GTECH 385.01/GTECH 785.01/EES765 Urban Applications of GIS

Spring, 2022

Class hours: Tuesday 5:35 -- 8:25 p.m.
Class location: HN1090B-1
Professor: Hongmian Gong
Phone: 212-772-4658
Office hours: Tuesday 4:30 p.m. -- 5:30 p.m., or by appointment.
Email: gong@hunter.cuny.edu
(Please use phone during office hour and use email off office hour)
Web page: http://www.geography.hunter.cuny.edu/~hgong
Department office and phone: HN 1006, 212-772-5265

Course Objectives and Learning Outcomes

This course will discuss the data, methodologies, and examples of using GIS to solve urban problems in economic, transportation, social, planning, and environmental settings. Although most of the lab exercises in the class are about other cities in the U.S., examples from New York are provided based on the research of the instructor. We will explore the use of GPS for travel survey in New York City, applying Central Place Theory to library service research in New York City, and defining urban area in the New York metro region using satellite imagery.

The course will use ArcGIS Pro as the main software, with one lab using ENVI.

By the end of the course, students should be able to:
1. know some basics of ArcGIS Pro and ENVI;
2. use GIS overlay analyses for various urban issues;
3. run geographical weighted regressions for urban analyses;
4. work with satellite images and combine them with vector data for urban analyses;
5. use GIS to conduct small research projects addressing real world urban issues.

Prerequisite

GTECH 201 for GTECH 385.01; GTECH 709 (GISystems) or equivalent for GTECH 785.01 and EES 765.

Optional Textbook

Richard P. Greene & James B. Pick, *Exploring the Urban Community: A GIS Approach, 2nd Edition.* Upper Saddle River, NJ: Pearson Prentice Hall, 2012. ISBN: 9780321751591 (Paperback) or ISBN-13: 9780321709721 (E-Book)

Course Evaluation

Grade will be based on the following Criteria:

Self introduction and labs	60%
Project paper and presentation	40%

Notes:
1. Each student is required to do an urban-related research project at the end of the semester, using the GIS techniques taught in the course. The data should be real, not hypothetical. Undergraduate students are expected to hand in an 8-page (double spaced) paper and graduate students a 10-page (double spaced) paper outlining the data, methodology, conclusion, and significance of their projects.

2. A late assignment or paper will be marked down by 10% each day. Bonus points, at the discretion of the instructor, are given to students who provide technical help to others in the discussion board.

3. Class attendance is mandatory. Students are responsible for obtaining any information presented in class during an absence.

4. No incomplete (IN) is given as a grade unless it is under the most extraordinary, and documented, circumstances. To request IN as a grade, please complete a Contract to Resolve Incomplete Grades form at
http://www.geo.hunter.cuny.edu/forms/Contract%20to%20Resolve%20Incomplete.pdf and email it to the instructor by May 24.

5. Credit/No Credit (CR/NC) as a final course grade is available to undergraduate students only. To receive CR/NC you must have completed all of the course requirements (all labs, project paper and presentation). Please consult https://hunter.cuny.edu/students/registration/register-for-classes/credit-no-credit/#instructions.

Course Content and Tentative Schedule

Week 1 (Feb. 1): Introduction (online)

Week 2 (Feb. 15): Census Geography (Chapter 2 Lab: Defining a metropolitan statistical area);

Week 3 (Feb. 22): Systems of Cities (Chapter 4 Lab: China's urban rank change)

Week 4 (March 1): Urban Transportation (Lab: GPS for urban travel survey in New York City)

Week 5 (March 8): Segregation (Chapter 7 Lab: Centrographic methods)

Week 6 (March 15): Migration and Residential Mobility (Chapter 6 Lab: Gravity model and site selection for an education center); ESRI web course "Regression analysis using ArcGIS"

Week 7 (March 22): Internal Structure of Cities and Regression (Chapter 3 lab: Squatter settlements in Mexico City)

Week 8 (March 29): Lab: Public library use in New York City

Week 9 (April 5): Environmental problems (Chapter 10: Air pollution and Asthma in Chicago)

Week 10 (April 12): Course Project; Industrial Location (Chapter 8 Lab: Location quotients for industries in Chicago)

Week 11 (April 26): Project Brief due; Urban Expansion (Chapter 9 Lab: Concentric ring analysis of Sprawl in Chicago)

Week 12 (May 3): Lab: Measuring urban sprawl using nighttime imagery

Week 13 (May 10): Lab: Defining urban area in New York metro region using satellite imagery

Week 14 (May 17): Course Project

Week 15 (May 24, 5:35 to 7:35 pm): Project paper due before class, presentation (online)

Notes on Schedule

1. February 8: Classes at Hunter College follow a Friday schedule, so we don't have class on this Tuesday.

2. April 19: Spring recess, no classes at Hunter College.

Email Policy

Students should check the Announcements section in Blackboard, the lab instructions for that week, and the course syllabus before emailing the instructor. Content of the emails is limited to what cannot be waited until the next class or office hour. Emails are generally replied to within one business day and no later than two business days. Remember to include the course title in the subject line and sign your full name as it appears in CUNYFirst.

Hunter College Policy on Academic Integrity

Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The College is committed to enforcing the

CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.

ADA Policy

In compliance with the American Disability Act of 1990 (ADA) and with Section 504 of the Rehabilitation Act of 1973, Hunter College is committed to ensuring educational parity and accommodations for all students with documented disabilities and/or medical conditions. It is recommended that all students with documented disabilities (Emotional, Medical, Physical, and/or Learning) consult the Office of AccessABILITY, located in Room E1214B, to secure necessary academic accommodations. For further information and assistance, please call: (212) 772- 4857 or (212) 650-3230.

Hunter College Policy on Sexual Misconduct

 "In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.

a. Sexual Violence: Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).

b. All Other Forms of Sexual Misconduct: Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link: http://www.cuny.edu/about/administration/offices/la/Policy-on-SexualMisconduct-12-1-14-with-links.pdf

Syllabus Change Policy

Except for changes that substantially affect implementation of the evaluation (grading) criteria, this syllabus is a guide for the course and is subject to change with advance notice. Any changes made to the syllabus will be announced in the class and/or posted in Blackboard under Announcements.