**Instructor:** Dr. Juliana Maantay  
**Contact:** juliana.maantay@lehman.cuny.edu (718) 960-8574 [Contact by email is more effective and quicker]  
**Office Hours:** By appointment: meetings and advisement possible through email, phone, or ZOOM.  
**Class Meeting Place:** via ZOOM, phone, or email; **Class Meeting Times:** Class participants will meet at least four scheduled times, via Zoom.  
**Credits:** 4 credits  
**Pre-Requisite:** GEP 350 or equivalent Geography/GISc coursework or experience, and instructor’s permission.

**Course Description:**
This course is intended to provide the student with a solid grounding in research design and methodology by designing and conducting a Geography/GISc research project. Projects are to be substantive and original research efforts conforming to generally acceptable professional geographical practices and techniques. Standard geographical research design and analytical methods will be reviewed and incorporated into research projects. Students will be instructed in effective oral and graphic presentation techniques and writing of comprehensive research reports.

**Required Reading:**
- “Research Design and Proposal Writing in Spatial Science,” by J. Gatrell, G. Bierly, and R. Jensen, Springer Publications.  (Selected chapters available on Blackboard)

**Recommended Reading:**
- “An Introduction to Scientific Research Methods in Geography,” by D. Montello and P. Sutton, Sage Publications, 2006.  (Any edition of this book is fine, I believe there is a more recent edition than 2006, but if you find an inexpensive used copy on Amazon, etc., that’s acceptable, too.)

**Learning Objectives – Upon successful completion of this course, students are expected to be able to:**
- Express theoretical foundations of Geographic Information Science (GISc), cartography, and geography in general;
- Interpret, acquire, manage, analyze, display, and synthesize geospatial data, using both quantitative and qualitative methods;
- Design and create accurate, meaningful, and unbiased maps and cartographic products that are easily understood by the target audience;
- Integrate spatial analysis and GISc applications in an interdisciplinary manner, incorporating information and research questions from other fields, such as public health, botany, political science, geology, demography, criminology, environmental science, sociology, urban planning, etc.;
- Design, implement, and present a substantive research project using GISc as the organizing framework;

**Scheduled Class Meetings**, via Zoom, from 6:00 PM – 8:00 PM
- 8/28 – First Class meeting (Friday)  
- 9/25 – Second Class Meeting (Friday)  
- 11/6 – Third Class Meeting (Friday)  
- 12/4 – Fourth Class Meeting (Friday)  
- 12/14 - Final project reports and posters due (Monday, no class meeting)
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Course Timetable:

Class Meeting 1 – Introductions and Review of Class Requirements and Preliminary Project Ideas – 8/28/2020

Weeks 1-4:
- Read: Gatrell et al, Chapter 1 - Spatial Science and its Traditions; Chapter 2 - Literature Reviews; Chapter 3 - Research Questions; Chapter 4 - Data and Methods in Spatial Science. Optional Read: Montello and Sutton, Chapter 1 - Introduction: A Scientific Approach to Geography; Chapter 2 - Fundamental Research Concepts; Chapter 3 - Data Collection in Geography: Overview; Chapter 9 - Statistical Data Analysis;
- Select your research topic, and conduct literature review on it, and applicable GISc-related methods;
- Prepare written Initial Research Design, including hypothesis or questions to be answered;
- Conduct a Preliminary Data Needs Assessment and Data Acquisition plan;

Class Meeting 2 – Presentation of Preliminary Research Design and Literature Review - 9/25/2020

CLASS 2 DELIVERABLES:
- Short (one-pager) description of your narrowed-down project, including one or more laser-sharp, pin-pointed research questions;
- Table of data sets needed (use the Data table format provided), including data sources and status of acquisition for each data set;
- Flow Chart of project design (GIS analysis portion of project only);
- Literature Review, presented in the Lit Review table format provided;
- Be prepared to discuss your research design and literature review.

Weeks 5-8:
- Optional Read: Montello and Sutton, Chapter 10 - Data Display: Tables, Graphs, Maps, Visualizations; Chapter 11 - Reliability and Validity; Chapter 12 - Geographic Information Techniques in Research
- Refine research methodology;
- Capture and input necessary data;
- Preliminary data analysis;

Class Meeting 3 – Interim Progress Report on research projects - 11/6/2020

CLASS 3 DELIVERABLES:
- At least one preliminary Map Layout and a one-pager on Preliminary Findings.

Weeks 9-12:
- Optional Read: Montello and Sutton, Chapter 13 - Scientific Communication in Geography; Chapter 14 - Ethics in Scientific Research;
- Complete analysis of data;
- Map and charts production;
- Prepare draft of final findings;
- Prepare Power Point presentation of project background, methods, analysis, findings, and conclusions.

Class Meeting 4 – Presentation of Research Results – 12/4/2020

CLASS 4 DELIVERABLES:
- Oral Presentation of Project, via PowerPoint slides (10 minutes maximum per student presentation). You can also upload a short video of your presentation, if you prefer.
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**Weeks 13-15:**
- Prepare final maps and charts and written report of findings;
- Prepare large-format PowerPoint slide of poster of project (24” w x 36” h – portrait format).

**FINAL EXAM WEEK – Final Project Due (all materials to be submitted no later than Monday, December 14, 2020)**

**FINAL DELIVERABLES:**
- Final Project Report; (Format and outline is posted on BlackBoard)
- PowerPoint Slide of Large-format Poster of Project.
- Final PowerPoint Presentation of Project (if revisions are required from in-class presentation version).

**Course Requirements:**
- Submission and in-class presentation of Interim Deliverables in Classes 2 and 3 (September 28 and November 6): (30% of grade);
- Successful completion of research project by Class 4 (December 4), with PowerPoint oral presentation of project in Class 4: (30% of grade);
- Preparation and submission of written report (20%) and poster (20%) illustrating your project by December 14, 2020: (40% of grade).
- Attendance is required at every class meeting, since there will be interim and final presentations at each in-class meeting.

**Grading Policy:** Grades will not be curved, there will be no extra credit, and no grades will be dropped.

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**GISc Lab Etiquette:**

Due to the COVID crisis, the GISc Lab will not be accessible during the fall 2020 term. However, the GISc Lab Manager, Brian Morgan, will be working remotely and will be available to assist with lab-related questions, via Zoom or email. We will update you on schedules and so forth as this information becomes available to us. We are anticipating having our GISc lab tutors available during some regularly scheduled hours every week, but we have not yet received confirmation their hours. The tutors they are there to help you, if you get stuck. They are NOT to be considered a substitute for learning the software and methods on your own, however, so you must still try to figure things out and not become overly reliant on others for help. And although collaborative work with your classmates is encouraged as a good way to accelerate the learning process and reinforce concepts, we expect individual work products for all assignments and final submissions for this course.
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**Course Policies:**

**Lateness and absences:** Lateness or absence will count against your grades for the presentations of your deliverables, unless there is an emergency or it is cleared with the professor in a timely fashion before class. If you miss a session, it is your responsibility to check with your classmates for notes and other course materials.

**Cell phone use:** Since portions of the class, including the lectures and presentations, will be conducted in a synchronous manner, please refrain from using cell phones or checking social media during class.

**Late submission of assignments or exams:** Late assignments will generally not be accepted unless it is cleared with the professor well before the due date. Under special circumstances, unexcused late assignments may be accepted (at the professor’s discretion) but one full letter grade will be subtracted. If there is a medical reason for lateness, please supply documentation.

**Incompletes:** A grade of incomplete will only be considered if you are clearly making a good faith effort to complete the course (i.e., attending regularly, participating in discussions) and have a good reason for not completing the work (e.g. medical or family emergency). Incompletes must be arranged with the instructor IN ADVANCE of the end of the term. Undergraduates have one term to complete the missing work. Deadlines will be established by the instructor.

**Dropping:** The last day to drop the course with the grade of “W” is November 6 (no refund).

**Academic dishonesty:** Academic dishonesty will not be tolerated. Academic dishonesty includes, but is not limited to, cheating, plagiarizing (including “cutting and pasting” or paraphrasing information from the internet without proper citation), fabricating information or citations, facilitating acts of academic dishonesty by others, submitting work of another person or papers written for other courses, or tampering with the academic work of other students. Students may be asked to submit their notes and references to prove that their work is their own. Violators will be reported to the head of the Department and to the Dean of Student Affairs. For further clarification, please read CUNY’s policy on academic integrity at [http://lehman.smartcatalogiq.com/en/2015-2017/Graduate-Bulletin/App...](http://lehman.smartcatalogiq.com/en/2015-2017/Graduate-Bulletin/App...)

**Accommodation for Students with Disabilities:**

Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need accommodations are encouraged to register with the Office of Student Disability Services. For more information, please contact the Office of Student Disability Services, Shuster Hall, Room 238, tel #: 718-960-8441.

**The Academic Center for Excellence (ACE) and the Science Learning Center (SLC):**

Lehman College has two tutoring centers on campus. The ACE provides appointment-based and drop-in tutoring in the humanities, social sciences and writing, as well as general writing skills. The SLC provides drop-in tutoring for natural and computer science courses. Because campus is closed due to COVID this term, contact the tutoring centers directly to find out about remote tutoring, at [http://www.lehman.edu/issp](http://www.lehman.edu/issp), or ACE at 718-960-8175, and the SLC at 718-960-7707.

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The evolution of research building blocks, from data points to wisdom.