GEOG 7945: Socio-Economic Applications of GIS
Syllabus for Fall 2021

Instructor: Dr. Fahui Wang
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Lectures: Tuesday 1:30 AM-2:50 PM in 245 Howe-Russell-Kniffen
Labs: Thursday 1:30 AM-2:50 PM in E220 Howe-Russell-Kniffen
Open lab access: E220 Howe-Russell-Kniffen
Office Hours: Tuesday & Thursday 11:30AM-12:30PM in 262A Howe-Russell-Kniffen
Credits: 3 hours

COURSE OBJECTIVES

1. To understand *analytical/quantitative methods* for analyzing and interpreting geographic data.
2. To implement the methods in a *geographic information systems* (GIS) environment (especially on the ArcGIS Pro platform).
3. To apply the methods in *social sciences, public policy and planning*.

This course is part of the requirements for the GIS Graduate Certificate.

PHYSICAL OR LEARNING DISABILITIES

Any student with a documented disability needing academic adjustments is requested to speak with the Office of Disability Services and the instructor, as early in the semester as possible. All discussions will remain confidential. This publication/material is available in alternative formats upon request. Please contact the Office of Disability Services, 112 Johnston Hall, 225-578-5919. I look forward to talking with you soon to learn how I may be helpful in enhancing your academic success in this course.

EVALUATION

"Walk the walk". The only way to learn GIS is to practice, practice and practice. The course is projects-oriented. Concepts, methods and skills are built into each project.

1. *Class projects*: A practice project is designed for you to refresh your basic GIS skills (no report is required). For the other four projects, a report is required for each. These case studies are designed to build your GIS-based spatial analysis skills and help you understand the topics discussed in class; accounting for 40% of your grade.
2. *Final Independent Project (Paper)*: You have 4-5 weeks to develop and finish an independent project utilizing important skills you have acquired from the class; accounting for 60% of your grade. It is my hope that some of you will develop the project related to your thesis (dissertation), and continue to expand and polish it after the semester—perhaps publish it as a journal article or a book chapter.

Policy:

- Late answers to projects will not be accepted.

A letter grade will be initially assigned to each of your projects, and the equivalent numerical score

(A+=4.3, A = 4, A- = 3.7, B+ = 3.3, B = 3 …) will be posted on the Moodle. An overall numerical score for the course is calculated as the weighted average of all components (four class projects and final independent project). Based on the overall score, a final letter grade is assigned according to a distribution curve. Based on my experience in the past, usually the top 40% gets A, the next 40% gets B, then 10% C, 10% D or F.
The letter grades A, B, C, and D have the suffix plus (+) or minus (-) included to distinguish higher and lower performances within each of these letter grades. The letter grade F does not include the plus/minus distinction.

PREREQUISITES
It is assumed that you have at least one introductory statistics and one GIS class (using ArcGIS as the platform). Motivation is the key to success in this class (and beyond): motivated to learn some valuable skills and get started with real research!

LAB ARRANGEMENT
We will meet in 245 Howe-Russell-Kniffen for lectures in class hours on Tuesday. Students are encouraged to work on projects in E221 together in class hours on Thursday. No teaching assistants are available for this class. Help from me is just a knock (or an email) away. When we start working on the final independent project (beginning in the 11th week), no classes or labs will be scheduled.

TEXTBOOKS
Required:
- Wang, F. 2015. *Quantitative Methods and Applications in GIS*. Boca Raton, FL: CRC Press. ISBN 978-1-4665-8472-3 (available http://www.crcpress.com/product/isbn/9781466584723)
  A direct link to the eBook is:
  http://libezp.lib.lsu.edu/login?url=http://www.crcnetbase.com/isbn/9781466584730
- some journal articles posted under the course folder in Moodle.

COURSE OUTLINES (tentative plan)
1. Week 1-2: GIS-based Trade Area Analysis and Applications (Chapters 2&4)
   Project 0. Estimating Trade Areas of Public Hospitals in Louisiana (for your practice, no report required)
2. Week 3-4: GIS-based Spatial Accessibility Analysis and Applications (Chapter 5)
   Project 1. Measuring Primary Care Accessibility in Chicago
3. Week 5-6: GIS Application in Urban and Regional Density Patterns (Chapters 6, 7, 10 & 12)
   Project 2. Analyzing Urban Population Density Patterns in Chicago
4. Week 7-8: Basic Spatial Statistics and Implementation in GIS (Chapter 8)
   Project 3. Spatial Cluster and Regression Analyses of Homicide Patterns in Chicago
5. Week 9-10: GIS-automated Regionalization and Applications (Chapter 9)
   Project 4. Constructing Geographic Areas for Analysis of Late-Stage Cancer Risk in Chicago

6. **Week 11-15: Final Independent Project: GIS-based Analysis of _____**
   (Submit your report/paper based on the project on Moodle, due date TBA)