EPIDEMIOLOGY METHODS

CREDIT HOURS: 3

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GRADE: L/G

OFFICES: Brown 208 and 4560 Clayton Ave, Ste. 1000 (Duncan)

ROOM: Goldfarb 124 (Section .01 [AM])
Hillman 300 (Section .02 [PM])

OFFICE HOURS: Wednesdays 12:15-1:15 in B208 (Duncan)
TBA (others)
or by appointment (all)

TIME: Thursdays 9 AM - NOON
(Section .01) & 1-4 PM (Section .02)

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I. COURSE DOMAIN AND BOUNDARIES

This course builds upon the concepts and methods learned in Foundations in Public Health: Epidemiology by providing a greater depth of understanding of the methods of epidemiological study designs and their analyses including issues of bias, confounding, and effect-modification. The goal of this class is to provide a strong background in analytic reasoning and research design, execution, analysis, and interpretation.
II. MPH COMPETENCIES

Knowledge gained in this course will provide a basis for meeting the following MPH program competencies:

**Epidemiology**
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.

This course will reinforce the following competencies from other domains:

**Transdisciplinary Problem Solving**
- Understand public health problems from a transdisciplinary perspective.

**Evidence-Based Public Health**
- Identify sources and quality of evidence-based information related to public health planning, research, policy, and practice.
- Understand the methods of and barriers to translating scientific evidence to public health practice.

**Biostatistics**
- Understand the basic concepts of probability, variation and inference.
- Apply descriptive and inferential techniques according to the type of study design for answering a particular research or practice question.
- Prepare clear and effective graphical and tabular summaries of basic statistical analysis.

**Social and Behavioral Sciences**
- Analyze determinants of health and disease using an ecological framework.

**Environmental Health Sciences**
- Specify approaches to identifying, assessing, mitigating, and preventing environmental hazards that pose risks to human health and safety; including the use of current environmental risk assessment methods.
- Explain the biological and molecular pathogenesis basis of public health, and the general mechanisms of toxicity and insult in eliciting pathogenic and salutogenic responses to chemical, biological, physical, and psychosocial environmental exposures.

**Communication and Informatics**
- Understand how to capture, synthesize, communicate and disseminate ideas and data to diverse stakeholders to influence public health policy and practice.

**Program Planning**
Knowledge gained in this course will provide a basis for meeting the following MPH program competencies:

- Design monitoring and evaluation plans to capture outcomes and impacts of public health programs or policies.

**Leadership, Professionalism and Ethics**
- Demonstrate professional demeanor in behavior and communication
- Describe, comprehend, and adhere to the basic principles of ethical analysis (e.g., the Public Health Code of Ethics) pertaining to the collection, maintenance, and use of public health information.
- Develop effective and innovative leadership for collaboration and partnership among communities and organizations focused on public health goals.

**Diversity, Culture, and Health Disparities**
- Understand the impact of contexts such as gender, race, poverty, history, migration, and culture in public health policy and practice.

### III. BROWN SCHOOL ACADEMIC POLICIES

**Academic Integrity:** Academic integrity in the completion of tests, oral presentations and written assignments (including statistical syntax) is expected. Violations of academic integrity (e.g., plagiarism) are very serious offenses. Violations will result in notification to the Assistant Dean for the appropriate (MSW or MPH) program and may result in referral to the Academic and Professional Integrity Committee, which could lead to dismissal from the program. Please review and adhere to the entire set of Academic Integrity guidelines in the student handbook on Inside Brown: [Student Handbook 2017-2018](#)

**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)](#), a University-wide resource which 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 which 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 include such activities as 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
will be at the discretion of the instructor, unless this is an accommodation approved by Disability Resources.

Nonacademic use of laptops and other devices is distracting and seriously disrupts the learning process for everyone. Neither computers nor other electronic devices are to be used in the classroom during class for non-academic reasons. This use includes emailing, texting, social networking, and use of the Internet. The 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 points, a loss of the privilege of computer 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 Director. If you would like to speak with directly Ms. Kennedy directly, she can be reached at (314) 935-3118, jwkennedy@wustl.edu, or by visiting the Title IX office in Umrath Hall. Additionally, you can report incidents or complaints to the Office of Student Conduct and Community Standards or by contacting WUPD at (314) 935-5555 or your local law enforcement agency. See: Title IX

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. See: RSVP Center

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 afore 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 is in Brown Hall, room 320.

V. READINGS

Required:


Links to additional required readings will be provided on Blackboard.

Recommended (on reserve at the Brown School Library):


VI. ORGANIZATION OF THE COURSE

This course will consist of lectures, examples, computer labs and discussion. You will be given seven problem sets that reinforce the epidemiologic principles and methods that are presented in class, answers to which will be discussed in class the following week. I will assess your mastery of the course objectives through problem sets, quizzes, exams and a data analysis project.

VII. ROLE OF FACULTY AND STUDENT

Student Expectations and Requirements:

- Be prepared to discuss the assigned readings at the start of each class and to participate in class discussions.
- Submit your assignments and examinations on time
• If you have any issues or challenges with the class, please come to the instructors first so that we can make every effort to resolve them together.

• Post questions regarding course content, assignments, exams, etc. to Blackboard Discussion Board rather than sending them to the instructors or TAs via email. Chances are that someone else has the same question, so posting questions to Blackboard where everyone else can see them (and the answers) is much more efficient for everyone. Students are encouraged to answer each other’s questions, and doing so will count towards a student’s participation grade. Therefore, the instructors and TAs will purposely delay responding to questions that can be answered by other students.

Instructors’ Expectations and Requirements:

• We will come to class prepared, organized, and enthusiastic.

• We will be available to answer any questions that you may have about the course. Please feel free to contact me by telephone or email (preferred) to discuss any issues concerning the course.

• We retain the right to change the content and order of the lectures and exercises to meet the needs of the students who are enrolled in the course.

TA Expectations and Requirements:

• The TAs will assist the instructor with preparation of materials for class and grading of papers/exams.

• The TAs will hold office hours and exam review sessions to aid students in the learning of the course material.

• The TAs will also be available to answer – or to facilitate the answering of – student questions regarding the course material through email or on Blackboard (see below).

VIII. ASSIGNMENTS AND GRADING CRITERIA

Problem Sets: Over the course of the semester you will complete eight problem sets designed to provide you with an opportunity to develop the skills needed to master the course competencies. A hard copy of the problem set is due at the start of the class on the due date. Although you may discuss these problem sets with your classmates, you are expected to turn in your own, unique version of each problem set. Please also have available a second copy (electronic or hard copy) to review in class. Late assignments will not be accepted without advance permission of an instructor.

Each problem set will be graded on a 10 point scale. Six of the ten points will be based on whether the criteria listed below are met. The remaining four points will be given for accurately answering a single question on the problem set (partial credit will be given). This question will not be revealed in advance.

To receive full points on your problem set, it must:

• be turned in at the beginning of class on the day it’s due, whether or not you are in class
• have all answers typed
• show all calculations (these can be done by hand, but must be legible)
• have units, where appropriate, for all numbers in your answers
• have complete answers for every question

**Participation:** One participation point will be given for completion of each of the following: (1) the beginning of the semester survey; (2) the mid-semester course evaluation; and (3) the end of the semester course evaluation. To receive the remaining seven points for participation you must attend all class sessions, unless absence is excused by an instructor in advance, arrive to class on time, refrain from improper use of technology during class (see below), and participate in discussions in class.

**Small group data analysis project:** In groups of 2-4 students, you will choose a research question that can be answered using data from the National Longitudinal Study of Adolescent Health (Add Health) and conduct a statistical analysis using the methods learned in class. At the end of the semester, groups will write and submit a structured abstract based on their findings and give a 15-minute oral presentation of their findings on the last day of class.

**Review quizzes:** To minimize time spent in class reviewing concepts from Foundations Epidemiology, each week I will give you a list of topics from Foundations Epidemiology to review prior to coming to class to the following week's class. At the same time I will post a brief quiz covering the review material on Blackboard. You will have the entire week to complete the quiz, which must be submitted by the beginning of class each Wednesday. At the end of the semester I will drop the lowest quiz grade.

**Exams:** Two in-class exams will be given to evaluate the skills you are expected to master during the course. Exams will be cumulative and will include questions in a variety of formats (e.g. multiple choice, short answer). Questions may cover any material presented in lectures and/or readings due up to the day of the exam.

**Grading:** Final grades will be based on the proportion of points earned from the problem sets, final project, exams, quizzes and participation during the course:

- Problem sets (30 %)
- Final project (20 %)
- Exams (30 %)
- Review Quizzes (10%)
- Participation (10 %)

**Grade Scale:**

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*I will post PDF files of these readings on Blackboard*