



NYU

**COLLEGE OF GLOBAL
PUBLIC HEALTH**

**GPH-GU 2106: Epidemiology
FALL 2015**

INSTRUCTOR INFORMATION

Professor: Farzana Kapadia, PhD MPH
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Email: farzana.kapadia@nyu.edu
Office: 411 Lafayette Street, Room 523
Office hours: By appointment

COURSE INFORMATION:

Lecture: Wednesday, 4:55 – 6:35pm
12 Waverly Place (Center for Genomics and Systems Biology)
Room: G08

Discussion Sections:

Section 2: Wednesdays, 6:45 – 8:25pm, Room: Silver 620
TA: Sarah Conderino
Office hours: By appointment
Email: sconderino@gmail.com

Section 3: Wednesdays, 6:45 – 8:25pm, Room: GCASL 279
TA: Michelle Nolan
Office hours: By appointment
Email: nolan.mn@gmail.com

Section 4: Wednesdays, 6:45 – 8:25pm, Room: Bobst LL150
TA: Donovan Jones
Office hours: By appointment
Email: dj576@nyu.edu

Section 6: Wednesdays, 6:45 – 8:25pm, Room: Silver 409
TA: Ellenie Tuazon
Office hours: By appointment
Email: ellenie.tuazon@gmail.com

COURSE DESCRIPTION

Epidemiology is the study of the distribution and determinants of health and disease in different human populations and the application of methods to improve disease outcomes. As such, epidemiology is the basic science of public health. This course is designed to introduce students in all fields of public health to the background, basic principles and methods of public health epidemiology. We will also discuss the biological, behavioral, sociocultural and environmental factors associated with the etiology and distribution of health and disease.

Topics covered in this course include: basic principles of epidemiology; measures of disease frequency; epidemiologic study designs: experimental and observational; bias; confounding; outbreak investigations;

screening; causality; and ethical issues in epidemiologic research. In addition, students will develop skills to read, interpret and evaluate health information from published epidemiologic studies.

This course has two main components: a lecture and a discussion section; attending both lecture and discussion sections are equally important to ensuring success in the course. All students are required to attend lecture sessions and participate in their discussion sections. The discussion sections will be led by a teaching assistant (TA) and will include a brief discussion of lecture materials covered that week and a review of homework assignments due that week. For some discussion sections, students will have an opportunity to take part in a series of ‘hands on’ exercises developed to provide a fuller understanding of concepts covered in previous lectures and homework assignments.

PRE-REQUISITES

No pre-requisites

LEARNING OBJECTIVES

By the end of this course students will develop the ability to:

1. Explain the role of epidemiology in the field of public health.
2. Describe and calculate epidemiological measures used to define and quantify health problems in and across defined populations.
3. Describe the range of epidemiologic study designs used to examine the health status of a population and be able to evaluate the strengths and limitations of each.
4. Identify and describe the impact of bias and confounding in epidemiologic studies
5. Understand the concepts of screening and testing in a range of health and other settings.
6. Understand and apply epidemiological criteria needed to establish causal relationships.
7. Understand and apply key ethical issues to the conduct of epidemiological and other scientific investigations.
8. Critically read and evaluate epidemiologic studies in the medical or public health literature.

COURSE COMPETENCIES

Objective	Competency
1	<p><i>Discipline Specific Competencies:</i></p> <p>3. Understand the patterns of disease and injury in human populations and apply to the control of health problems.</p>
2	<p><i>Concentration-Specific Competencies: Epidemiology</i></p> <ul style="list-style-type: none"> • Identify which chronic, infectious, and degenerative diseases contribute the most morbidity within and across populations. • Describe the trends in mortality due to the most common infectious, chronic and degenerative diseases within and across populations. • Identify the appropriate analytic methods for calculating key measures of morbidity (i.e. prevalence, incidence), mortality (e.g. mortality rates, etc) and measures of association (e.g. risk ratio, rate ratio, odds ratio, etc.).
3	<p><i>Discipline Specific Competencies:</i></p> <p>1. Develop and apply statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research.</p> <p><i>Concentration-Specific Competencies: Epidemiology</i></p> <ul style="list-style-type: none"> • Identify determinants for disease that include individual, social/contextual, and structural determinants of morbidity and mortality trends within and across

	<p>populations.</p> <ul style="list-style-type: none"> Identify the appropriate analytic methods for calculating key measures of morbidity (i.e. prevalence, incidence), mortality (e.g. mortality rates, etc) and measures of association (e.g. risk ratio, rate ratio, odds ratio, etc.).
4	<p><i>Discipline Specific Competencies:</i></p> <ol style="list-style-type: none"> Develop and apply statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research.
5	<p><i>Discipline Specific Competencies:</i></p> <ol style="list-style-type: none"> Develop and apply statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research.
6	<p><i>Discipline Specific Competencies:</i></p> <ol style="list-style-type: none"> Develop and apply statistical reasoning and methods in addressing, analyzing and solving problems in public health; health care; and biomedical, clinical and population-based research. Understand the patterns of disease and injury in human populations and apply to the control of health problems.
7	<p><i>Interdisciplinary/Cross-Cutting Competencies:</i></p> <ol style="list-style-type: none"> Demonstrate ethical choices, values and professional practices implicit in public health decisions while considering the effect of choices on community stewardship, equity, social justice and accountability.
8	<p><i>Interdisciplinary/Cross-Cutting Competencies:</i></p> <ol style="list-style-type: none"> Gather, process, and present information to different audiences in-person, through information technologies, or through media channels.

COURSE REQUIREMENTS AND EXPECTATIONS

A. READINGS

Required course text:

- Aschengrau A & Seage GR. Essentials of Epidemiology in Public Health. 3rd Edition (2014).
- Additional required readings will be assigned to supplement the main textbook or as part of various homework assignments; a list of these is provided on the next page. Readings that are published, journal articles **can be accessed via the NYU Library's journal access that is located under the Research tab of NYUHome**. I also reserve the right to add readings during the course of the semester as appropriate.

Additional resources:

- A good online text: Principles of Epidemiology: An Introduction to Applied Epidemiology and Biostatistics. Second Edition. It is available at: http://www.phppo.cdc.gov/PHTN/catalog/pdf-file/Epi_Course.pdf
- Epidemiology, the Internet and Global Health.
An online compilation of hundreds of lectures on a wide variety of topics; I would recommend this site to anyone interested in further reading on a specific subject area. The site can be accessed at <http://www.pitt.edu/~super1/>

And this is just the beginning. There are a number of textbooks based on content area, level of expertise, etc. as well several websites. If you have a specific area of interest in mind, please let me know and I will be happy to provide additional resources.

B. REQUIREMENTS & EXPECTATIONS

1. Students are expected to **attend all lecture and discussion sessions**. Students are expected to come to class on time to prevent disrupting the lecture and classroom activities. Active participation in the discussion sessions is also expected and highly encouraged. If you cannot attend a certain discussion session, it is your responsibility to notify the appropriate TA beforehand, or in the case of an emergency, immediately upon return. All other absences will be considered unexcused.
 - **Any student who misses more than 2 scheduled discussion section meetings will lose points from their discussion section grade.**
2. **Technology Policy:**
 - Mobile device (e.g., smart phones, pagers, etc.) ringers will be turned off or placed on vibrate prior to class.
 - Laptops and tablets can **ONLY** be used in the classroom to take notes, make calculations, and download/read course materials. Note that research suggests non-academic use of the Internet is associated with poorer learning outcomes.^{1,2}
3. **Complete reading assignments prior to class.** Readings are listed in the course schedule on pages 4 – 6 and additional readings may be assigned as needed.
4. **Complete homework assignments (5):** Homework assignments are due on the dates noted below. They are to be handed in at the beginning of lecture – **late homework will not be accepted**. If you cannot make it to class, it is your responsibility to notify the appropriate TA ahead of time and make arrangements to turn in your homework via email on or before the due date. You can rely on your class notes or other supplemental materials to complete your assignment, but it is an individual effort so **do not share answers with others!**

NOTE: **All homework assignments must be typed** (1" margins, Times New Roman 12pt or Arial 11pt font – **no smaller and no larger – no exceptions!**). Calculations may be neatly handwritten. Your name must be on the top of each page that you hand in. **If we can't read your answers, we can't grade your work.**

Homework Due Dates:

Assignment 1:	September 23 rd , 2015
Assignment 2:	October 7 th , 2015
Assignment 3:	October 28 th , 2015
Assignment 4:	November 11 th , 2015
Assignment 5:	December 2 nd , 2015

NOTE: **If you have questions about grades on any assignment or exam, speak to Dr. Kapadia within 3 days of receiving said grade. After this timeframe, I will not entertain grading disputes.**

¹ Ravizza SM, Hambrick DZ, Fenn KM. Non-academic internet use in the classroom is negatively related to classroom learning regardless of intellectual ability. *Compu Educ.* 2014;78:109-114.

² Gaudreau P, Miranda D, Gareau A. Canadian university students in wireless classrooms: What do they do on their laptops and does it really matter? *Compu Educ.* 2014;70:245-255.

5. **Midterm Exam:** An in-class, closed book examination including multiple choice, calculations and short answers items. The exam will cover materials presented in lectures 1 – 7.
6. **Final Exam:** An in-class, closed book examination including multiple choice, calculations and short answers items. The exam will cover materials presented in lectures 8 – 13.
7. **Grading Rubric:**
 1. Homework assignments (5 x 9 pts): 45 pts
 2. Participation in discussion section: 5 pts
 3. Midterm: 25 pts
 4. Final: 25 pts

Grading Scale:

A	93-100	C+	77-79
A-	90-92	C	73-76
B+	87-89	C-	70-72
B	83-86	D+	67-69
B-	80-82	D	60-66
		F	<60

8. **NYUClasses:**
 NYUClasses will be used extensively throughout the semester for assignments, announcements, and communication. NYU Classes is accessible through at <https://home.nyu.edu/academics>

COURSE SCHEDULE

	Date	Lecture Topic	Reading Assignment Due
1	Sept 2nd	<ul style="list-style-type: none"> - Course overview - Historical Development - Basic principles of epidemiology 	<p>Recommended:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 1 2. Winkelstein W. Interface of epidemiology and history: A commentary on past, present and future. <i>Epidemiologic Reviews</i>. 2000;22:2-6. 3. Armenian HK. Epidemiology: A problem solving journey. <i>American Journal of Epidemiology</i>. 2009;169:127–131.
2	Sept 9th	<ul style="list-style-type: none"> - General Health and Population Indicators - Measures of morbidity 	<p>Required:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 2 2. Browse: SEER website, State Cancer Profiles at: http://seer.cancer.gov/statistics/scp.html (incidence rate data) 3. Gershon et al. Trends in asthma prevalence and incidence in Ontario, Canada, 1996 – 2005: A population study. <i>AJE</i>. 2010;172:728-736. <p>Recommended:</p> <ol style="list-style-type: none"> 1. ERIC Notebook: Incidence vs. Prevalence 2. ERIC Notebook: Calculating Person-Time
3	Sept 16th	<ul style="list-style-type: none"> - Measures of mortality - Direct & Indirect age adjustment 	<p>Required:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 3 pgs 69 - 73 2. CDC Stat Notes: Klein, <i>Age Adjustment</i> 3. Browse: SEER website, State Cancer Profiles at: http://seer.cancer.gov/statistics/scp.html (death rate data) 4. Gershon et al. Trends in asthma prevalence and incidence in Ontario, Canada, 1996 – 2005: A population study. <i>AJE</i>. 2010;172:728-736. <p>Recommended:</p> <ol style="list-style-type: none"> 1. Wang et al. Age-specific and sex-specific mortality in 187 countries, 1970–2010: a systematic analysis for the Global Burden of Disease Study 2010. <i>Lancet</i> 2012; 380: 2071–94.
4	Sept 23rd	<ul style="list-style-type: none"> - Cross-Sectional studies - Ecologic studies <p style="text-align: center;">ASSIGNMENT #1 DUE</p>	<p>Required:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 4 2. Browse: NCHS website: Surveys & Data Collection: http://www.cdc.gov/nchs/surveys.htm 3. Roberts et al. Cross-sectional association between perceived discrimination and hypertension in African-American men and women. <i>AJE</i>. 2008;167:624-632. 4. Wheeler BW, Allen J, Depledge MH, Curnow A. Radon and skin cancer in south-west England: an ecologic study. <i>Epidemiology</i>. 2012;23:44–52. <p>Recommended:</p> <ol style="list-style-type: none"> 1. Grimes & Schulz: <i>Descriptive Studies</i> 2. ERIC Notebook: <i>Ecologic Studies</i> 3. ERIC Notebook: <i>Cross Sectional Studies</i>

COURSE SCHEDULE

	Date	Lecture Topic	Reading Assignment Due
5	Sept 30th	- Cohort studies	<p>Required:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 3 pgs 59 - 69 2. Aschengrau & Seage, Chapter 8 3. The Nurses Health Study: http://www.channing.harvard.edu/nhs/ 4. Oh et al. Dietary fat intake and risk of coronary heart disease in women: 20 years of follow-up of the Nurses' Health Study. <i>AJE</i>. 2005;161:672-679. <p>Recommended:</p> <ol style="list-style-type: none"> 1. Grimes & Schulz: <i>Cohort Studies</i>
6	Oct 7th	- Case-Control studies ASSIGNMENT #2 DUE	<p>Required:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 9 2. Vineis et al. Environmental tobacco smoke and risk of respiratory cancer and chronic obstructive pulmonary disease in former smokers and never smokers in the EPIC prospective study. <i>BMJ</i>. 2005;330:1-5. 3. Press, DJ & Pharoah, P. Risk Factors for Breast Cancer: A Reanalysis of Two Case-control Studies From 1926 and 1931. <i>Epidemiology</i>. 2010;21(4):566-572. <p>Recommended:</p> <ol style="list-style-type: none"> 1. Schulz & Grimes: <i>Case-Control Studies</i>
7	Oct 14th	MIDTERM EXAM	
8	Oct 21st	- Randomized Trials	<p>Required:</p> <ol style="list-style-type: none"> 1. Aschengrau & Seage, Chapter 7 2. CONSORT guidelines: http://www.consort-statement.org/ 3. Grimes & Schulz: <i>Overview of clinical research</i> 4. Padian et al. Diaphragm and lubricant gel for prevention of HIV acquisition in southern African women: a randomized controlled trial. <i>Lancet</i>. 2007;370:251-261. 5. Auvert et al. Randomized, Controlled Intervention Trial of Male Circumcision for Reduction of HIV Infection Risk: The ANRS 1265 Trial. 2005. <i>PLoS Med</i> 2(11): e298. 6. Metsch et al. Effect of risk-reduction counseling with rapid HIV testing on risk of acquiring sexually transmitted infections: the AWARE randomized clinical trial. 2013. <i>JAMA</i>. Oct 23;310(16):1701-10. <p>Recommended:</p> <ol style="list-style-type: none"> 1. Schulz & Grimes: <i>Blinding</i> 2. Schulz & Grimes: <i>Allocation concealment</i> 2. Schulz & Grimes: <i>Generation of allocation sequences</i>

COURSE SCHEDULE

	Date	Lecture Topic	Reading Assignment Due
10	Oct 28th	- Selection and Information Bias ASSIGNMENT #3 DUE	Required: 1. Aschengrau & Seage, Chapter 10 2. Aschengrau & Seage, Chapter 12 pgs 307 – 317 3. Wilcox AJ et al. Folic acid supplements and risk of facial clefts: national population based case-control study. <i>BMJ</i> . 2007; 334:464-469. Recommended: 1. Grimes & Schulz, <i>Bias and causal associations</i>
11	Nov 4th	- Confounding	Required: 1. Aschengrau & Seage, Chapter 11 2. Wilcox AJ et al. Folic acid supplements and risk of facial clefts: national population based case-control study. <i>BMJ</i> . 2007; 334:464-469. Recommended: 1. Grimes & Schulz, <i>Bias and causal associations</i>
12	Nov 11th	- Effect Modification - Causal inference ASSIGNMENT #4 DUE	Required: 1. Aschengrau & Seage, Chapters 13 & 15 2. Bradford Hill, <i>The environment and disease</i>
13	Nov 18th	- Outbreak investigations	Required: 1. Reingold A. <i>Outbreak investigations – a perspective</i> . 2. Dominguez A, et al. Large Outbreak of Measles in a Community with High Vaccination Coverage: Implications for the Vaccination Schedule. <i>Clinical Infectious Diseases</i> . 2008; 47:1143–9. 3. Centers for Disease Control and Prevention. Increased Transmission and Outbreaks of Measles — European Region, 2011. <i>MMWR</i> . 2011;60(47)1605-1610.
14	Nov 25th	NO CLASS – THANKSGIVING BREAK	
15	Dec 2nd	- Screening ASSIGNMENT #5 DUE	Required: 1. Aschengrau & Seage, Chapter 16 2. Andersson et al. Mammographic screening and mortality from breast cancer: the Malmo mammographic screening trial. <i>BMJ</i> . 1988;297:943-949. Recommended: 1. Grimes & Schulz, <i>Screening tests</i>
16	Dec 9th	- TBA	Required: TBA
	Dec 16th	FINAL EXAM	

University Policies

Please be sure to read the [University Policy on Religious Holidays](#) and the policy [on safety, weather emergencies, and disruptions](#).

Students with Disabilities:

Students with disabilities should contact the Moses Center for Students with Disabilities regarding the resources available to them, and to determine what classroom accommodations should be made available. More information about the Moses Center can be found here. must appear on the syllabus. Information about the center can be found here: <https://www.nyu.edu/life/safety-health-wellness/students-with-disabilities.html>. Students requesting accommodation must obtain a letter from the Moses Center to provide to me as early in the semester as possible.

Statement of Academic Integrity:

The NYU College of Global Public Health values both open inquiry and academic integrity. Students in the program are expected to follow standards of excellence set forth by New York University. Such standards include respect, honesty and responsibility. The CGPH does not tolerate violations to academic integrity including:

- Plagiarism
- Cheating on an exam
- Submitting your own work toward requirements in more than one course without prior approval from the instructor
- Collaborating with other students for work expected to be completed individually
- Giving your work to another student to submit as his/her own
- Purchasing or using papers or work online or from a commercial firm and presenting it as your own work

Students are expected to familiarize themselves with the CGPH and University's policy on academic integrity as they will be expected to adhere to such policies at all times – as a student and an alumni of New York University.

Plagiarism

Plagiarism, whether intended or not, is not tolerated in the CGPH. Plagiarism involves presenting ideas and/or words without acknowledging the source and includes any of the following acts:

- Using a phrase, sentence, or passage from another writer's work without using quotation marks
- Paraphrasing a passage from another writer's work without attribution
- Presenting facts, ideas, or written text gathered or downloaded from the Internet as your own
- Submitting another student's work with your name on it
- Submitting your own work toward requirements in more than one course without prior approval from the instructor
- Purchasing a paper or "research" from a term paper mill.

Students in the CGPH and CGPH courses are responsible for understanding what constitutes plagiarism. Students are encouraged to discuss specific questions with faculty instructors and to utilize the many resources available at New York University.

Disciplinary Sanctions

When a professor suspects cheating, plagiarism, and/or other forms of academic dishonesty, appropriate disciplinary action is as follows:

- The Professor will meet with the student to discuss, and present evidence for the particular violation, giving the student opportunity to refute or deny the charge(s).
- If the Professor confirms that violation(s), he/she, in consultation with the Program Director may take any of the following actions:
 - Allow the student to redo the assignment
 - Lower the grade for the work in question
 - Assign a grade of F for the work in question
 - Assign a grade of F for the course
 - Recommend dismissal

Once an action(s) is taken, the Professor will inform the Program Director and inform the student in writing, instructing the student to schedule an appointment with the Associate Dean for Academic Affairs, as a final step. The student has the right to appeal the action taken in accordance with the CGPH Student Complaint Procedure.