

GTECH 20100 - Introduction to Geographic Information Science
Monday and Wednesday, 5:35 p.m. to 8:25 p.m.
Hunter North 1090B-2

Instructor: Manju Adikesavan

Office Hours: Monday and Wednesday, before or after class, by arrangement over email

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Course Overview:

The general theme of this course could be entitled Geography, the relationship game. Geography is very much about relationships and in this course, we will establish a scientific framework for reasoning about relationships such as spatial coincidence, distance, vicinity, scale, geometry and attributes, geographic features and their representation on a map, etc. Hand-in-hand with each of the relationships, you will learn how to apply your knowledge using geographic information system (GIS) tools.

Goals: Familiarize students with a set of spatial concepts and GIS tools to implement them.

Objectives: Abstraction of everyday geographic observations to put them to use in a spatial decision-making context.

Outcomes: By the end of this course, you will be able to:

1. Distinguish different GIS data models and formats and identify how they can be analyzed using GIS
2. Describe and design a GIS production process from data modeling and acquisition to editing, analysis, and cartographic output.
3. Work independently with GIS, determine what is easy to do with GIS, what will take you considerable amounts of time, and which spatial research questions do not lend themselves to a GIS solution.

Required Textbook:

None; all learning materials will be available on BlackBoard.

Pre-requisites:

GEOG 10100 or 15000, MATH 10100

Useful Learning Materials:

Albrecht, J. 2007. *Key Concepts and Techniques in GIS*. London: Sage. ISBN 978-1412910163

de Smith M, Goodchild, M and P Longley. 2011. *Geospatial Analysis*. Leicester: Winchelsea Press. Free access at <http://www.spatialanalysisonline.com/> or as Amazon Kindle ebook (no ISBN).

Donnelly, F. 2017. *Introduction to GIS Using Open Source Software*. Available for free at http://faculty.baruch.cuny.edu/geoportal/resources/practicum/gisprac_2017july_fd.pdf

QGIS. 2017. *A Gentle Introduction to GIS*. Available for free at http://docs.qgis.org/2.18/en/docs/user_manual/

Policies:

Attendance is crucial. Each week's content builds on material covered in prior weeks hence adherence to the course timetable and deadlines is vital for success in this course. Much of the learning is active requiring undertaking the practical assignments systematically and learning the tools through hours of practice. Class participation includes timely attendance at laboratory sessions, participation in class discussions, completion of in-class tasks, and accomplishment of assignments on time. You are expected to behave responsibly towards the instructor and fellow students by not imposing a dominating or threatening presence in conversations and discussions, and by allowing others to speak and be heard, especially if they are shy and their voice weaker than yours.

Assignments are due one week after they are given in class. It is in your best interests to meet deadlines for assignments. Incomplete grades and time extensions are not an option for this course. Unless otherwise instructed, you will submit assignments in electronic form.

Electronic recording devices are allowed during lectures. All other personal electronics should be turned off before coming into the classroom. This includes cell and smart phones.

Computers may be used for taking notes only, and if you use them for activities not related to classroom content (e-mail, Facebook chats, surfing the Net...), you will be asked gently, but firmly, to turn them off.

Lab policies are described in detail in <http://www.geo.hunter.cuny.edu/techsupport/rules.html>. *Web-enhancement* in the context of this course means everything pertaining to this course will be communicated through BlackBoard. You are required to check the BlackBoard course site daily. All changes to the syllabus will be announced on BlackBoard. All lecture and lab materials are accessible through BlackBoard, and this is also the place where you upload your assignments. Your exams and lab assignments will be graded based on what you have uploaded to BlackBoard and this is where you will find your grades and may access course statistics that help you to assess your standing at any given time.

All email messages about this course should include GTECH 20100 in the subject line, and be signed with your full name as it appears in CUNYfirst. Any email with question about assignments, projects and exams will be answered within 24 hours unless noted otherwise.

Tips for successful learning:

1. Schedule time to practice lab exercises and submit assignments on time
2. Figure out your learning and working style – the [Center for Student Achievement](#), HW Rm 417, offers workshops and other resources to help you succeed in class.

3. Get a study buddy or form a study group, if that works for you and find locations suitable for group study. If you learn best by yourself in a quiet environment, identify places where you can work undisturbed.
4. Learn from multiple sources - your peers, instructor, the internet, etc.
5. Read lab exercises and readings with care – never assume meanings, lookup/ask meanings of new terms, and note them for your personal GIS glossary.

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. Plagiarism, dishonesty, or cheating in any portion of the work required for this course will be punished to the full extent allowed according to Hunter College regulations.

Academic dishonesty is simply not acceptable. Helping other students on use of the software is, however, encouraged.

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.

Special accommodations for persons with disabilities are provided upon request. Please see the instructor if you feel the need for them.

Hunter College Policy on Sexual Misconduct

In compliance with the CUNY Policy on Sexual Misconduct, Hunter College affirms 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 relationship. 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, on 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) of 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-Sexual-Misconduct-12-1-14-with-links.pdf>

Syllabus change policy: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice. All changes will/would be announced on BlackBoard, which you are expected to check daily.

Criteria for Evaluation:

Evaluation of your performance is measured in theory and practice. The theory part is covered in the midterm and final exam. GIS can only be learned by doing. Hence 50% of the course grade is based on lab exercises and a final project. Active participation is an essential learning tool and hence encouraged by allowing for 5% of the course grade. 100 points is a definite possibility in this course. Final evaluation will be based on the following breakdown:

Evaluation	Grade %	Date
11 lab exercises	33%	Each assignment is due before the next one starts
Midterm exam	15%	March 18, 2019
Individual Project	17%	March 20, 2019 – May 13, 2019
Final exam (cumulative)	20%	May 20, 2019
Quizzes	10%	As noted in the course schedule
Participation	5%	Observed throughout the semester

Policy of IN as a final course grade: The instructor cannot accommodate students who are late in their work or do not show up for the exam or project presentation. And, unless you produce a medical certificate or letter from the Office of Accessibility, the instructor will not give the final grade of IN (incomplete). You must request an IN within 48 hours of the final exam and make arrangements to meet with your instructor and sign a Contract to Resolve and Incomplete Grade. The contract will set out the terms and conditions for the resolution of the IN. You have one semester to resolve the IN before it becomes and FIN.

A grade of “WU” will be assigned if a student stops attending class after official attendance verification, does not officially withdraw from the course (“W” grade) and does not submit the coursework (exams/assignments) required for earning a letter grade.

Credit/No Credit Policy: The CR/NC option will be honored only if the conditions stated on the CR/NC form are satisfied: all course work has been completed and you earned grades such that you accumulate at least 50 points total in the course. Credit/No Credit forms will be accepted up

to 15 minutes before the scheduled start of the final exam. Students on academic probation are ineligible. Details of Hunter’s Credit/No credit policy and form can be found at <http://www.hunter.cuny.edu/advising/how-to/file-credit-no-credit-cr-nc>.

Course Schedule:

Week	Date	Day	Topic
1	Jan-28	M	Session 1: Getting started; semester overview Lab0: Getting to know your lab computer; Working with Excel spreadsheets
	Jan-30	W	Session 2: Mathematical Foundations Lab 1: Thinking geographically
2	Feb-04	M	Session 3: Geography as context Lab 1: Thinking geographically
	Feb-06	W	Session 4: Presenting data and ideas, portfolio development - Part I Lab 2: Presenting data and ideas Quiz 1: Sessions 1 through 3
3	Feb-11	M	Session 5: Presenting data and ideas, portfolio development - Part II Lab 2: Presenting data and ideas
	Feb-13	W	Session 6: Principles of GIS - Part I Lab 3: First Steps with ArcGIS Online
4	Feb-18	M	Presidents’ Day - College is closed
	Feb-20	W	Session: Principles of GIS - Part II Lab 3: First Steps with ArcGIS Online
5	Feb-25	M	Quiz 2: Sessions 4 through 7 Session 8: US Census data and mapping - Part I Lab 4: Accessing and displaying Census data with QGIS
	Feb-27	W	Session 9: US Census data and mapping - Part II Lab 4: Accessing and displaying Census data with QGIS
6	Mar-04	M	Session 10: Data input, where to find data Lab 5: Interrogating NYC'S Data Mine with Carto
	Mar-06	W	Session 11: Data input, where to find data Lab 5: Interrogating NYC'S Data Mine with Carto
7	Mar-11	M	Quiz 3: Sessions 8 through 11 Session 12: From shape files to databases - Part I Lab: 6 Organize a geographic database with ArcCatalog
	Mar-13	W	Session 13: From shape files to databases - Part II; Midterm Exam Review Lab: 6 Organize a geographic database with ArcCatalog

8	Mar-18	M	Midterm exam
	Mar-20	W	Project proposal due Session 14: Projections and reference systems Lab 7: Comparing map projections in ArcMap
9	Mar-25	M	Session 15: Projections and reference systems; Setting up a GIS project Lab 7: Comparing map projections in ArcMap
	Mar-27	W	Session 16: Basic GIS analysis operations - Part I Lab 8: Getting started with GIS analysis
10	Apr-01	M	Session 17: Basic GIS analysis operations - Part II Lab 8: Getting started with GIS analysis
	Apr-03	W	Quiz 4: Sessions 14 through 17 Session 18: Geoprocessing - Part I Lab 9: Geoprocessing
11	Apr-08	M	Session 19: Geoprocessing - Part II Lab 9: Geoprocessing
	Apr-10	W	Session 20: Introduction to raster GIS - Part I Lab 10: Working with raster data (ArcGIS)
12	Apr-15	M	Session 21: Introduction to raster GIS - Part II Lab 10: Working with raster data (ArcGIS)
	Apr-17	W	Session 22: Map Design - Part I Lab 11: Basic mapping with ArcGIS
	Apr-22	M	Spring Recess - College is closed
	Apr-24	W	Spring Recess - College is closed
13	Apr-29	M	Quiz 5: Sessions 18 through 22 Session 23: Map Design - Part II Lab 11: Basic mapping with ArcGIS
	May-01	W	Session 24: GIS & Society - Part I Lab: Project
14	May-06	M	Session 25: GIS & Society - Part II Lab: Project
	May-08	W	Session 26: Final Exam review Lab: Project
15	May-13	M	Session 27: Project presentation
		M	Final Exam - TBD