Introduction to Epidemiology in Global Health

Dates: 21 January 2025 – 30 March 2025

Location: Online

Instructor

Brandon Guthrie, PhD
Associate Professor, Global Health
Associate Professor, Epidemiology
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Dr. Guthrie (he/him/his) is an epidemiologist and Associate Professor of Global Health and Epidemiology at the University of Washington. His specific research interests focus on improving engagement in care among people living with HIV. Dr. Guthrie has NIH-funded research projects based in Nairobi, Kenya that are evaluating interventions to improve linkage and retention in HIV/AIDS care, expedite treatment initiation, and reduce mortality. His research includes both randomized intervention trials as well as mixed methods and implementation science approaches to evaluate interventions that are tailored to achieve both high effectiveness and acceptability.

Student Support Specialist

Dewa Shrestha Greenleaf, MA (edgh@uw.edu)
Dewa Shrestha Greenleaf (she/her/hers) is a Student Support Specialist in the Department of Global Health e-Learning at the University of Washington. Born in Kathmandu, Nepal, Dewa immigrated to the US as a child. She completed her Master's degree in Health Promotion at the University of Iowa. Her graduate work focused on understanding how researchers examine health issues in immigrant and refugee populations. She also worked on a longitudinal study to examine the impact of physical activity on the bone development of children.

Description

Introduction to Epidemiology for Global Health provides an orientation to the fields of epidemiology and biostatistics for those seeking to conduct research or work on research studies in a global health context. The objective of this course is to provide participants with an understanding of how epidemiologic methods are used to understand the distribution of disease within populations and what factors affect the risk of disease. Through this course, participants will become familiar with the concepts and terminology used to describe disease risk, the common study designs used in epidemiology, the concepts of bias and confounding, and the importance of appropriate measurement in epidemiologic research.

Course Learning Objectives

After completing this course, you will be able to:

- Describe the main concepts in epidemiology.
- Describe the methodological approaches to measuring diseases in populations and assessing relationships between exposures and diseases.
- Describe how to use measures of association to investigate the relationship between exposure and disease.
- Describe the characteristics of different study designs, including cohort studies, case-control studies, and randomized trials and provide examples of when each study design would be appropriate and preferred.
- List the seven viewpoints that epidemiologists use to assess the likelihood of a causal exposure-disease relationship.
- Identify confounding and how to account for confounding to produce valid conclusions.
- Describe the most common strategies to control for confounding.
- Give examples of how the research question of interest will dictate how subjects are classified in terms of exposure and disease.
- Describe how to interpret the various measures of test performance.
- Summarize the common regression methods used in epidemiology.
- Describe the various types of surveillance systems and the ways in which global health surveillance can guide public health action.

Course Topics

1. Introduction to Epidemiologic Methods

- Basic terminology
- Descriptive epidemiology
- Measuring burden of disease
- Measuring excess risk

2. Statistical Decision Making

- Types of data
- Numerical summaries
- Graphical summaries
- Hypothesis testing & statistical inference
- Drawing conclusions from hypothesis testing

3. Study Designs

- Descriptive study designs
- Randomized trials
- Quasi-experimental and cohort studies
- Case-control and cross-sectional studies

4. Causal Inference

5. Bias & Confounding

- Bias
- Confounding
- Controlling for confounding
- Rate adjustment

6. Measurement & Classification

- Classification
- Classification of exposure
- Misclassification
- Measurement
- Strategies to minimize misclassification

7. Interpretation & Decision Making

- Interpreting test results

8. Regression Models

- Linear regression models
- Logistic regression models
- Survival analysis

9. Global Health Surveillance

- Surveillance systems
- Data collection
- Emerging surveillance systems
- Research

Target Audience

Participants are from multiple countries around the world and include health care workers and clinicians who have a bachelor's-level degree (or equivalent). The course is appropriate for individuals with experience in a health-related field with interest in understanding epidemiologic principles and research methods.

Format

This is a self-paced, online modular course divided into 10 weeks.

This course will be delivered entirely online through a course management system named (Moodle).

Participants are expected to review the pre-recorded weekly lectures, complete assigned readings and activities, and participate in discussion via the discussion forums. Most participants will also meet with a local study group that is led by a site facilitator. This is meant to increase opportunities for discussion about the relevance of the material to the local setting. Completion of a final course evaluation is strongly encouraged for successful completion of the course.

If you have any questions, please look at the course FAQ. If your question isn't answered there, please email edgh@uw.edu.

Materials

Required and recommended readings will be drawn from the following texts. Additional readings will be assigned for each module.

Principles of Epidemiology in Public Health Practice, 3rd Edition. An Introduction to Applied Epidemiology and Biostatistics

Cancer Epidemiology: Principles and Methods. Isabel dos Santos Silva. International Agency for Research on Cancer. Lyon. 1999..

Grading

To be successful in the course you will need to complete all of the learning activities listed.

Final grades will be calculated as follows:

Activity	Percentage
Written assignments	14%
Discussion forums (2 points each, 5 total)	10%
Quizzes (4 points each, 9 total	36%
Final exam	40%
Total	**100%**

Submitting Assignments

All assignments for this course will be submitted electronically through Moodle. Assignments must be submitted by the given deadline.

Viewing Grades in Moodle

Points you receive for graded activities will be posted to the Moodle Grade Book.

Quizzes will be graded upon submission. Discussion and assignment grades are posted by the end of the day Monday after an assignment is due. If you submit your assignment late (after the due date), please note that your grade will be updated approximately 10 days after the due date. All due dates and times are in Pacific Time.

Assignments

Written Assignments

There are two written assignments throughout the course. The assignments will give you an opportunity to practice drafting common project management documents. Answer keys are provided once you submit your assignment.

Discussion Forums

Your participation in the discussion forums is critical for maximizing your learning experiences in this course. Please refer to the information on posting to discussion forums to read about expectations for posting.

Quizzes

Quizzes will open when the module opens. You will have 2 attempts on each quiz. The learning management system will record your highest score.

Optional Learning Activities

In some modules, we have included optional learning activities. These contain additional resources, learning activities, and downloadable resources. Completing these optional activities is for your own enrichment and will not count toward your grade.

Certificate of Completion

Active participation is required to receive a Certificate of Completion for the course. To receive a Certificate of Completion from the University of Washington, USA, you must pass the course, which means getting a final score of 70% or higher on all graded activities.

If you are a site participant, you must earn a qualifying score and attend 3 of the site meetings your site will hold. Attendance at more, if offered, is encouraged but not required to meet the site participation requirement. After the course, site participant certificates will be sent to site coordinators for distribution.

Late Work Policy

Assignments will be due at the end of each module. If you are unable to submit your assignment by the due date, you may still submit it up to one week late without penalty. After the one-week grace period, the assignment will close and it can no longer be accepted for grading.

Commitment to Academic Integrity

Commit to Integrity

As a participant in this course, you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

Definitions

“Plagiarism is defined as the use of the words, ideas, diagrams, etc., of publicly available work without appropriately acknowledging the sources of these materials. This definition constitutes plagiarism whether it is intentional or unintentional and whether it is the work of another or your own, previously published work. Plagiarism is a very serious offense that the University of Washington's eDGH Program does not tolerate.”

Enforcement

Corroborated reports of plagiarism, cheating, or other misconduct will result in no credit on that assignment and may result in suspension from the course and ban from participation in future courses.

Religious Accommodations

eDGH uses the UW’s policy on religious accommodations for participants who need to make special arrangements in meeting course deadlines due to reasons of faith or conscience or for religious activities. Accommodations must be requested within the first two weeks of this course by contacting edgh@uw.edu.

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