GTECH 201 – Introduction to Geographic Information Science

Fall 2020

Tuesdays and Fridays, 9:45 AM – 12:30 PM

Place of Instruction: fully online
Credits/hours: 4/6
Instructor: Jochen Albrecht, jochen.albrecht@gmail.com
Office Hours: There are no dedicated hours, but you are encouraged to contact me anytime
Office: HN 1032 (although not applicable this semester)
Pre-requisite: GEOG 101 or 150; MATH 101

Course Description

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 tools.

Goal: Familiarize students with a set of spatial concepts and 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 should have a good understanding of different types of geographic data and how they can be analyzed using geographic information systems. GTECH 201 forms the basis for a row of other GTECH courses that cover the range from cartography to advanced GIS applications. GTECH 201 is a required course because the skill set you acquire here will serve you well in all jobs related to geography and environmental studies.

Textbook

None – all reading materials will be posted on BlackBoard.

Criteria for evaluation

I do not grade on a curve. If many students get good grades, great! If many have mediocre grades, so be it; it will be disappointing and an incentive to do better. I will not try to trick you with impossible exams. Ideally, all can have 100 points! Final evaluation will be based on the following breakdown:

Lab exercises	33%
Quizzes	5%
Individual studio project	17%
Participation in class	20% (we will use the BB discussion board extensively)
Midterm	5%
Final exam	20%

Policy on Incomplete (IN) and Credit/No-Credit (CR/NC) grades

A final grade of IN (incomplete) will not be given except under the most extraordinary, and documented, circumstances. CR/NC is not available to students enrolled in GTECH 201.

Course Policies

All our synchronous sessions will be recorded via BlackBoard Collaborate. If you have a problem with that, please drop the course. While I acknowledge that most of us are working from home and have no dedicated quiet office, I urge you all to be fully present (without distractions) during our synchronous sessions.

Announcements and grades will all be posted on BlackBoard.

This fall 2020, all our courses are taught 100% online. The course is officially split into a lecture and a lab component, both to be held in sequence twice a week. In reality, some of our meeting days will be lecture only, others lab only or a mix of the two. I will strive for the mix to make our meeting more interactive but sometimes it takes a more than a good hour to move through some lecture or lab material. The same is true for synchronous versus asynchronous sessions. Except for the first two weeks, all lecture material will be pre-recorded and you are expected to work through them ahead of the respective lecture. We will then have a live/synchronous lecture session accompanied by a life/synchronous lab. The labs are structure in such a way that during the synchronous part, you will be introduced to the techniques in principal. You will then have until the next lab session to work on your own on what could be labeled an asynchronous homework component.

Most of your work on the cartographic studio (your individual GIS project) will be asynchronous as well, although you are encouraged to contact the instructor for 1:1 (online) meetings whenever you run into a problem.

In consequence, you should reserve on your personal calendar the official time slots on Tuesday and Friday morning to always be ready for logging into BlackBoard for a synchronous (live) session. Not every Tu/Fr will be live and sometimes, it will be just for a lecture or a lab rather than both. Also, as of the time of writing, it is impossible to forecast whether a particular Tuesday or Friday session will be live; this is the first time that we are forced to offer GTECH 201 fully online and your professor will play it by ear how we are progressing through the material. The provisional schedule at the end of this syllabus is therefore tentative and subject to change (which will always be announced on our GTECH 201 BlackBoard homepage.

Our synchronous sessions will be conducted via BlackBoard Collaborate. In addition, there is the expectation that you will meet both in small groups and with your instructor at pre-arranged times and engage on an almost daily basis with your peers using the BlackBoard Discussion Board. Your peer meeting may (according your internal group agreements) use other electronic tools such as the free but very useful Jitsi. However, all official communication will be either via email or through BlackBoard. You are required to check the BlackBoard course site on a *daily basis*. All changes to the syllabus will be announced on the course home page. All lecture, lab and reading materials are accessible through BlackBoard, and this is also the place where you upload your assignments to. Your exams and 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.

Communication

All email messages about this course should include GTECH 201 in the subject line and be signed with your full name.

Participation

Attendance is crucial. Assuming that the class-learning environment is active learning, adherence to protocols and the course timetable is very important. Lateness in arriving at class, even in our new online environment, will not be tolerated. Class participation includes timely attendance and participation in organized class discussions, accomplishments of in-class tasks, and preparation of the reading assignments.

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 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

The policy is available at http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf

Tentative Schedule

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 on a *daily* basis. This syllabus is subject to updates. Changes will be announced in class and on Blackboard.

Date	***Topic***
Aug 28	Introductions; going over the syllabus, examples of previous software projects
Sep 01	Spatial reasoning; spatial relationships in everyday life
Sep 04	Formalizing spatial relationship; mathematical spaces
Sep 08	Simple data structures, tables, encoding of hierarchical relationships
Sep 11	Visualizing tabular data; business graphics
Sep 15	Communicating with presentation software and web pages
Sep 18	No class (CUNY holiday)
Sep 22	Spatial data in tables (and databases); the geo-relational principle
Sep 25	The vector GIS data model
Sep 29	CUNY Monday, no GTECH 201
Oct 02	Raster and network data model
Oct 06	Different ways to represent the 3rd spatial dimension
Oct 09	Conceptual models and how they translate into data requirements
Oct 13	Data sources
Oct 16	Ways to get spatial (but non-GIS) data into a GIS; geocoding
Oct 20	Midterm exam
Oct 23	Project management; requirements of the cartographic studio
Oct 27	Spatial data formats; open versus commercial data formats
Oct 30	Geodetic datums and projections
Nov 03	Geographic coordinate systems
Nov 06	The difference between
Nov 10	(Geospatial) web services
Nov 13	Intro to GIS analysis: reorganizing data
Nov 17	Buffer and overlay operations
Nov 20	Geoprocessing
Nov 24	Intro to raster GIS
Nov 25	CUNY Friday, GTECH 201 meets on the morning before Thanksgiving
Nov 27	Thanksgiving holiday, no GTECH 201
Dec 01	Advanced analysis operations and web services
Dec 04	Map symbolization and labels
Dec 08	Cartographic design considerations
Dec 11	Studio presentations
Dec 15	Final exam

Instructor expectations

Hunter College...

This is a place where students come to learn. It's a place where knowledge is developed and hopefully it's a place where students can see and participate in its development. Unlike previous schooling you don't have to be here, so we'll assume that you want to be here and that you are here to actively seek knowledge and skills.
With assumptions that you are (a) here of your own free will and (b) are actively seeking to gain knowledge and skills, there is only one fuzzy area (for some) - how to succeed! It's really quite simple: have fun. If you are enjoying what you are doing, you will succeed; if you are taking subjects or studying in a particular program and not enjoying it, you are unlikely to be successful.

A few words on success and enjoyment. Success is not just measured by your grade (but passing does help!), it is also measured by how you feel about what you are doing. You are the only person who can really judge whether you are successful - have you met your own expectations? Enjoyment does not necessarily mean stress free living (although maybe it is for some!). Taking only subjects that you were told were "easy" doesn't guarantee enjoyment; some of us require a challenge in life! Again, only you are in a position to determine what you find enjoyable. A final thought on what a university is: this is also a place where faculty comes to learn...

GTECH 201 Introduction to Geographic Information Science

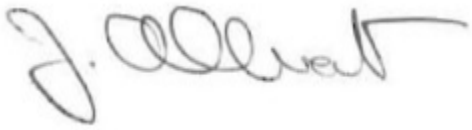
Students: to be successful you should be taking this subject because you want to take it, not because someone told you that you need to take it and you must be actively seeking knowledge and skills. This subject is a good participation "sport", but it's not a really good spectator event. You need to be proactive, be able to try something new, look at things from a new (spatial) perspective, ask questions, read read read. Study every day-if you study less than three days a week you are wasting your time completely. You need to know when to take a break, get some fresh air, rest your eyes (a Buddhist philosophy is quite useful...). Attend all sessions. When your absence is unavoidable, make sure you catch up on what was missed. Plan your week as best as possible and make the commitment to spend the amount of time needed for you to be successful. Get a study partner or three, if this works for you. Remember, even if you are able to survive by cramming for exams, the subject matter will only go into short term memory. Eventually, you will reach a level where you can no longer survive by cramming, and your study habits will kill you.

Faculty: to be successful, I need to know that I've "made a difference" to at least some of my students, i.e., they feel successful. I'll provide a coherent subject structure, I'll deliver the best lecture possible on the day, and pointers to resources where possible and I will provide sound practical instruction and practice my listening skills so that I can understand what difficulties you may be having, so that we can resolve them. Furthermore, I am available and approachable; ask questions during class and at other times; use my almost continuous online presence to see me. Faculty have shown disappointing prowess at extra-sensory perception, please help me out!

We often lecture in subjects we are considered to have some expertise in; we are therefore fairly interested in the subject matter. We too are students in that we are continuing to learn new things in our areas of expertise and sometimes we are the ones who develop new knowledge in our areas of expertise!

Theory vs. practice: in lectures I try to provide an overview of the most important knowledge, but this never replaces the practical work on your cartographic studio. Sometimes lectures and labs will cover the same ground, but often, the best that can be done in some twentysix sessions is to provide

just a "flavor" of the subject matter, something to whet your appetite, something to set the context for your own GIS work.

Finally...
The reason for this page of amateur pop psychology is twofold: (a) first I hope that prospective students take this subject for the right reasons (i.e. they believe that they will enjoy it) and are in the right frame of mind to be successful and (b) second, I hope that with a little mutual empathy the learning experience can be made better for both student and teacher. If we are not having fun, we are both doing something wrong!

I wish us a lot of fun in this course,