CRP 386: Geographic Information Systems in Planning Summer 2019, Syllabus

Instructor: Dr. Junfeng Jiao
Teaching Assistant: TBD

Class Credits: 3.0
Class Time: Second-Term, Summer 2019, T/W/Th 5:00-7:30pm

Class location: UTSOA Computer Lab (WMB 1.110)
Instructors: Dr. Junfeng Jiao, SUT 3.120
Email: jjiao@austin.utexas.edu
Office hours: by appointment
Teaching Assistant: TBD
Office hours: by appointment

All class materials are available on the UT Canvas system. You will need your UTEID and password to access them.

Figure 1: Common GIS Layers in Planning (DON CLAYTON)
COURSE DESCRIPTION

This is an Intro to intermediate-level GIS class. This class covers some of the most common GIS analysis techniques used by planners and designers and focuses on the methods of spatial analysis and their applications to urban issues. This course introduces GIS software and applications in the context of daily life as an urban planning student as well as in the professional urban planning practice. This course aims to enable planners to fully exploit GIS as analysis, visualization, and presentation tools.

This class involves intensive GIS lab exercises. Through these GIS labs, the instructor will introduce different GIS analysis functions and demonstrate their applications with real urban projects. The set of software used in this course includes: ArcMap, ArcCatalog, and ArcToolbox. The overall goals of this class are:

- To obtain working knowledge of the GIS software commonly used in planning practice and develop students’ analytical capabilities.
- To learn to communicate spatially using GIS tools with the general public, clients, and professionals.

The course will run as a lecture/lab combination and explore many basic geo-spatial analysis techniques using ArcGIS, including:

- Data Acquisition, File Organization, Map production
- GIS/Query & Vector Analysis w/ Map Overlay
- Raster Analysis w/ Spatial Analyst
- Presenting Census Data in GIS

Students are also encouraged to form study groups to discuss and practice GIS analysis together.

WHAT WILL I LEARN?

- Important GIS and spatial analysis skills
- GIS data acquisition and analysis skills
- File Management skills (GIS is a very file intensive system)
- Critical eyes to view maps and productive hands to make nice and correct maps.
- Many more…

Recommended text book:

1. Getting to Know ArcGIS Desktop, Second Edition Updated for ArcGIS 10
   (By Tim Ormsby, Eileen Napoleon, Robert Burke, Laura Feaster, and Carolyn Groess)
   Note: Some older versions of the book are also acceptable, but you may experience differences in data and course exercises.

Software & Hardware:

- The class will use ESRI ArcGIS®, all these software programs have been installed in the SOA lab computers. Each registered student will receive a one-year student ArcGIS software free of charge.

- A flash drive of greater than 12 GB storage capacity is required. You will need to use the flash drive to transfer data from the computer lab to your personal computer.
Useful Online Resources:

1. Getting Started with ArcMap:

2. ArcGIS Desktop Tutorials:

COURSE STRUCTURE

Tutorials and Labs
The primary teaching/learning instruments employed by this course are the tutorials of computer applications and the lab sessions. In the tutorial component, students will be given guided introductions by the instructor and TA, and work on assignments that explore relevant software features under the guidance of the Instructor and TA. Labs sessions will be used to work on the assignments in a setting where the TA is available for questions.

POLICIES

Evaluation
Your final grade will be calculated on the following—

1. Participation (10%): I expect to see you in class and hope that you will be involved in the class discussions. It will account for 10% of your grade.

2. Lab Reports (50%): There will be nine submitted lab exercises throughout this class. These exercises are designed to provide you with basic GIS knowledge and operational skills that will allow you to conduct your neighborhood-profiling project with ease. All these exercises are structured in a “learning-by-doing” and “self-explanatory” way and can be done by simply completing all step-by-step instructions following the tutorials.

   You can work on the lab exercises with either the remaining class time at a SOA lab location or on your personal computer. You may discuss your questions with your classmates or ask the instructor or TA for help. A lab report containing figures, charts, and some text discussions are typically due within one week after the date assigned. To be fair to your classmates who work hard to turn in their work on time, I will not accept late work unless it is due to a medical condition or other emergency situations.

3. Final Project (40%): The final project will be an individual project. It will focus on GIS analysis only and cover all the contents introduced in the class, including lectures and lab assignments. It is designed to help you understand your progress in GIS and better prepare you for future study.

Deadlines
Deadlines ARE IMPORTANT. Again, late submissions are not accepted. Standard exceptions for major medical situations apply; such situations should be discussed with the instructor.

This class is governed by all of the university’s student policies, including those on plagiarism and multiple submissions. It is your responsibility to be familiar with these. Please be courteous regarding cell phone use and other distractions.
**Attendance**
Most of our class meetings will be devoted to lectures and hands-on exercises, so regular attendance and active participation are essential. You may **miss one class**—for any reason—without penalty. Each additional absence will lower your course grade by 5%, and six or more absences will likely result in a failing grade for the course. Because our time in class is limited, promptness is important. Each instance of arriving late or leaving early will count as 1/2 of an absence. If you are late for class, it is your responsibility to make sure you have not been marked absent.

**Honor Code**
The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.
<table>
<thead>
<tr>
<th>Week</th>
<th>Day</th>
<th>Date</th>
<th>In-class</th>
<th>Deadlines</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Tu</td>
<td>16-Jul</td>
<td>Lecture-1: Introduction to GIS; Ex-1: Basic GIS Operation</td>
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<td>17-Jul</td>
<td>Lecture-2: GIS Data Type and ArcGIS; Ex-2: GeoDatabase</td>
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<td>18-Jul</td>
<td>Lecture-3: Mapping Ex-3: Mapping</td>
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<td>Week 2</td>
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<td>24-Jul</td>
<td>Lecture-5: Census, Ex-5: Data and Census data</td>
<td>Ex-1, 3, and 4 Due on July 24, 5pm</td>
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<td>25-Jul</td>
<td>Lecture-6: Data Join Ex-6: Data Query and Spatial Join</td>
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<td>Week 3</td>
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<td>Lecture 7: Geo-coding Ex-7 Geo-Coding</td>
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<td>31-Jul</td>
<td>Lecture-8: Vector Analysis Ex-8: Vector and Vector Based Analysis</td>
<td>Ex-5, 6, and 7 Due on July 31, 5pm.</td>
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<td>Lecture-9: Raster Analysis Ex-9: Raster and Raster Based Analysis</td>
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<td>Tu</td>
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<td>Lecture-10: Ex-10: Neighborhood Connectivity</td>
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<td>W</td>
<td>7-Aug</td>
<td>Lecture-11: Model Builder Ex-11: Model Builder</td>
<td>Ex-8, 9 and 10 Due on Aug-7, 5pm Final ProjectPosted</td>
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<td>8-Aug</td>
<td>In class working time Final Project Preparation</td>
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<td>14-Aug</td>
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<td>Th</td>
<td>15-Aug</td>
<td>In class working time Final Project Preparation</td>
<td>Final Project Due on Aug 18, 5pm.</td>
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