is homework driven and all assignments will be graded at the beginning of the lab portion of class. In addition to homework there will be two or three case studies. **Cases are treated as take-home exams and must be completed individually.** All work by students must be done independently, except for any assistance by the instructor. Lastly, students will complete a project (assigned by the instructor) in groups. The project will consist primarily of integrating data into ArcMap and preparing a presentation at the end of the quarter. More information on the group project will be provided later.

Discussion among students on homework assignments and cases is encouraged for clarification of assignments, technical details of using software, and structuring major steps of solutions. Cheating and plagiarism are strictly forbidden. Cheating 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 exam or assignment, use of unauthorized material during an exam, supplying or communicating unauthorized information for an assignment or exam.

**Grades will be distributed as follows:**

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<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Class Attendance (Mandatory)</td>
<td>10%</td>
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<tr>
<td>Homework</td>
<td>45%</td>
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<tr>
<td>Cases</td>
<td>20%</td>
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<tr>
<td>Project</td>
<td>25%</td>
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**Grading Scale:**

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<tr>
<th>Grade</th>
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<tr>
<td>A</td>
<td>90% - 100%</td>
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<tr>
<td>B</td>
<td>80% - 89.99%</td>
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<tr>
<td>C</td>
<td>70% - 79.99%</td>
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<tr>
<td>D</td>
<td>60% - 69.99%</td>
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<tr>
<td>F</td>
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COURSE POLICIES

**Academic Misconduct and Classroom Etiquette:** Students are expected to abide by the LSU student code of conduct. Students who are caught cheating on an exam will fail the course, with no exceptions. Students are also expected to abide by the basic rules of classroom etiquette including: getting to class on time and coming prepared to engage; turning off all electronic devices; not talking during lectures; and remaining respectful of diverse views when engaging in classroom debate. All views are allowed and welcome; however, expressing them in a respectful way is required. Reasonable people can disagree, but disagreement needs to be expressed in ways that are conducive to the free exchange of ideas, productive dialogue, and meaningful learning.

**Disability:** Any student who feels he/she may need an accommodation based on the impact of a disability should contact the professor privately to discuss specific needs. Also, contact the LSU Disability Services at (225) 578-5919 as soon as possible to better ensure that accommodations are implemented in a timely fashion.
COURSE SCHEDULE (Subject to Change):

WEEK 1 - January 15th: INTRODUCTION

Readings: Monmonier - Chapters 1 & 2
Lab: GIS Tutorial 1-1 through 1-9
Homework: Assignments 1-1 & 1-2

WEEK 2 - January 22nd: MAP DESIGN

Readings: Monmonier - Chapter 3
   * Chapter 2: Cartographic Language in “Some truth with maps: A Primer on Symbolization and Design” by Alan M. MacEachren
Lab: GIS Tutorial 2-1 through 2-8
Homework: Assignments 2-1, 2-2 & 2-3

WEEK 3 - January 29th: GIS OUTPUTS & LAYOUTS

Readings: Monmonier - Chapter 4 & 5
Lab: GIS Tutorial 3-1 through 3-7
Homework: Assignments 3-1, 3-2 & 3-3

WEEK 4 - February 5th: FILE GEODATABASES

Readings: Monmonier - Chapter 6 & 7
Lab: GIS Tutorial 4-1 through 4-6
Homework: Assignments 4-1 & 4-2
Case #1 Assigned (Due Week 6 - February 19th)

WEEK 5 - February 12th: SPATIAL DATA

Readings: Monmonier - Chapter 8
Lab: GIS Tutorial 5-1 through 5-11
Homework: Assignments 5-1 & 5-2

WEEK 6 - February 19th: GEOPROCESSING

Lab: GIS Tutorial 6-1 through 6-7
Homework: Assignments 6-1, 6-2 & 6-3
WEEK 7 - February 26th: DIGITIZING
Lab: GIS Tutorial 7-1 through 7-5
Homework: Assignments 7-1 & 7-2
Case #2 Assigned (Due Week 9 - February 19th)

WEEK 8 - March 5th: GEOCODING & GEOREFERENCING
Lab: GIS Tutorial 8-1 through 8-5
Georeferencing Tutorial
Homework: Assignments 8-1, 8-2 & 8-3

WEEK 9 - March 12th: SPATIAL ANALYSIS
Lab: GIS Tutorial 9-1 through 9-4
Homework: Assignments 9-1, 9-2 & 9-3

WEEK 10 - March 19th: USING CRIME MAPS / DESIGNING & BUILDING CRIME MAPS
**Review Chapters 1 & 2 in GIS Tutorial for Crime Analysis**
Readings: GIS Tutorial for Crime Analysis pg 30 -33
Lab: GIS Tutorial for Crime Analysis 3-1 through 3-3; 4-1 through 4-3
Homework: Assignments 3-1, 3-2, 4-1, & 4-2

WEEK 11 - March 26th: QUERYING CRIME MAPS & BUILDING MAP ANIMATIONS
Readings: GIS Tutorial for Crime Analysis pg 88 - 90
Lab: GIS Tutorial for Crime Analysis 5-1 through 5-3; 6-1 & 6-2
Homework: Assignments 5-1, 5-2, 6-1, & 6-2 / PROJECTS ASSIGNED

WEEK 12 - April 2nd: CONDUCTING HOT SPOT ANALYSIS
Readings: GIS Tutorial for Crime Analysis pg 128 - 130
Lab: GIS Tutorial for Crime Analysis 7-1 through 7-3
Homework: Assignments 7-1 & 7-2

WEEK 13 - April 9th: SPRING BREAK

WEEK 14 - April 16th: ASSEMBLING JURISDICTION MAPS
Readings: GIS Tutorial for Crime Analysis pg 152 & 153
Lab: GIS Tutorial for Crime Analysis 8-1 through 8-5
Homework: Assignments 8-1 & 8-2
WEEK 15 - April 23rd: PREPARING INCIDENT DATA FOR MAPPING

Readings: GIS Tutorial for Crime Analysis pg 188 & 190
Lab: GIS Tutorial for Crime Analysis 9-1 through 9-5
Homework: Assignments 9-1 & 9-2 / WORK ON PROJECTS

WEEK 16 - April 30th: WORK ON PROJECTS

WEEK 17 - May 7th: FINAL PRESENTATIONS & LUNCH

**YOU MUST ATTEND THE FINAL PRESENTATION TO PASS THIS COURSE!**