



Core Course: Principles of Epidemiology

PHE 535 (PSU), CPH 533 (OHSU-SON), H 525 (OSU), PHPM 512 (OHSU-PHPM)

Course Description:

This course is designed to introduce graduate students in the Oregon MPH Program to basic concepts and issues in epidemiology. Epidemiology is the fundamental science used by public health professionals to identify, prevent and control health problems in communities. Specifically, epidemiologic methodology is used to investigate and detect how health-related states or events (e.g. disease, unhealthy exposures, etc.) are distributed in populations and what factors or characteristics (“determinants”) influence or determine these distributions. In addition, epidemiology is used to apply study findings to the prevention and control of health problems within populations.

This course will introduce the concepts, principles and methods of epidemiology within relevant sociocultural contexts. We will also learn how to apply epidemiologic methods to answer questions about the distribution of disease, death, disability and risk exposures in populations, as well as those relating to causal relationships between exposures and health outcomes.

Credits: 3 credits

COMPETENCY MATRIX

COMPETENCY	RELATED COMPONENTS	LEARNING ACTIVITIES*	COMPETENCY DEMONSTRATIONS*
1. Quantify & Describe Distribution of Health-Related States in Populations	1. Articulate and apply the basic concepts, definitions and terminology of epidemiology 2. Articulate the primary goals of epidemiology: elucidating cause and instituting public health measures to improve community health 3. Describe a public health problem in terms of magnitude, person, time and place 4. Select and calculate basic epidemiology measures 5. Draw appropriate inferences from epidemiologic data 6. Identify key sources of data for epidemiologic purposes 7. Evaluate epidemiologic literature and reports in terms of design, results, interpretation, strengths	<ul style="list-style-type: none"> • Required readings • Class discussions • Exercises (such as case studies, problem sets, self-assessment tools, critical review of epidemiologic literature, etc.) • Viewing films • Guest speakers • Web-based learning modules 	<ul style="list-style-type: none"> • Oral or poster presentations in classroom or community • Quizzes/Examinations • Research papers on relevant topics • Exercises

	and limitations		
COMPETENCY	RELATED COMPONENTS	LEARNING ACTIVITIES*	COMPETENCY DEMONSTRATIONS*
2. Apply Epidemiologic Methods to Identify Causes of Health-Related States	<ol style="list-style-type: none"> 1. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data 2. Calculate and interpret epidemiologic measures of frequency, association (absolute and relative), and impact 3. Explain risk, risk factors, association, and causation (causal inference and causal criteria) 4. Identify and describe the major descriptive and analytic epidemiology study types including their uses, strengths, and limitations 5. Select an appropriate study design to address a specific epidemiologic problem 6. Identify, define, and describe the major types of bias in epidemiologic studies including how to assess their presence and control their effects 7. Identify, define, and describe confounding and effect modification, and how to assess their presence and control their effects 8. Explain the basic steps of an outbreak investigation 9. Assess the validity and reliability of public health screening programs 	<ul style="list-style-type: none"> • Required readings • Class discussions • Exercises (such as case studies, problem sets, self-assessment tools, critical review of epidemiologic literature, etc.) • Viewing films • Guest speakers • Web-based learning modules 	<ul style="list-style-type: none"> • Complete a course on ethical issues related to research with human subjects • Design an epidemiologic study • Quizzes/Examinations • Oral or poster presentations in classroom or community • Research papers on relevant topics • Exercises
3. Interpret Study Findings within	<ol style="list-style-type: none"> 1. Evaluate risk 2. Evaluate measures of association 	<ul style="list-style-type: none"> • Required readings • Class discussions 	<ul style="list-style-type: none"> • Oral or poster presentations in

<p>Relevant Sociocultural Contexts</p>	<ol style="list-style-type: none"> 3. Identify study limitations 4. Identify study strengths 5. Explore the historical, social, and ethical implications of the uses of epidemiology in public health 6. Identify social and cultural factors that influence population health, and explain how they affect the distribution of disease in the population 7. Assess internal validity of study by identifying and controlling sources of error (random and systematic (bias)), confounding, interaction, etc. 8. Assess external validity of findings (generalizability) 9. Evaluate causal criteria 10. Evaluate significance and precision of findings 	<ul style="list-style-type: none"> • Exercises (such as case studies, problem sets, self-assessment tools, critical review of epidemiologic literature, etc.) • Viewing films • Guest speakers • Web-based learning modules 	<p>classroom or community</p> <ul style="list-style-type: none"> • Quizzes/Examinations • Research papers on relevant topics • Exercises
<p>4. Communicate Public Health Findings</p>	<ol style="list-style-type: none"> 1. Communicate epidemiologic concepts, definitions, and terminology in both technical and lay language 2. Describe the characteristics, uses and interpretations of epidemiologic measures and study designs for lay public, professionals, and policy makers 3. Explain the importance of epidemiology for informing scientific, ethical, economic and political discussion of and action upon health issues 	<ul style="list-style-type: none"> • Required readings • Class discussions • Exercises (such as case studies, problem sets, self-assessment tools, critical review of epidemiologic literature, etc.) • Viewing films • Guest speakers • Web-based learning modules 	<ul style="list-style-type: none"> • Oral or poster presentations in classroom or community • Quizzes/Examinations • Research papers on relevant topics • Exercises

*** Activities and Demonstrations chosen for use are subject to course instructor discretion**