Health Geography in the Age of Global Pandemics (GEOG 3090/5090)

Course Syllabus

Spring 2021 University of Utah Department of Geography

Instructor: Neng Wan, Ph. D.Course Number: GEOG 3090/5090Email: neng.wan@geog.utah.eduTime: TH 3:40pm-5:00pmPhone: 801-585-3972Locations: Zoom (see Canvas)Office: GC 4731Units: 3.0Office hours: Wednesday 2:00-4:00 p.m. & by appointment via Zoom or phone call

Course Description

The increasing population mobility and the worsening environment have led to many global health problems such as the recent outbreak of COVID-19. Understanding and preventing these public health problems require efforts from various disciplines, including Geography. Health geography incorporates concepts and methodologies from the discipline of geography to study population health, disease, and health care. This course will provide a broad introduction to health geography through its coverage of various topics including infectious diseases, health disparities, and healthcare accessibility. It will use COVID-19 and other globally transmitted diseases as examples to illustrate how geographical methods can facilitate the understanding of social-environmental causes, prevention, and intervention of health problems. It will review popular quantitative and gualitative methods that are routinely used in public health and epidemiological investigations and demonstrate how the geographer's toolbox of spatial analysis methods can effectively improve public health. This course applies three main approaches to health geographic research: social/behavioral approaches, ecological approaches which focus on relationships between people and their environment, and spatial epidemiological approaches which apply maps and spatial methods to identify and understand patterns of disease. The course will also describe the role geographers and social scientists play in protecting the public's health and demonstrate how these skills can be applied in the fields of public health and epidemiology.

Course Objectives

Goal: To introduce students to the approaches, methods and theories used by health geographers. Upon completion of this course students should be able to:

- 1. Describe how geography as a discipline contributes to understanding population health, the risk and spread of disease, and health care and related outcomes;
- 2. Describe how ecological and demographic changes influence health;
- 3. Describe how neighborhood and/or community contexts affect health;
- 4. Utilize maps and basic geographic methods to examine spatial patterns of disease and risk factors that may contribute to disease;

- 5. Describe and demonstrate how geographic methods and tools are utilized in public health practice;
- 6. Identify suitable geographical/analytical methodologies and tools (e.g., cluster detection, remote sensing available to study health-related topics);
- 7. Identify potential health outcomes that may result from changes in our physical environment, and the spatial state of our health care system
- 8. Critically assess geospatial research and public health reports; and,
- 9. Identify various career opportunities in public health and medical geography.

Course Webtools

As an IVC course, weekly classes will be held online using either Zoom or Google Meet. The instructor will arrange meeting invitations through CANVAS.

This course has an online component using the CANVAS e-learning environment. It is available through the Campus Information System at www.utah.edu. You are responsible for all announcements, additional reading assignments and other material posted on the GEOG3090/5090 site, so be sure to check it frequently. I will also be posting PDFs of the slides I use in the lectures, as well as links to helpful and interesting websites.

Course format

The course consists of lectures, in-class exercises, and supplemental assignments.

Course Materials

Textbooks and related journal articles

- Anthamatten, P. & H. Hazen. 2011. An Introduction to the Geography of Health. London and New York: The Routledge.
- Saracci, R. 2010. Epidemiology: A Very Short Introduction, Oxford University Press
- Online Materials:

This course utilizes Canvas (https://utah.instructure.com/) to provide access to course announcements, lecture notes, assignments, additional readings, and other materials related to the course. You must logon to Canvas using your university Network ID (uNID).

Grading

Grading will be based on the following components:

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Туре	Percent
Class participation	10%
Mid-Term Exam (take-home)	10%
Final Exam (take-home)	15%
Group and/or individual research project	40%
Assignments	25% (5*5 pts)

Midterm and Final Examinations

There will be two examinations during the semester-- a mid-term and final exam. Exams are cumulative and cover theories and applications discussed in class, assignments, and assigned readings. Exams will include short essay questions, interpretation of study findings or policy, and problem solving questions. The mid-term and final exam will be take-home. You will have 5 days to complete the take-home exam. Rescheduling a missed exam is only possible in cases of a serious illness or other extreme circumstance which must be documented. Notify the instructor at least three weeks in advance if an alternate date is necessary.

COURSEWORK

Reading Material

Students are expected to have read the assigned readings and completed assignments prior to attending the class (see Course Schedule).

Assignments

There will be five assignments to supplement lectures. Assignments are designed to enhance students understanding of material covered in class by providing hands-on opportunities to review and assess the materials independently.

- Assignment 1. Basic epidemiology measures.
- Assignment 2. Journal article review: Each student is required to write a journal article review. The goal of the journal article review is to familiarize students with scholarly research and how health geographic research is conducted. Students will select an article to review from a list of references posted on Canvas.
- Assignment 3. Disease Presentation: Each student is required to present to the class the epidemiological characteristics of one infectious disease (or health outcome), and how specific environmental and/or climate factors can affect transmission.
- Assignment 4. Spatial Analysis/GIS Exercise: Details about this assignment will be provided at a later date.
- Assignment 5. Health Services Exercise (Geographic Accessibility) (TBA).

Group and/or Individual Research Project

Group and/or individual projects are typically designed to fill knowledge gaps with the goal of using geographic methods to better understand a major health issue for a defined community. Projects can be a traditional research project (e.g., analysis of data) or a literature review of a selected disease or health problem (e.g., COVID-19, HIV/AIDS, Malaria, West Nile virus, Cancer, Health services).

Projects are conducted through problem-based learning (PBL). PBL is an instructional method in which students work in groups to connect disciplinary knowledge to solve real-world problems. PBL is helpful for preparing students to solve problems that are encountered in one's career or workplace. Your instructor (Dr. Wan) will serve as facilitator for each group and help you design your project/study. Project members are expected to work collaboratively to: 1) define the problem, 2) document what they know and don't know, 3) identify a possible solution, 4) identify and use appropriate resources to solve the problem, and 5) present the final solution.

Students with similar interests will be grouped to conduct a final project together.

- Up to three students in a group; preferably, one graduate student in each group to help lead discussions. In the final project report, each student's contribution should be clearly noted. All group members are also required to do a part of the project presentation.
- You may choose to work independently.

Research Project Evaluation

Evaluation will be based on:

- One page project proposal, explaining why you have chosen the disease or health issue and how your project is relevant for public health.
- Progress report, including a list of references (journal articles, book chapters, websites.) that will be reviewed and a timeline of the work plan.
- Class presentation for each (10 minutes).
- Final Project Report:

The goal of the final report is to summarize the research project. It should include: 1) Introduction explaining the objective/purpose of the project. 2) Summary of studies including objectives, types of data/methods utilized, and findings. 3) Discussion of current status of topic, knowledge gaps and future research needs pertaining to your topic.

*For individuals/groups that choose to complete a traditional research project your final project report should include: 1) introduction, literature review, 2) methods, 3) results, 4) conclusion.

Course Grading Scale

Final letter grades will be assigned based on the scale below

A 92%-100%	C 72%-77.9%
A- 90%-91.9%	C- 70%-71.9%
B+ 88%-89.9%	D+ 68%-69.9%
B 82%-87.9%	D 62%-67.9%
B- 80%-81.9%	D- 60%-61.9%
C+ 78%-79.9%	E 0%-59.9%

Course Policies

Evaluation policies

1) Individual extra credit will not be assigned

2) An "incomplete" will be given only in extreme cases when conditions beyond the student's control require an extended period of absence.

3) Required course work is due on the dates specified on the schedule. **Assignments presented to the instructor after the specified due date will be worth only half of the earned points.** If there is a problem with meeting a deadline, speak with the instructor as soon as possible.

4) All assignments must be typed. Hand-written assignments will not be accepted.

Student Responsibilities:

Academic Misconduct

Academic misconduct will not be tolerated. Penalties may include failure of an assignment, the entire course, and/or the filing of formal charges with appropriate university authorities. Academic misconduct includes, but is not limited to, cheating, misrepresenting one's work, and plagiarism.

- Cheating involves the unauthorized possession or use of information in an academic exercise, including unauthorized communication with another person during an exercise such as an examination.
- Misrepresenting one's work includes, but is not limited to, representing material prepared by another as one's own work or submitting the same work in more than one course without prior permission of all instructors.
- Plagiarism means the intentional unacknowledged use or incorporation of any other person's work in one's own work offered for academic consideration or public presentation.

All violations of academic honesty will be handled according to University policy. Students should be familiar with the Code of Student Rights and Responsibilities at the following link: http://www.regulations.utah.edu/academics/6-400.html

All students are expected to maintain professional behavior in the classroom setting, according to the Student Code, spelled out in the Student Handbook. Students have specific rights in the classroom as detailed in Article III of the Code. The Code also specifies proscribed conduct (Article XI) that involves cheating on tests, plagiarism, and/or collusion, as well as fraud, theft, etc. Students should read the Code carefully and know they are responsible for the content.

<u>Attendance</u>

Students are expected to attend all classes.

Class Participation

Students are expected to participate in all class discussions and exercises. Quizzes will be held occasionally at the start or end of class to ensure reading assignments were completed.

Class Conduct

- No eating, talking, sleeping during the lectures
- No usage of cell phones
- Laptops can be used for taking notes and accessing course materials. Use of laptops during lecture to check emails or to conduct non-course related tasks is strictly prohibited.
- Please be respectful of your colleagues and instructor and respect the right of all to speak and do not interrupt.
- Discussion threads, e-mails, and chat rooms are all considered to be equivalent to classrooms, and student behavior within those environments shall conform to the Student Code.

Disabilities

"The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice

needs to be given to the Center for Disability Services, 162 Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations." (www.hr.utah.edu/oeo/ada/guide/faculty/)

**Note: The syllabus is not a binding legal contract. It may be modified by the instructor when the student is given reasonable notice of the modification.

Tentative Schedule

This is a tentative outline of when various topics will be covered and assignments due.

Week	Date	Topics	Reading	Assignments
				Due
1	1/19	Course Introduction	Syllabus	
	1/21	Intro to Health Geography	IGH Chap 1	
			CDC's Glossary of	
			Epidemiology Terms:	
			https://www.cdc.gov/re	
			productivehealth/data s	
			tats/glossary.html	
		ECOLOGICAL APPROACHES		
2	1/26	Disease Ecology I	IGH Chapter 2	
	1/28	Disease Ecology II	IGH Chapter 2	
			El Chapter 1, 2	
3	2/02	Measuring Health & Disease I	El Chapter 1, 2	
	2/04	Measuring Health & Disease II	El Chapter 3,4	
4	2/09	Emerging and Reemerging Diseases: Ecological	IGH Chapter 3	
		Change, Evolution of Pathogens & People	Mayer article	
	2/11	Demographic and Epidemiological Transitions,	IGH Chapter 3	
		Migration, Mobility and Globalization		
5	2/16	Infectious Diseases I		
	2/18	Infectious Diseases II		Assignment 1
6	2/23	Study design (epidemiology and spatial	El Chapter 5-7	
		epidemiology)		
	2/25	Project Discussion		
7	3/02	Estimating disease rates		Assignment 2
	3/04	Environmental Exposure and Health	IGH Chapter 4	
			Wilhelm article	
		SPATIAL APPROACHES		
8	3/09	HIPPA and IRB		
	3/11	GIS & Public Health	IGH Chapter 10	
			El Chapter 8	
			Rushton article	
9	3/16	Making Health data Mappable (Geocoding	IGH Chapter 9	
		methods/tools)		

	3/18	Spatial Analysis and Health	Maantay article; Oliver article	
10	3/23	Remote Sensing and Health Applications		
	3/25			Assignment 3
11	3/30	Assignment 3 Presentation		
	4/1	Assignment 3 Presentation		
12	4/6	Mobile Health		
	4/8	Project Progress Discussion		Project progress report due
		SOCIAL APPROACHES		
13	4/13	Healthcare I	IGH Chapter 7, 8 El Chapter 9, 10 <i>Guagliardo article</i>	
	4/15	Healthcare II	IGH Chapter 7, 8 El Chapter 9, 10 Guagliardo article	
14	4/20	The Social Context of Disease (health inequalities)	IGH Chapter 5	Assignment 4
	4/22	Final project presentation		Assignment 5
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IGH= An Introduction to the Geography of Health EI= Epidemiology: A Very Short Introduction

Summary of Course Readings

Books

1. Anthamatten, P. & H. Hazen. 2011. An Introduction to the Geography of Health. London and New York: The Routledge.

2. Saracci, R. 2010. Epidemiology: A Very Short Introduction, Oxford University Press

Required and suggested readings

Week 1

CDC's Glossary of Epidemiology Terms:

https://www.cdc.gov/reproductivehealth/data_stats/glossary.html

Week 4

Mayer, J. D. (2000). "Geography, ecology and emerging infectious diseases." Soc Sci Med **50**(7-8): 937-52.

Suggested Reading

Reisen, W. K. (2010). "Landscape epidemiology of vector-borne diseases." Annu Rev Entomol **55**: 461-483.

Week 7

Wilhelm, M., Ghosh, J.K., Su, J., Cockburn, M., Jerrett, M., Ritz, B., 2011. Traffic-related air toxics and preterm birth: a population-based case-control study in Los Angeles County, California. Environ Health 10, 89.

Suggested Reading

Chang, H.H., Reich, B.J., Miranda, M.L., 2012. Time-to-event analysis of fine particle air pollution and preterm birth: results from North Carolina, 2001-2005. Am J Epidemiol 175, 91-98. Faiz, A.S., Rhoads, G.G., Demissie, K., Kruse, L., Lin, Y., Rich, D.Q., 2012. Ambient air pollution and the risk of stillbirth. Am J Epidemiol 176, 308-316.

Week 8

Rushton, G. (2003). "Public health, GIS, and spatial analytic tools." Annu Rev Public Health **24**: 43-56. *Suggested Reading*

Weeks 9-10

Maantay, J. (2007). "Asthma and air pollution in the Bronx: methodological and data considerations in using GIS for environmental justice and health research." Health Place **13**(1): 32-56.

Oliver, M. N., K. A. Matthews, et al. (2005). "Geographic bias related to geocoding in epidemiologic studies." Int J Health Geogr **4**: 29.

Week 13-15

Guagliardo, M. F. (2004). "Spatial accessibility of primary care: concepts, methods and challenges." Int J Health Geogr **3**(1): 3. http://www.ij-healthgeographics.com/content/3/1/3.