

GTECH 733

GeoComputation II

Syllabus

Instructors

Sean Ahearn (Tuesday 3:00 PM - 5:00 PM)

Course Times

Thursday, 17:35 – 21:15

Course Rooms

One-line & N1090

Short description

This course will explore various spatial-temporal models and implement them using the Python programming language. We will examine both proprietary and open source frameworks for our modeling. There will be no incomplete for this course. Grades will be assigned based on the work that is completed.

Prerequisites

GTECH 731 & 732

Textbook

References

A series of topical articles will be distributed

Expected Learning Outcomes

By the end of the course it is expected that students will be able design, develop, implement and validate a series of spatial-temporal models in the python programming environment. Models will include aspects of Monte-Carlo simulation, the Knox statistic for space-time analysis, probabilistic graph theory, Cellular automata models and Agent-based Models. Additionally, we will examine how Neural Networks can be uses in spatial-temporal modeling.

The primary goal of this course will be to enable students to understand the strengths and limitations of modeling and to write their own advanced GIS models using the python programming language.

Evaluation

Abstracts	10%
Labs	60%
Final project	30%

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. Only students who have completed ALL course requirements including all writing/lab assignments and exams will be eligible for a final grade of CR/NC.

Week	Lecture Topic	Homework/Lab Topic
8/25	Introduction	Review CA code & read article
9/2	Cellular Automata Models	CA Assignment
9/9	Agent-based Models	ABM assignment
9/23	Agent-based Models	Cont.
9/30	Spatial-temporal Models	Knox statistic/ Stat-scan
10/7	Spatial-temporal Models	Cont.
10/14	Markov Models	MM Assignment, readings
10/21	Cont.	Cont.
10/28	Epidemiological Models	Epi assignment
11/4	AI & Deep Learning (NN)	NN assignment
11/11	Cont.	Cont.
11/19	Project proposal	Project proposal
12/2	Projects	Projects proposal presentations
12/9	Projects	
12/16	Projects	Final project presentations

Course Policies

Communication

All email messages about this course should include GTECH 733 in the subject line and be signed with your full name.

Web-enhancement

Everything pertaining to this course will be communicated 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 and lab materials are accessible through BlackBoard, and this is also the place where you upload your assignments to. 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.

Late Policy

Labs and the answers to the questions should be emailed on the due date before the beginning of the class at 5.35pm. Late work will be downgraded 10% for each day late after the due date. These rules will also be applied to homework and abstracts. If you get behind in this course, it will be difficult to catch up. If you get behind for any reason talk to the class instructor early. Unless for a serious documented emergency reason, requests for handing in late work can not be honored.

Lab Access

The lab(s) (room HN 1090B) are open 7 days a week, 24 hours a day, and students with appropriate access are entitled to work in these labs when the labs are not being used for teaching. Additional information on labs and lab policies is available here:

<http://www.geo.hunter.cuny.edu/techsupport/rules.html>

Please ensure you have a geography account - login and password. You will still be responsible for handing in the labs on time if your account is suspended because of non-compliance.

Class Climate

Hunter has made a conscientious effort to increase diversity in the student, staff and faculty member populations. To ensure that all class members feel welcomed and equally able to contribute to class discussions, we will all endeavor to be respectful in our language, our examples, and the manner in which we conduct our discussions and group work.

If you have any concerns about the climate of the class, please contact me.

Academic Standards

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. Be sure and reference all material you use. If you have any questions, please contact me!

Students with a Disability

If you have any type of disability (emotional, medical, physical, learning, etc.), there are support systems, resources, and accommodation actions available to you. If you wish to access any of these supports, resources or accommodations, I encourage you to contact the Office of [AccessABILITY](#), located in Room E1214B, to secure necessary academic accommodations. Please Note: You are under no obligation to disclose your disability.

Syllabus Changes

This is a new course, so changes to the syllabus are possible. Except for changes that substantially affect implementation of the evaluation (grading) statement, the current 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