

MS in Epidemiology Curriculum Full-time sequence

YEAR 1	YEAR 2
FALL:	FALL:
PH 5001 Fundamentals of Public Health (3 credits)	PH 8001 Research Design and Analysis in Public Health (3 credits)
PH 5201 Epidemiologic Research Methods I (3 credits)	PH 9996 Thesis (3 credits.)
PH5002 Biostatistics (3 credits) – strongly recommended	Quantitative/Cognate course (3 credits)
SPRING:	SPRING:
PH 8202 Epidemiologic Research Methods II (3 credits)	Epidemiology cognate courses (3 credits)
Epidemiology cognate courses (3 credits)	Cognate/Quantitative methods courses (3 credits)
Quantitative methods courses (3 credits)	PH 9996 Thesis (3 credits)

Required: PH5001, PH5201, PH8202, PH8001 (4 courses); Cognate Epidemiology Courses (3 courses); Advanced Quantitative Methods course (3 courses); 6 credits of masters thesis.

DEGREE REQUIREMENTS

The MS in Epidemiology degree requires 30 semester hours (s.h.) of course work plus completion of a 6 s.h. Master's thesis (total degree requirement of 36 s.h.). The MS degree can be completed in 2 academic years by full time students and in 3 academic years by part time students. Students will be granted up to 6 s.h. of advanced standing credit for course work completed through the CDC or a CEPH accredited public health program, some of which are offered as intensive summer courses.

COURSES

1. Required Public Health Core Courses (12 s.h.)

PH 5001 Fundamentals of Public Health (3 s.h.)

This course encompasses historical and socio-cultural approaches to understanding public health and bioethics. Emphasis is on understanding public health systems from the dawn of history to the 21st century and the evolution of bioethical issues including the application of bioethical principles, regulations and strategies in research and health practice. This seminar emphasizes the integration of conceptual and experiential learning. This is reflected in the course design and in teaching and learning processes.

PH 5201 Epidemiological Research Methods 1 (3 s.h.)

This course provides an introduction to the fundamentals of conducting epidemiologic research. It covers definitions of epidemiology; measures of disease frequency and risk assessment; measures of effect and association; epidemiologic study designs including randomized clinical trials, cohort, case-control studies, and cross-sectional surveys; assessment of screening programs, and an overview of the role of bias and confounding in epidemiologic study results

PH 8202 Epidemiologic Research Methods 2 (3 s.h.)

By exposing students to more advanced concepts in epidemiology, the purpose of this course is to build upon material presented in PH 670 (Epidemiologic Research Methods 1) and introducing a more thorough assessment of confounding, interaction, bias, issues related to quality control and measurement of risk. In addition, concepts such as multivariate modeling using logistic and log linear regression and survival analysis are describing and SPSS is used to analyze epidemiologic data.

PH 8001 Research Design and Analysis in Public Health (3 s.h.)

Design seminar integrates research and statistical methods by comparing the appropriateness and feasibility of alternate design strategies commonly used in public health research. Covers the components of the PHS 398 research proposal including requirements for NIH certification for protection of human subjects.

2. Cognate Courses in Epidemiology (9 s.h.)

PH 8203 Public Health Data Reporting 3 s.h.

Use of population-based data sources (CDC and NCHS data sets, disease registries, state-level reporting systems); methods of rate construction, direct and indirect age-standardization, life-tables, small area analysis. Pre-requisite: PH 670 or permission of instructor.

PH 8209 Epidemiology of HIV/AIDS 3 s.h.

Epidemiology of HIV/AIDS Application of epidemiological principles and concepts in infectious disease epidemiology with emphasis on surveillance, research, prevention, and control. Pre-requisite: PH 670 or permission of instructor.

PH 5204 Mental Health Epidemiology 3 s.h.

Epidemiology of psychiatric disturbances, including alcohol and other drug dependencies, psychosocial aspects of health and illness. Emphasis on epidemiologic methods and theories in psychosocial and mental health research. Pre-requisite: PH 670 or permission of instructor.

PH 9583 Independent Research in Public Health 2-12 s.h.

Independent research in public health. Requires written contract with faculty supervising the research, human subjects certification and documentation of IRB approval to obtain approval of the Director of Graduate Programs.

PH 5500 Seminar in Current Issues in Public Health 3 s.h.

Seminar topics rotate to address current issues in public health research, policy and practice. (May be taken by advisement if related to specific career goals in epidemiology.)

GUS 4071 Medical Geography 3 s.h.

An analysis of the factors responsible for the geographic patterns of disease, mortality, and health care services: the role of the environment in evaluating mortality and disease patterns.

PH 8206 Infectious Disease Epidemiology 3 s.h.

This Infectious Disease Epidemiology course provides basis for understanding infectious diseases, disease transmission, risk factors, outbreak investigation and study designs, surveillance methods, current infection control strategies and mechanisms. The purpose of this course is to expose students to the principles and practice of infectious disease epidemiology and how communicable diseases and their control affect public health locally, nationally and internationally. Pre-requisite is PH 670 or permission of instructor.

PH 8205 Chronic Disease Epidemiology 3 s.h.

Provides basis for understanding chronic diseases, designs to study chronic

diseases, current strategies for primary and secondary prevention of chronic disease. Pre-requisite PH 670 or permission of instructor.

PH 8207 Occupational and Environmental Epidemiology 3 s.h.

This intermediate course will cover selected topics in occupational and environmental epidemiology through a focus on specific health outcomes, such as non-malignant respiratory diseases, cancer, and musculoskeletal disorders, within the context of particular study designs or exposures. Students will have the opportunity to critically examine the current literature, and to study contemporary issues in research. Exposure assessment, biomarkers and emerging diseases within the context of the workplace and the environment will be addressed.

PH 8011 Social Determinants of Health

The purpose of this survey course is to address a core area of public health research and policy through introducing students to the major social variables that affect public health. We will cover a wide range of topics from the health impact of global income inequality to the role of specific work place policies. These factors can be understood as 'fundamental causes' of health, ones that function 'upstream' to other health related factors such as health beliefs, behaviors and biology, which often link the social determinants of health with a specific disease outcome.

3. Required Advanced Quantitative Methods (9 s.h. from the following courses)

PH 5002: Introduction to Biostatistics

Students will be introduced to basic methods of descriptive analysis, estimation, hypothesis testing, and regression. The course will offer frequent and thorough examples with a strong emphasis on applications and "real data" in both examples and problems. Emphasis will be placed on using the statistical software package SPSS to accomplish analyses, rather than manual computations. All students will be expected to complete and present an original statistical research project at the end of the course.

PH 8208 Data Management and Analysis

As part of this three-credit course, graduate students will obtain a working knowledge of SAS. Items covered in this course include database development and management of various file types, data merging and data cleaning skills, generating descriptive statistics, basic data display through simple and complex graphics, and programming and interpreting univariate and multivariable analyses. A variety of datasets will be provided as part of the course. Emphasis will be placed on the development and management of population-based, research-oriented databases within the Windows environment.

PH 8012: Multivariate Biostatistics

To provide basic theory and application of regression models, analysis of variance, nonparametric statistics, and survival analysis applied to the analysis of population-based data.

ED. PSY 8625 Intermediate Educational Statistics 3 s.h.

Survey of issues, problems, and approaches involved in using ANOVA, correlational, and nonparametric procedures. Emphasizes guidelines for selecting statistical tests, computer-aided computation, and interpretation of results. Prerequisite: ED. 525 or equivalent.

ED. PSY 8826 Multivariate Research Methods 3 s.h.

A survey of multivariate data analysis procedures, with a focus on parametric techniques. Students use computer library programs (e.g., BMDP, SPSS) to analyze data. Prerequisite: ED. PSY. 625

STAT 8103 Sampling Theory 3 s.h.

Theory and application of sampling from finite populations. Topics include random, stratified, cluster, and systematic sampling; estimation of means and variances; optimal allocation of resources; problems of non-sampling errors; and ratio and regression estimation.

STAT 8105 Time Series Analysis I. 3 s.h.

Theory and application of time series models illustrated with forecasting problems. Considers spectrum analysis, autocorrelation analysis, stationary and nonstationary linear processes, ARMA and ARIMA models, seasonal time series and related materials.

STAT 8106 Linear Models I. 3 s.h.

Theory and analysis of the over parameterized and cell means forms of the linear statistical model that underlies designed experiments. Emphasis on the "messy data" situations having disproportionate cell sizes, empty cells and disconnectedness. Use of SAS-GLM software to analyze about 10 real data sets.

STAT 8107 Design of Experiments I. 3 s.h.

Principles of experimental designs, completely randomized designs, multiple comparisons, randomized block design, latin square design, missing value problems, analysis of covariance, and factorial experiments.

STAT 8531 Applied Linear Regression 3 s.h.

Simple linear regression. Multiple regression. Weighted least squares, generalized least squares. Polynomial regression. Dummy variables, comparing regression lines. Subset selection procedures. Residual analysis, influential observations. Prediction.

STAT 8108 Applied Multivariate Analysis I. 3 s.h.

Multivariate normal distribution; marginal and conditional distributions; estimation of population mean vector and dispersion matrix; correlation, partial correlation, and multiple correlation coefficients; Hotelling's T²; MANOVA; discriminant function; repeated measurements analysis; principal components and canonical correlation; factor analysis; and multidimensional scaling.

STAT 8116 Categorical Data Analysis 3 s.h.

Sampling models for discrete data; Fisher's exact test; Gart's test for residual effects; measures of association; log-linear models; iterative proportion fitting; collapsing multidimensional tables; conditional independence, and logistic regression.

STAT 8117 Clinical Trials 3 s.h.

Introduction to the special problems associated with medical trials on humans. Topics include the debate concerning randomization, use of historical data, ethics of experimentation, decision theoretic approach to clinical trials, and applications of sequential and adaptive sampling techniques. Discussion of research articles.

STAT 8580 Pharmaceutical Statistics I. 3 s.h.

Introduction to certain statistical problems associated with pharmaceutical drug development. Topics include the bioequivalence problems, population PK/PD modeling, and analysis of combination drug trials. Research articles of current interest will be discussed.

SOC 8211 Inferential and Multivariate Statistics. 3 s.h.

Covers inductive statistics including probability and sampling, as well as multivariate contingency tables, analysis of variance, correlation, and regression. Laboratory period required.

4. Thesis Requirement (6 s.h.)

PH 9996 Master's Thesis 3-6 s.h.

The Master's Thesis is an original research paper. Students will select a topic that meets their research career goals. The thesis may involve primary data collection, but will more often be secondary analysis of data from an epidemiologic study dataset used to investigate a research question not previously analyzed. The thesis must meet the requirements stipulated by the Graduate School of Temple University.

PH 9996 Master's Continuing Research 1 s.h.

With approval of advisor and written contract, students may continue their thesis work to completion if needed.