

**BROWN SCHOOL
WASHINGTON UNIVERSITY IN ST. LOUIS
MASTER OF PUBLIC HEALTH PROGRAM
FALL 2018
Foundations of Public Health:Epidemiology
S55 MPH 5002.01**

CREDIT HOURS: 3

INSTRUCTOR: Kimberly J. Johnson, MPH, PhD

GRADE: L/G

OFFICE: Goldfarb 237 (Instructor)

ROOM: Hillman 120

PHONE (Johnson): 314-935-9154 (office), 314-809-9452 (cell)

TIME: 2:00-5:00 W

TA: Becca Woofter

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OFFICE HOURS:

Kim Johnson: G237 12-1 Mondays or by appointment
Rebecca Woofter: 12-2 Tuesdays (location TBA) or by appointment

I. COURSE DOMAIN AND BOUNDARIES

Students will learn the role of epidemiological approaches for describing and quantifying health problems and methodological approaches for assessing risk factors and disease etiology. Specifically, epidemiology seeks to: 1) discover the agent, host, and environmental factors that affect health, in order to provide the scientific basis for the prevention of disease and injury and the promotion of health; 2) determine the relative importance of causes of illness, disability, and death, in order to establish priorities for research and action; 3) identify those sections of the population that have the greatest risk from specific causes of ill health, in order that the indicated action may be directed appropriately; and 4) contribute to developing and then evaluating the effectiveness of public health programs and services in improving the health of the population. In addition, students will learn to view epidemiology as one the key tools in the application of transdisciplinary problem solving to public health issues.

II. MPH FOUNDATIONAL KNOWLEDGE AND COMPETENCIES ADDRESSED IN THIS COURSE

A. Foundational Knowledge

- Explain the role of quantitative and qualitative methods and sciences in describing and assessing a population's health.
- List major causes and trends of morbidity and mortality in the US or other community relevant to the school or program.
- Discuss the science of primary, secondary and tertiary prevention in population health, including health promotion, screening, etc.
- Explain the critical importance of evidence in advancing public health knowledge.

B. Foundational Competencies (and or Specialization Competencies as applicable)

1. Apply epidemiological methods to the breadth of settings and situations in public health.
2. Select quantitative and qualitative data collection methods appropriate for a given public health context.
3. Interpret results of data analysis for public health research, policy or practice.
4. Communicate audience-appropriate public health content, both in writing and through oral presentation.

C. Other Competencies

1. Define and interpret a public health problem in terms of magnitude, person, time, and place.
2. Calculate basic epidemiology measures of disease frequency and association.
3. Explain the main study designs used in epidemiological, clinical, and population research.
4. Evaluate the strengths and limitations of an epidemiology study in terms of appropriateness of study design, data collection, analysis, and random and systematic errors.

III. BROWN SCHOOL ACADEMIC POLICIES

Academic Integrity: If a faculty member or student suspects that academic or professional integrity has been violated, they are required to submit an Academic Integrity or Professional Integrity Violation form found on Inside Brown for review by the Assistant Dean of the program. The Assistant Dean or designated representative will aid in the investigation of the violation, which includes but is not limited to gathering relevant evidence; conversations with the instructor, student(s) involved, witnesses, and others as necessary. Depending on the seriousness of the case, the Assistant Dean may choose to refer the matter directly to the University Student Conduct Board. This referral procedure will generally be followed if it is believed that the penalty is likely to involve suspension or expulsion from the University. The Assistant Dean for the program or designated representative will offer to meet privately with the student(s) against whom the complaint has been made. It is the student's responsibility to familiarize themselves with the behaviors that constitute an [academic integrity violation](#) requiring referral.

Student Handbook 2018

Accommodations: If you have a learning disability, sensory, or physical disability or other impairment, and you may need special assistance in lectures, reading, written assignments, and/or exam taking, please contact the Brown School Director of Student Affairs who can provide coordination of accommodations at Washington University and the Brown School. The [Disability Resource Center](#), a University-wide resource, provides diagnostic and academic accommodations support and referrals.

English Language Proficiency: If your English language proficiency is such that you may need special assistance in lectures, reading, written assignments, and/or exam taking, please communicate these needs to your instructor who may refer you to the [English Language Program](#) (ELP). ELP is a University-wide resource that provides classes and academic English language support designed to increase non-native English speaking students' English language proficiency and to facilitate their academic success at Washington University. You may also find the Academic Assistance resources available through the [Office for International Students and Scholars](#) to be helpful.

Professional Use of Electronic Devices in the Classroom: Computers or other electronic devices, including "smart pens" (devices with an embedded computer and digital audio recorder that records the classroom lecture/discussion and links that recording to the notes taken by the student), may be used by students at the discretion of the faculty member to support the learning activities in the classroom. These activities include taking notes and accessing course readings under discussion. If a student wishes to use a smart-pen or other electronic device to audio record lectures or class discussions, they must notify the instructor in advance of doing so. Permission to use recording devices is at the discretion of the instructor, unless this use is an accommodation approved by Disability Resources.

Nonacademic use of laptops and other devices and use of laptops or other devices for other coursework is distracting and seriously disrupts the learning process for other people in the classroom. Neither computers nor other electronic devices are to be used in the classroom during class for nonacademic reasons or for work on other coursework. Nonacademic use includes emailing, texting, social networking, playing games, instant messaging, and use of the Internet. Work on other coursework may include, but is not limited to, use of the Internet, writing papers, using statistical software, analyzing data, and working on quizzes or exams. The nonacademic use of cell phones during class time is prohibited, and they should be set on silent before class begins. In the case of an emergency, please step out of the room to take the call. The instructor has the right to hold students accountable for meeting these expectations, and failure to do so may result in a loss of participation or attendance points, a loss of the privilege of device use in the classroom, or being asked to leave the classroom.

Religious Holidays: The Brown School recognizes the individual student's choice in observing religious holidays that occur during periods when classes are scheduled. Students are encouraged to arrange with their instructors to make up work missed as a result of religious observance, and instructors are asked to make every reasonable effort to accommodate such requests.

IV. WASHINGTON UNIVERSITY ACADEMIC SUPPORT POLICIES

Accommodations based upon sexual assault: The University is committed to offering reasonable academic accommodations to students who are victims of sexual assault. Students are eligible for accommodation regardless of whether they seek criminal or disciplinary action. Depending on the specific nature of the allegation, such measures may include but are not limited to implementation of a no-contact order, course/classroom assignment changes, and other academic support services and accommodations. If you need to request such accommodations, please direct your request to Kim Webb (kim_webb@wustl.edu), Director of the Relationship and Sexual Violence Prevention Center. Ms. Webb is a confidential resource; however, requests for accommodations will be shared with the appropriate University administration and faculty. The University will maintain as confidential any accommodations or protective measures provided to an individual student so long as it does not impair the ability to provide such measures.

If a student comes to me to discuss or disclose an instance of sexual assault, sex discrimination, sexual harassment, dating violence, domestic violence or stalking, or if I otherwise observe or become aware of such an allegation, I will keep the information as private as I can, but as a faculty member of Washington University, I am required to immediately report it to my Department Chair or Dean or directly to Ms. Jessica Kennedy, the University's Title IX Coordinator. If you would like to speak with the Title IX Coordinator directly, Ms. Kennedy can be reached at (314) 935-3118, jwkennedy@wustl.edu, or by visiting her office in Umrath Hall. Additionally, you can report incidents or complaints to Tamara King, Associate Dean for Students and Director of Student Conduct, or by contacting WUPD at (314) 935-5555 or your local law enforcement agency. You can also speak confidentially and learn more about available resources at the Relationship and Sexual Violence Prevention Center by calling (314) 935-8761 or visiting the 4th floor of Seigle Hall.

Bias Reporting: The University has a process through which students, faculty, staff and community members who have experienced or witnessed incidents of bias, prejudice or discrimination against a student can report their experiences to the University's Bias Report and Support System (BRSS) team. See: brss.wustl.edu

Mental Health: Mental Health Services' professional staff members work with students to resolve personal and interpersonal difficulties, many of which can affect the academic experience. These include conflicts with or worry about friends or family, concerns about eating or drinking patterns, and feelings of anxiety and depression. See: shs.wustl.edu/MentalHealth.

Additional Issues or Concerns: If you feel that you need additional supports in order to be successful in your time at Brown, beyond the mentioned accommodations, please contact Essie Rochman, Director of Student Affairs at erochman@wustl.edu. She can assist you in navigating a myriad of concerns. Her office in Brown Hall, room 320.

V. READINGS

The reading assignments for the course will include specific chapters from the course textbook and handouts/links to journal articles provided in class or on Canvas, which can be accessed here:

<https://wustl.instructure.com/>.

Required textbook: Penny Webb and Chris Bain. *Essential Epidemiology: An Introduction for Students and Health Professionals*. Third Edition, 2017. [RESERVE](#)

Links to additional required readings will be provided on Canvas.

VI. ORGANIZATION OF THE COURSE

The format of the course will be primarily lectures, examples, in class activities, and discussion. You will perform exercises that reinforce the epidemiologic principles and methods that are presented in class, which will be discussed in class. There will be three exams that assess your mastery of the course objectives.

VII. ROLE OF STUDENT, INSTRUCTOR, AND TAs

Student Expectations and Requirements:

- You are expected to read any assigned material prior to class.
- You should be prepared to discuss the assigned readings during class and to participate in class discussions.
- You must return your assignments and examinations *on time* to me.
- You are responsible for doing your own work on examinations. Students are allowed to work in groups on homework assignments to facilitate peer learning.
- You are expected to check Canvas and email regularly for any course announcements.

If you have any issues or challenges with the class, please come to me and/or the TAs first so that we can make every effort to resolve them together.

Instructor Expectations and Requirements:

- I will come to class prepared, organized, and enthusiastic.
- I will be available to answer any questions that you may have about the course on Canvas, by email, by phone, or during office hours/scheduled appointments. Email questions will normally be answered within 24 hours with the exception of weekends. You can anticipate a reply to emails sent over the weekend on Monday.
- I retain the right to change the content and order of the lectures and exercises to meet the needs of students who are enrolled in the course.

Role of TA:

The TA will assist the instructor with preparation of materials for class, grading de-identified student papers/exams, and will hold office hours and review sessions for the first two exams. The TA will also be available by email to answer questions or facilitate answering of questions.

VIII. ASSIGNMENTS AND GRADING CRITERIA

Problem Sets (15% of final grade): You will be assigned 9 problem sets (PSETs). Each problem set will focus on the information provided in the lecture and readings prior to the problem set due date. PSETs will provide you with an opportunity to develop the skills to master the competencies associated with each lecture. Each problem set will be graded out of 100 points with point deductions based on completeness and accuracy of responses. Unless otherwise instructed, you should provide units for all numeric answers and show all calculations where appropriate.

Problem sets can be turned in hardcopy or on Canvas with your group/individual id (not name) on each due date before class. Late assignments will not be accepted except under extraordinary circumstances (e.g. medical emergency, natural disaster, death in the family). The final grade for the problem sets will be based on the total score of 8 highest scored problem sets (the lowest score will be dropped).

Examinations (65% of final grade; 20% each for Exams 1 and 2 and 25% for final): You will complete three examinations. The examinations may consist of any combination of true/false, multiple choice, short essay questions, and mathematical problems to evaluate the skills that each student is expected to master during the course. Students will be provided a formula sheet for the exam. The exams will be cumulative building upon the concepts learned prior to the exam. The final exam will be a case-based exam. Example/practice exams and keys will be posted on Blackboard.

Make-up exams will not be permitted except under the extraordinary circumstances as noted above. Any requests for **re-grading** must first be submitted in writing (rather than in person upon return of your exam) with a detailed explanation of why you believe your answer is correct. You may then request an in-person appointment with me to discuss the re-grading of your answer.

Article editorial/critique (10%). This assignment will assess the students' synthesis of material covered in the course including but not limited to: descriptive and analytical epidemiology, study design, measures of disease frequency and association, systematic bias, confounding, effect modification (where applicable), and causality. Students will work in groups of 2-3 to write an 800-1000 word editorial on a published manuscript that will be placed on Canvas for this assignment.

Participation and professionalism (10% of final grade). Participation will be assessed as follows:

- **Attendance (25% of participation grade):** You are required to attend 14/15 classes to receive full attendance points. Roll call will be taken to track attendance. Permission to miss additional classes due to extraordinary circumstances as mentioned above or in some cases for professional circumstances may be granted without the subsequent loss of points. It is my expectation that you will use professional conduct and report your intended absence to me by email in advance of class. If you do not report your absence, I will send you an email and may even contact our school social worker to follow-up if I do not hear from you in a reasonable amount of time (24 hours).
- **Online quizzes (25% of participation grade):** You are required complete at least **5 of the 10** online quizzes.
- **Completion of mid-term and final evaluations (20% of participation grade):** **A total of 2 points will be given for completing the midterm (1 point) and final evaluations (1 point).** This information is very important for continuous improvement efforts of course content. I appreciate your comments about what you like about the course as well as your constructive feedback for improvements!
- **Epi in the news (25% of participation grade):** Your group of 3-4 (that will be assigned) will present one "Epi in the news" article during the semester. The article should be epidemiology-related and from current media (within 1-2 months of presentation time). The purpose of this assignment is to provide an opportunity for discussion of contemporary epidemiological/public health issues. Each team will be given 10 minutes to present an article with an additional 5 minutes of discussion. The method of presentation is flexible with the option of power point slides or strictly verbal presentations. Grading will be pass/fail based on relevance of the article to epidemiology and organization of the presentation. I will give examples of "Epi in the news" article presentations in the first part of the course. There will be a strict time limit enforced (I will stop you at 10 min).
- **Professionalism (5% of participation grade).** I reserve the right to deduct 0.5 points from your total grade for unprofessional classroom behavior. Some real-life examples of past student unprofessional classroom behavior:
 - o Online shopping, use of social media, general surfing, or texting while there is a lecture/discussion happening in the classroom
 - o Throwing a pencil when turning in an exam that a student felt was difficult
 - o Loud sighs/expressions of frustration while taking an exam
 - o Disruptive whispering, chatting, or laughing while the instructor is talking
 - o Openly criticizing other instructors/classes/students while in the classroom

- o Arriving late to class without informing the instructor
- o Printing assignments at the last minute and/or turning them in late
- o Arguing for points on homework/exams solely to improve one's score without providing a strong rationale for why the student's answer is justified
- o Falling asleep in class consistently
- o Emailing the instructor while in class about a perceived problem with the class
- o Not emailing or talking to the instructor about an intended absence

Extra Credit: There will be no extra credit given outside of extra credit problems on examinations in this course.

Grading Scale:

95-100: A*	90-94: A-	88-89: B+	82-87: B
80-81: B-	77-79: C+	74-76, C	70-73: C-
69 & below, F			

***Tips for success:** In my experience, students who perform at the outstanding level that is required for an A in this class are typically those that come to class prepared having read all the assigned/recommended material before class, start their homework well before the due date, and ask questions to clarify gaps in their understanding.

IX. LAPTOPS AND SOFTWARE

We will occasionally be using laptops (please see **section X** for dates). It is also recommended that you familiarize yourself with Microsoft Excel or Google Spreadsheets as we may occasionally use these software packages to perform calculations. A list of available software is here: <https://insidebrown.gwb.wustl.edu/Departments/IT/Pages/Student%20Software.aspx>. Microsoft office can also be purchased at a substantial discount through Wash U. Students can visit Student Technology Services (<https://sts.wustl.edu>), located on the South 40, for assistance with computer issues.

X. COURSE OUTLINE

Class: Date	Readings	Topic (s)	Epi in the news	In class exercises	What is due?	Extra practice
1: 8/29	Ch. 1 and 10	Course overview (e.g., syllabus, Canvas), introduction to fellow students, causality	None	Causal models	Online quiz for reading	
2: 9/5	Ch. 2, pgs. 31-49 (start of chapter 2 up to crude incidence and mortality ratios); Ch. 3, pgs. 75-96 (start of chapter 3 up to migrant studies); Ch. 12	Measures of disease frequency, descriptive epidemiology, and data collection systems (surveillance)	K. Johnson	Working with publically available data (Bring your laptops)	PSET 1 (causality) Online quiz for reading	
3: 9/12	Ch. 5	Measures of association and impact	K. Johnson	Measures of association and impact	PSET 2 (descriptive epi) Online quiz for reading	
4: 9/19	Ch. 3 pgs. 97-100 (ecological or correlation studies section and Box 3.5); Ch. 4	Study design	Group 1	Journal Club activity. Group analysis and report of study design and justification in selected papers.	PSET 3 (measures of association and impact) Online quiz for reading	http://learn.chm.msu.edu/e/pi/Lecture_Quizzes/Study_Design/SDN_quiz_1.html
5: 9/26	Ch. 15	Reliability and validity of screening and diagnostic tests	Group 2	CDC Case Study: Screening for Antibody to the Human Immunodeficiency Virus	PSET 4 (study design) Online quiz for reading	Sample exam
6: 10/3	None	Exam 1 (covers weeks 1-4)			Nothing	

7: 10/10	Ch. 7	Measurement error	Group 3	Selection and Information bias exercises	PSET 5 (Reliability and validity) Online quiz for reading	
8: 10/17	Ch. 2, pgs. 49-57 (crude incidence and mortality ratios up to PMR section), Appendices 1, 2, and 4	Confounding I (Standardization)	Group 4	Standardization exercises	PSET 6 (Measurement error) Online quiz for reading	
9: 10/24	Ch. 8 Kinra S, Okasha M. Unsafe sex: cohort study of the impact of too much sex on the mortality of famous jazz musicians. <i>BMJ</i> 1999 319 (7225): 1612-3	Confounding II	Group 5	Discussion of reading and confounding exercises	PSET 7 (Confounding I: Standardization) Online quiz for reading	
10: 10/31	None	Effect measure modification	Group 6	Effect measure modification exercises	PSET 8 (Confounding II)	Sample exam
11: 11/7	None	Exam 2 (covers weeks 5-9)				
12: 11/14	Required: <ul style="list-style-type: none"> Grimes and Schulz. <i>Lancet</i> 2002; 359:341-345 Grimes and Schulz. <i>Lancet</i> 2005; 365: pgs. 1429-33 Schulz and Grimes. <i>Lancet</i> 	Cohort and case-control study designs	Group 7	ICE exercise (Day 1)	PSET 9 (Effect measure modification) Online quiz for reading	

	2002; 359: pgs. 431-34					
13: 11/28	Required: <ul style="list-style-type: none"> • Ch. 9 • Grimes and Schulz. Lancet 2002; 696-700 • Grimes and Schulz. Lancet 2002; 359:515-519 • Schulz and Grimes. Lancet 2002; 359:614-618 	Experimental studies (clinical trials and quasi-experimental designs)		Experimental study (group design, implementation, and analysis) ICE exercise (Day 2)	Online quiz for reading	
14: 12/5	None	Review of course material/introduction to final exam case materials			Article critique	
15: 12/12	None	Final exam (covering all weeks)			Nothing	

XI. Competency Assessment (for office use only)

B. Foundational Competencies (and or Specialization Competencies as applicable)

1. Apply epidemiological methods to the breadth of settings and situations in public health.
2. Select quantitative and qualitative data collection methods appropriate for a given public health context.
3. Interpret results of data analysis for public health research, policy or practice.
4. Communicate audience-appropriate public health content, both in writing and through oral presentation.

B1. PSET1 to PSET9, Exams 1-2 and the Final Exam

B2. PSET4

B3. PSET2 to PSET9, Exams 1-3

B4. Epi in the news, Exams, Article editorial