Department of Epidemiology and Biostatistics

Epidemiology 9551A
Foundations of Epidemiology
Fall 2018

Class: Mondays 9:30 to 11:30 am
       Fridays 9:30 to 10:30 am
Location: Lectures – Kresge Building, K103
          Tutorials – Kresge Building, K7
TA: TBA

Instructor: Dr. Kelly Anderson
Office Hours: After class or by appointment
E-mail: kelly.anderson@schulich.uwo.ca
Phone Extension: 81001

Course Information

Prerequisite Information
Enrollment in the graduate program in Epidemiology & Biostatistics, or permission of the course instructor.

Unless you have the requisites for this course or written special permission from the Undergraduate or Graduate Chair to enrol, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees if you are dropped from a course for failing to have the necessary prerequisites.

Course Syllabus

This course aims to provide a comprehensive introduction to fundamental concepts, principles, and terminology of epidemiologic research and study design. Topics include measures of disease frequency and effect, key study designs, causation, bias, and confounding.

In addition to lectures, students will participate in tutorial sessions (schedule below) where they will apply concepts learned in class to epidemiologic case studies and datasets.
**Learning Outcomes:**

By the end of this course, students will be able to:

- Use epidemiological concepts to describe the distribution and determinants of disease, with consideration of person, place, and time
- Apply measures of disease frequency to describe the extent of disease in a population;
- Compute estimates of disease effect to examine exposure-disease associations
- Distinguish between and understand the limitations of various research designs
- Address threats to the validity of study design, including bias, misclassification, confounding, and effect modification.

**Weekly Topics:**

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Chapters</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>1</td>
<td>Sept 10</td>
<td>Introduction to Epidemiology &amp; Causal Thinking</td>
<td>1 &amp; 8</td>
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<tr>
<td></td>
<td>Sept 14</td>
<td>Causal Thinking in Epidemiology II</td>
<td>8</td>
<td>-</td>
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<tr>
<td>2</td>
<td>Sept 17</td>
<td>Populations and Population Health</td>
<td>2 &amp; 7</td>
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<td></td>
<td>Sept 21</td>
<td>Overview of Epidemiological Study Designs</td>
<td>5</td>
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<td>3</td>
<td>Sept 24</td>
<td>Measures of Disease Frequency</td>
<td>3 &amp; 4</td>
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<td></td>
<td>Sept 28</td>
<td><em>Tutorial #1: Measures of Disease Frequency</em></td>
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<td>#1 Due</td>
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<tr>
<td>4</td>
<td>Oct 1</td>
<td>Measures of Effect &amp; Population Impact</td>
<td>9</td>
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<td></td>
<td>Oct 5</td>
<td><em>Tutorial #2: Measures of Effect &amp; Population Impact</em></td>
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<td>5</td>
<td>Oct 8</td>
<td>Thanksgiving Monday - NO CLASS</td>
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<td>Oct 12</td>
<td>Fall Reading Week - NO CLASS</td>
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<td>6</td>
<td>Oct 15</td>
<td>Confounding: Definition and Conceptual Issues</td>
<td>11 &amp; 12 (to pg. 236)</td>
<td>#2 Due</td>
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<td></td>
<td>Oct 19</td>
<td>Confounding: Adjustment and Control</td>
<td>11 &amp; 12 (to pg. 236)</td>
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<td>7</td>
<td>Oct 22</td>
<td>Interaction &amp; Effect Measure Modification</td>
<td>18</td>
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<td>Oct 26</td>
<td><em>Tutorial #3: Confounding &amp; Interaction</em></td>
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<td>8</td>
<td>Oct 29</td>
<td>Midterm Exam</td>
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<td></td>
<td>Nov 2</td>
<td>Bias &amp; Measurement Error I</td>
<td>10</td>
<td>#3 Due</td>
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<td>9</td>
<td>Nov 5</td>
<td>Bias &amp; Measurement Error II</td>
<td>OWL</td>
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<td>Nov 9</td>
<td><em>Tutorial #4: Bias and Measurement Error</em></td>
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<td>10</td>
<td>Nov 12</td>
<td>Cohort Studies</td>
<td>14</td>
<td>#4 Due</td>
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<td>Nov 16</td>
<td>Cross-Sectional &amp; Ecological Studies</td>
<td>16</td>
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<td>11</td>
<td>Nov 19</td>
<td>Case-Control Studies</td>
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<td>Nov 23</td>
<td><em>Tutorial #5: Study Design</em></td>
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<td>12</td>
<td>Nov 26</td>
<td>Screening</td>
<td>19</td>
<td>#5 Due</td>
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<td>Nov 30</td>
<td><em>Tutorial #6: Screening</em></td>
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<td>13</td>
<td>Dec 3</td>
<td>Final Exam Review Session</td>
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<td>#6 Due</td>
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<td>Dec 7</td>
<td>Open session for exam Q&amp;A</td>
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Additional Readings will be posted to OWL
**Course Materials**

**Required:**
  https://ebookcentral.proquest.com/lib/west/detail.action?docID=1707881#

**Optional:**
- Porta M. (2014) A Dictionary of Epidemiology, 6\textsuperscript{th} Edition. New York, Oxford University Press. Available Online via UWO Library:  
  https://ebookcentral.proquest.com/lib/west/detail.action?docID=1679277#

All books are available in the campus bookstore and online through the campus library (login required). Additional readings and other course materials will be posted to OWL. Students are expected to read all assigned chapters and articles.

**Methods of Evaluation**

A. **Participation (10% of grade)**
   - Students are expected to actively participate, either during in-class discussions or on the online discussion board on OWL.
   - A rubric for evaluating participation is available on the course OWL page.

B. **Tutorial Assignments (30% of grade)**
   - Assignments must be completed independently and handed in at the beginning of class.
   - Assignments will be posted to OWL at least one week before the deadline.
   - **Assignment Due Dates:**
     1. September 28
     2. October 15
     3. November 2
     4. November 12
     5. November 26
     6. December 3
C. **Midterm Exam (20% of grade)**
   - The midterm exam will consist of a combination of multiple choice and short answer questions, and will include material from lectures, readings, and tutorials for the first half of the term (weeks 1 to 7, inclusive).
   - **Date: October 29 in class**

D. **Final Exam (40% of grade)**
   - The final exam will consist of a combination of multiple choice and short answer questions, and will include material from all lectures, readings, and tutorials over the course of the semester. Although the exam will be cumulative, there will be a greater emphasis placed on material covered after the midterm.
   - The exam will be scheduled by the registrar’s office during the final exam period.
   - **Date: Monday December 10 from 9:30 am to 12:30 pm, Location TBA**

**Late Assignment Policy**
Please negotiate an alternative deadline with the instructor in advance if you foresee difficulties meeting the assigned due dates.

**Marking Reassessments**
Should you have concerns about a mark you have received on an assignment, you are welcome to request a reassessment from the instructor. To request a reassessment, please write one paragraph explaining why you believe you deserve a different mark from the one that you received. This will be read in conjunction with your original submission. The instructor will reassess your assignment based on this information. Requests for changes in marking made in any other manner will not be considered.

**Policy on Accommodation for Medical and Non-Medical Absences**

The University’s policy on accommodation for medical illness may be found at: [http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf).

The University policy on accommodation for medical Illness states that “in order to ensure fairness and consistency for all students, academic accommodation for work representing 10% or more of the student’s overall grade in the course shall be granted only in those cases where there is documentation indicating that the student was seriously affected by illness and could not reasonably be expected to meet his/her academic responsibilities. Documentation shall be submitted, as soon as possible, to the appropriate Dean’s office....” (i.e., the Associate Dean, Graduate Studies). Accommodation for work representing less than 10% of the student’s overall grade is at the discretion of the course instructor.
All non-medical absences must be approved in advance. In the case of an unexpected absence on compassionate grounds, documentation may be requested. If documentation is required by the instructor for either medical or non-medical academic accommodation, then such documentation must be submitted by the student directly to the appropriate Faculty Dean’s office and not to the instructor. It will be the Dean’s office that will determine if accommodation is warranted.

**Statement on Academic Offences**

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence:

[https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_grad.pdf)

**Support Services**

As part of a successful student experience at Western, we encourage students to make their health and wellness a priority. Western provides several on campus health-related services to help you achieve optimum health and engage in healthy living while pursuing your degree. For example, to support physical activity, all students, as part of their registration, receive membership in Western’s Campus Recreation Centre. Numerous cultural events are offered throughout the year. Please check out the Faculty of Music web page [http://www.music.uwo.ca/](http://www.music.uwo.ca/), and our own Mcintosh Gallery [http://www.mcintoshgallery.ca/](http://www.mcintoshgallery.ca/). Information regarding health- and wellness-related services available to students may be found at [http://www.health.uwo.ca/](http://www.health.uwo.ca/)

Students seeking help regarding mental health concerns are advised to speak to someone they feel comfortable confiding in, such as their faculty supervisor, their program director (graduate or undergraduate chair), or other relevant administrators in their unit. Campus mental health resources may be found at [http://www.health.uwo.ca/mental_health/resources.html](http://www.health.uwo.ca/mental_health/resources.html)

To help you learn more about mental health, Western has developed an interactive mental health learning module, found here: [http://www.health.uwo.ca/mental_health/module.html](http://www.health.uwo.ca/mental_health/module.html). This module is 30 minutes in length and provides participants with a basic understanding of mental health issues and of available campus and community resources. Topics include stress, anxiety, depression, suicide and eating disorders. After successful completion of the module, participants receive a certificate confirming their participation.
Department & Faculty Offices

The Epidemiology & Biostatistics main office is located in K201 in the Kresge Building on main campus.

Technology Requirements

You are responsible for all required course materials and announcements posted to the course’s OWL website. Please ensure after the first class that when you log in you are able to access the course site. A copy of the course outline will be available on both OWL and the departmental website.

The course OWL site will have an active discussion page that will be moderated by the TAs and course instructor. Please post all questions and inquiries to OWL to ensure that others have the opportunity to benefit from responses. Active and meaningful participation in the online discussion will be counted towards your participation grade.

The tutorial sessions and some assignments will involve the use of Stata statistical software, which is available in the K7 computer lab.