Spring 2016
EES 79903, Spatial Analysis of Urban Health
L: Fridays, once per month from 4:00-6:00 p.m., Gillet Hall, Room 311
Profs. Juliana Maantay and Andrew Maroko

DRAFT SYLLABUS
Lehman College, City University of New York
Department of Earth, Environmental, and Geospatial Sciences
GEP 610/EES 79903/PUBH 85100: Spatial Analysis of Urban Health
Spring 2016

Course Description:
This course focuses on urban health issues using a geographical framework and covers topics such as the historical perspective of health, place, and society; mapping and measuring health and health impacts; the social and spatial patterning of health; the geography of health inequalities and disparities; health and social/spatial mobility; and the effects of urban segregation, overcrowding, and poverty on disease. Current research, as well as the seminal early works on the geographies of health, will be reviewed. Geographic Information Science will be used in the laboratory exercises to illustrate the theoretical concepts and to produce worked examples of health geography. 3 credits, 4 hours

Course Meets:
Gillet Hall, Room 311 (classroom) Fridays, once per month, from 4:00 – 6:00 PM, dates as noted below.

Instructors:
Profs. Juliana Maantay and Andrew Maroko

E-mails:
Juliana.maantay@lehman.cuny.edu
Andrew.maroko@lehman.cuny.edu

Phones:
718 960-8574 (JAM)
718 960-1830 (ARM)

Office:
Gillet Hall, Room 325 (JAM)
Gillet Hall, Room 323 (ARM)

Office Hours:
Wednesdays, 2:00-4:00 PM and by appointment (JAM)
Wednesdays, 3:00-5:00 PM and by appointment (ARM)

Required Textbooks:
- All other chapters and papers will be provided in pdfs on Blackboard.
- Each week pertinent websites and blog postings will be provided on Blackboard for further background and introductory information to that week’s topic.

Learning Objectives (By the end of the course students will be expected to have):
- A thorough understanding of urban health issues and how to examine them through spatial analysis;
- Enhanced computer literacy, and the ability to conduct data exploration, geospatial analysis, and health mapping with GISc;
- Ability to interpret health data within an understandable GISc framework.
**In-Class Meeting, 4:00 – 6:00 PM, Friday, January 29th**

**Weekly Class Topics/Readings/Lab Exercises:**

1. History of health geography and the context of urban health – Part 1
   
   **Readings:**

   **Lab Assignment:** No Lab

   **Week 1 Written Assignment**
   **Responses due 3:00 PM, Tuesday, February 2nd, and Reaction Comments due 3:00 PM, Wednesday, February 3rd**

2. History of health geography and the context of urban health – Part 2
   
   **Readings:**

   **Lab Assignment A:** A re-examination of John Snow's cholera map - NOW with MAUP!

   **Week 2 Written Assignment**
   **Responses due 3:00 PM, Tuesday, February 9th, and Reaction Comments due 3:00 PM, Wednesday, February 10th. Lab Assignment A due 3:00 PM Wednesday, February 10th**

3. Exploring and measuring urban exposures/methods – Part 1: Proximity and containment
   
   **Readings:**

   **Lab Assignment B:** Analyzing Exposure using Multiple Ring Buffers and Relative Risk
4. Exploring and measuring urban exposures/methods – Part 2: Exploratory Spatial Data Analysis – interpolation methods and land use regression modeling

Readings:

**Lab Assignment C:** Exploring Exposure and Environmental Justice using Interpolation

5. Issues of Equity: Environmental Justice and Health Disparities

Readings:
- Pastor, M., Sadd, J., Morello-Frosch, R., 2007. *Still Toxic After All These Years: Air Quality and Environmental Justice in the San Francisco Bay Area*. Center for Justice, Tolerance, and Community, University of California, Santa Cruz. 16 pages

**Lab Assignment:** Lab C Continues - Exploring Exposure and Environmental Justice using Interpolation

Week 5 Written Assignment Responses due 3:00 PM, Tuesday, March 1st, and Reaction Comments due 3:00 PM, Wednesday, March 2nd. Lab Assignment C due 3:00 PM, Wednesday, March 2nd.
6. Social and spatial patterning of health

Readings:


Lab Assignment D: GINI Index and Low Birth Weight: Comparing Regional Differences in Health Outcomes

*Week 6 Written Assignment Responses due 3:00 PM, Tuesday, March 8th, and Reaction Comments due 3:00 PM, Wednesday, March 9th. Lab Assignment D due 3:00 PM, Wednesday, March 9th*

7. Accessibility to the Benefits of the Urban Environment

Readings:


Lab Assignment E: The Relationship between Health and Accessibility to Urban Parks using Network Analysis

*Week 7 Written Assignment Responses due 3:00 PM, Tuesday, March 15th, and Reaction Comments due 3:00 PM, Wednesday, March 16th. Lab Assignment E due 3:00 PM, Wednesday, March 16th.*
8. The Influence of Residential Segregation: Using Indices of Segregation
   Readings:
     Inequalities. Joint Center for Political and Economic Studies, 40 pages.
     67 (2): 281-315.

   Lab Assignment F: Inter-Urban Comparison using Segregation Indices

   Week 8 Written Assignment Responses due 3:00 PM, Tuesday, March 22nd, and Reaction
   Comments due 3:00 PM, Wednesday, March 23rd (No Lab Assignment Due)

   Association of American Geographers (AAG) / International Society of Urban Health (ISUH) Meeting
   March 29th – April 4th, 2016

9. Physical and Social Vulnerabilities
   Readings:
     Estimate Vulnerable Urban Populations for Flood Hazard and Risk Assessment in New York
     City, in Showalter, P., and Lu, Y., eds., Geotechnical Contributions to Urban Hazard and
     Disaster Analysis, Chapter 5, pp. 71-97, Springer-Verlag.
   - Gatrell and Elliott, 2009. Geographies of Health, Chapter 9, Health Impacts of Global
     Environmental Change, pp. 218-35.
   - Freudenberg, N., Saegert, S., and Klitzman, S., eds., Urban Health and Society:
     Interdisciplinary Approaches to Research and Practice, Chapter 9, How Vulnerabilities and
   - Pearce et al, 2010. Environmental Justice and Health: The Implications of the Socio-
     Spatial Distribution of Multiple Environmental Deprivation for Health Inequalities in the
   - Tate, E. (2012). Social Vulnerability Indices: A Comparative Assessment Using Uncertainty and
     Sensitivity Analysis. Natural Hazards 63, pp. 325-347.

   Lab Assignment: Lab F continues - Inter-Urban Comparison using Segregation Indices

   Week 9 Written Assignment Responses due 3:00 PM, Tuesday, April 5th, and Reaction
   Comments due 3:00 PM, Wednesday, April 6th. Lab Assignment F due 3:00 PM, Wednesday,
   April 6th.

   **In-Class Meeting 4:00 – 6:00 PM, Friday, April 8th**
10. Social and environmental stressors and disease outcomes

Readings:

Lab Assignment G: Geographically Weighted Regression (GWR) Analysis: Effect of Vacant Land and Deprivation on Mental Health

Week 10 Written Assignment Responses due 3:00 PM, Tuesday, April 12th, and Reaction Comments due 3:00 PM, Wednesday, April 13th (No Lab Assignment Due)

11. Urban planning and health – “Designing Healthy Communities”

Readings:

Lab Assignment: Lab G continues - Geographically Weighted Regression (GWR) Analysis: Effect of Vacant Land and Deprivation on Mental Health.

Week 11 Written Assignment Responses due 3:00 PM, Tuesday, April 19th, and Reaction Comments due 3:00 PM, Wednesday, April 20th. Lab Assignment G due 3:00 PM, Wednesday, April 20th

SPRING BREAK, APRIL 22nd – APRIL 30TH
12. Spread of Disease - Part 1: Spatial Diffusion, Clustering, and Spatio-temporal Analysis

Readings:


Week 12 Written Assignment Responses due 3:00 PM, Tuesday, May 3rd, and Reaction Comments due 3:00 PM, Wednesday, May 4th (No Lab Due)

13. Spread of Disease - Part 2: Spatial Diffusion, Clustering, and Spatio-temporal Analysis

Readings:


Week 13 Written Assignment Responses due 3:00 PM, Tuesday, May 10th, and Reaction Comments due 3:00 PM, Wednesday, May 11th Lab Assignment H due 3:00 PM Wednesday, May 11th

**In-Class Meeting, 4:00 – 6:00 PM, Friday, May 13th**
14. Analyzing Historical Health Data

Readings:

Lab Assignment: No Lab

Week 14 Written Assignment Responses due 3:00 PM, Tuesday, May 17th, and Reaction Comments due 3:00 PM, Wednesday, May 18th (No Lab Due)

15. Final Exam (take-home exam, during Final Exam Week) Due Wednesday, May 25th by 3:00PM

Grading:
- Lab Assignments 35%
- Written Assignments 35%
- Final Exam 20%
- Participation 10%

Assessment:

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Your understanding of the course material will be evaluated through written assignments, lab assignments, a take-home Final Exam, and in-class discussion and participation in the monthly seminars, as well as weekly participation in the on-line discussion board.
Course Format:
This is a hybrid on-line course, meeting once per month for in-class discussions in a seminar format. On-line assignments include reading, written responses to questions, GISc lab assignments, discussion forum, and web-based research. At the conclusion of the course, there will be a take-home Final Exam, worth 20% of the total final grade for the course.

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

Class Participation:
Class participation includes engagement in discussions and answering of questions during the in-class meeting seminars. Since the class meets as a group only once per month, promptness and attendance at these meetings is imperative. Lateness and absence will count against this grade. Class participation also includes appropriate timeliness and proper format in communications, and weekly discussion board submissions, and accounts for 15% of the final grade.

Lab Assignments:
Lab assignments consist of GISc labs or research that may be completed in the GISc Lab during open lab periods, or as take-home work (most likely both). Student copies of the relevant GISc software will be provided to be installed on the home computers. All assignments must be uploaded to Blackboard by the due date and times stated in the syllabus in order to receive credit. Labs must be saved as a word document, an image file, and/or PDF. The documents must be saved as LastName_FirstName_LabName (e.g. Smith_Joe_Lab1.doc). Lab assignments count for 35% of the total final grade.

Written Assignments:
Each week there will be questions posted on Blackboard referring to the readings, web-based research, and GISc lab exercises for that week which will require responses from each student that must be uploaded to Blackboard by the due date and time. Responses are to be thorough, succinct, and answer the question as completely as possible. Written assignments count for 35% of the total final grade.

Final Exam:
The Final Exam consists of essay questions taken directly from the Weekly Written Assignments. Therefore it is a good idea to formulate responses to ALL the Weekly Assignment questions, even though you only will need to write and submit on Blackboard only one response per week.

Student Preparation:
NOTE: Students in GEP 610/PHE 717/EES 79903 have varying levels of GIS skills and background knowledge. To ensure as far as possible that everyone is "on the same page," and to minimize the effort required to understand the topics of spatial analysis, simulation, and modeling to be covered in this course, students are urged to review the following material, especially as necessary to supplement any known or potential area of deficiency.
All students will be expected to have a grasp of the rudiments of map composition and graph design, a familiarity with general GIS theory, a reasonable understanding of basic statistics, and a working knowledge of ArcGIS software and Windows operating system.
For general information on thematic mapping, map composition, and chart design, review Cartography: Thematic Map Design, by Borden Dent, (latest edition), McGraw Hill, New York, NY. See especially Chapters 13, 14, 15 and 18, regarding map composition, use of color, typeface selection, and graphing, and Chapters 4, 5, and 7, regarding thematic mapping. Chapter 6 is an excellent overview of GIS. This

GISc Lab Etiquette:
The GISc Lab is available ONLY to students enrolled in GISc courses (and other EGGS Dept. courses at Lehman College and EES courses through the Graduate Center). Please be considerate of others when working in the lab. There is no eating or drinking allowed in the lab at any time, and no cell phone use, either. Please be respectful of other students trying to concentrate, and keep idle chatter to a minimum. When you arrive at the lab, sign in on the sign-in sheet. This is very important in order to demonstrate that students are actually using the lab. Do not save your work to the desktop or hard drive of the computer: it will not be saved after you shut down the computer. Save your work (often!) to a flash drive or external hard drive which you should bring to class every time. At the end of your lab session, please shut down your computer and clean up your workstation area.
The lab is open every weekday and several evenings, (the lab schedule will be posted by the second week of the term) and the GISc Lab manager and GISc lab tutor will be available during some of those hours 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 lab exercises and written assignments.

Course Policies:
Lateness and absences: Lateness or absence will count against your class participation grade 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.
Late submission of assignments or exams: Late assignments/exams 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.
Blackboard: Blackboard will be used to distribute and update assignments, readings, and other course materials. It is the student’s responsibility to check it regularly.
Cell phone use: The use of cell phones and other similar devices are not permitted during in-class seminar sessions.
Computers: Since the in-class seminars and the lab assignment work take place in a computer lab, the following additional rules apply: Monitors must be turned off during discussion seminars; No drinking or eating of any kind in the lab; No printing of any materials without permission from the instructor or the lab manager;
Incompletes: A grade of incomplete will only be considered if you are clearly making a good faith effort to complete the course (i.e., completing assignments regularly, participating in seminar discussions) and have a good reason for not completing the work (e.g. medical or family emergency). Lack of time-management skills is not a valid reason to be granted an incomplete. Incompletes must be arranged
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with the instructor IN ADVANCE of the end of the term, and must be completed by the required date, in accordance with College policy on completing coursework - within the following term for undergrads, and within one year for graduate students. Note that there are specific deadlines for the completion of incomplete grades (NOT merely the end of the next term or year), and you must check the Academic Calendar to find out which apply.

Dropping: The last day to drop the course with the grade of “WD” is February 17th (25% refund); Last day to drop a course with a “W” grade is April 16th (official withdrawal).

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. For further clarification, please read CUNY's policy on academic integrity at http://www.lehman.edu/provost/documents/academic-integrity.pdf. Violators will be reported to the head of the Department and to the Dean of Student Affairs.

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 classroom 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. To obtain more information about the ACE and SLC, please visit their website at http://www.lehman.edu/issp, or please call the ACE at 718-960-8175, and the SLC at 718-960-7707.