“...it is the knowledge about the way in which the disease is propagated which will cause them to disappear.”

- John Snow

Course Format
This course will be held entirely online, with the opportunity to meet with the professor over Zoom as needed. Students are expected to:
1. Complete the readings for each module before viewing the course material online.
2. Watch all lecture videos and supplemental materials for each module.
3. Take quizzes and complete the homework assignments on time.
4. Participate in class discussions.

The class format will include lectures (videos), thought questions, homeworks, discussions, and quizzes/final exam as described below. The course website will show the steps students should follow in each module.

Course Outline
Epidemiology is the systematic and rigorous study of health and disease in a population. The purpose of this course is to introduce you to core concepts in epidemiology as a foundation for further learning in the public health field. You will learn about several aspects of epidemiology and will discover and learn to apply analytical methods to study patterns of disease and injury. Upon learning concepts of inference, bias and confounding you will assess epidemiological associations and causation of disease. You will recognize how to apply these concepts to inform basic and clinical science as well as policy. The course requires problem-based learning of epidemiological concepts and methods, so you will be able to use epidemiology as a scientific tool for addressing the health needs of the community.

Required Readings
Friis, Epidemiology 101, second edition. Other readings will be available on the course website.

Objectives
To familiarize you with how epidemiology contributes to:
1. The understanding of the causes and natural course of disease of all kinds,
2. The control of disease in human populations, and

By successfully completing this course, you should be able to:

1. Discuss the role of epidemiology within the broader field of public health
2. Discuss the principles of disease prevention within populations
3. List and describe key terms used in the epidemiology and prevention of infectious disease
4. Calculate and interpret basic population measures of health and disease occurrence including incidence, prevalence, and survival
5. Make appropriate comparisons of disease rates within and between populations
6. Distinguish between basic measures of association, including rate ratio, risk ratio, incidence density ratio, odds ratio, attributable risk, and population attributable risk
7. Select and apply fundamental epidemiologic study designs including randomized clinical trial, cohort, case-control, and ecologic for the purpose of investigating public health problems
8. Identify the role of bias and confounding in epidemiologic research and apply methods appropriate to assessment of confounding and various types of bias
9. Differentiate between various epidemiologic study designs and compare their respective strengths and weaknesses
10. Critique published epidemiological studies and identify their strengths and weaknesses

Association of Schools of Public Health (ASPH) competencies covered in class (epidemiology specific):
After completion of this course, you should be able to:

1. Identify key sources of data for epidemiologic purposes.
2. Identify the principles and limitations of public health screening programs.
3. Describe a public health problem in terms of magnitude, person, time and place.
4. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of health issues.
5. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
6. Apply the basic terminology and definitions of epidemiology.
7. Calculate basic epidemiology measures.
8. Communicate epidemiologic information to lay and professional audiences.
9. Draw appropriate inferences from epidemiologic data.
10. Evaluate the strengths and limitations of epidemiologic reports.

Council on Education for Public Health Foundational Competencies for Bachelor's Degrees (epidemiology specific):

1. You will develop the ability to locate, use, evaluate and synthesize public health information.

Class Schedule

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<tr>
<th>Week 1: August 24-27; Course Introduction and Outbreak Investigations</th>
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| Epi 100 Introductory lecture | Chapter 1, p 1-8.  
| Chapter 5, pages 103-107 and 112-126. | Discussion 1 |
| Outbreak investigation: Ebola | Chapter 10. |
| **Week 2: August 30-September 3; Studying Populations and Age Adjustment** | |
| Studying populations | Chapter 2.  
| Page 199 of your book: "Natural history of disease," including information on the three levels of prevention. | Homework: Incidence, Prevalence, and Person-Time |
| Age adjustment/ a.k.a. direct standardization | Chapter 3, pages 69-75. |
| **Week 3: September 6-10; Measures of Association** | |
| Measures of association | Chapter 3, pages 57-69 | No assignments this week |
| **Week 4: September 13-17; Overview of Study Designs** | |
| Overview of study designs | Chapter 7, pages 147-160. | Quiz 1 |
| **Week 5: September 20-24; Ecologic Studies and Sources of Public Health Data** | |
| Chapter 5, "Types of Descriptive Epidemiologic Studies," pages 107-112. | Homework 2 |
| Sources of Public Health Data | Chapter 4: “Data and disease occurrence.” |
| **Week 6: September 27-October 1; Intervention Studies** | |
| Clinical Trials | Chapter 7, “Experimental Studies,” pages 158-160. | Discussion 2 |
| **Week 7: October 4-8; Cohort Studies** | |
| Cohort studies | Chapter 7, "Cohort Studies," pages 155-158. | No assignments this week |
| **Week 8: October 11-15; Case-Control Studies** | |
| Case-control studies | Chapter 7, "Case-Control Studies," pages 153-155. | Homework 3 |
| Case-Control Example: renal cell cancer | |
### Week 9: October 18-22; Random Error


### Week 10: October 25-29; Bias

| Bias | Chapter 6, “Bias,” in Foundations of Epidemiology, M. Bovbjerg. Available from: [https://open.oregonstate.education/epidemiology/chapter/bias/](https://open.oregonstate.education/epidemiology/chapter/bias/) | Quiz 2 |

### Week 11: November 1-5; Confounding and Effect Measure Modification

| Confounding | Chapter 7, "Confounding," in Foundations of Epidemiology, M. Bovbjerg. Available from: [https://open.oregonstate.education/epidemiology/chapter/confounding/](https://open.oregonstate.education/epidemiology/chapter/confounding/) | No assignments this week |

### Week 12: November 8-12; Causal Inference

| Causal inference | Chapter 6, "Association and Causality." | Homework 4 |

### Week 13: November 15-19; Screening

| Screening | Chapter 9. | Homework 5 |

### Week 14: November 22-26; Ethics

| Ethics | Chapter 8, Pages 181-183, “Ethics and epidemiology” | No assignments this week |

### Week 15: November 29-December 3; Critical Review of Epi Studies

| Review of studies | Chapter 9, “Study designs revisited,” in Foundations of Epidemiology, M. Bovbjerg. Available from: [https://open.oregonstate.education/epidemiology/chapter/study-designs-revisited/](https://open.oregonstate.education/epidemiology/chapter/study-designs-revisited/) | No assignments this week |

### Finals Week: December 5-10

| Final Exam | Will occur over Zoom. | |

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**Assessment**

**Quizzes (20% of grade)**

Quizzes will address concepts from the modules. Questions will be short answer, multiple choice, true/false, calculations, and will ask you to show your work. Quizzes are closed book and must be done individually.
Students who cannot take quizzes due to extenuating circumstances should inform the instructor as soon as possible of the illness/situation. Extenuating circumstances are defined as severe personal illness (medical note required) or circumstances beyond the student’s control.

**Homeworks (50% of grade)**

Homework assignments are aimed for you to apply epidemiologic principles. Homeworks will be posted on the course website.

Homework directions:
1) Download the homework from Canvas. Write succinct answers that include a brief explanation or statement of support.
2) Upload your homework answers to Canvas by Saturday night of each week by midnight (PDF or Word copy accepted). To show your work, upload the Word document of the homeworks within the homework page.

**Discussions (10% of grade)**

There are two assigned discussions on Canvas for you to enter your ideas and respond to other students’ entries.

**Final Examination (20% of grade)**

The final exam will be conducted via Zoom.

The format of the exams will include multiple choice, true or false, short answer questions, as well as calculations and step-wise work through a ‘real world’ epidemiological problem. This is intended to assess your application of knowledge from required readings, lectures, discussions, and the final will be cumulative.

**Extra credit (optional)**

Each week students are asked to think up and submit one possible quiz question and their answers, based on that week’s readings and lectures, by Wednesday night at 11:59pm. I will choose among the best questions to add questions to the quizzes. If your question is chosen, you receive a small extra credit.

**Late work**

There is a 10% penalty for every 24 hours that homework or assignments are late. After 5 days you will receive a 0 for any late work. Late reviews will receive a grade of 0 unless there are extenuating circumstances.

**Academic Integrity**

According to UNT Policy 06.003, Student Academic Integrity, academic dishonesty occurs when students engage in behaviors including, but not limited to cheating, fabrication, facilitating academic dishonesty, forgery, plagiarism, and sabotage. A finding of academic dishonesty may result in a range of academic penalties or sanctions ranging from admonition to expulsion from the University.
Emergency Notification & Procedures

UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Blackboard for contingency plans for covering course materials.

Accessibility

All lectures will be available in closed caption format.

Your success in this class is important to me. Please let the me know if there is anything I can do to help you better understand the materials in this course, and I will try to do it if we can. Work with me; together we can develop strategies to maximize your learning potential, your understanding of the course material, and your demonstration of that understanding.

Students with Disabilities

All students taking this class are valued and it is important to me that students with disabilities are appropriately accommodated.

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information, refer to the Office of Disability Access website at http://www.unt.edu/oda. You may also contact ODA by phone at (940) 565-4323.