

Public Health Course Descriptions

HEALTH PROMOTION, SOCIAL & BEHAVIORAL HEALTH SCIENCES

HPRO 803/HPER 8030 Research Methods in HPER 3 credits

The course deals with scientific writing, research techniques, statistics, computer application, and quantitative research design and technique. Considerable emphasis is placed on evaluation of research in scholarly publications. A research proposal is written as one of the course requirements. Prereq: None, Not open to non-degree students.

HPRO 805/HED 8050 Applied Research in Public Health (3 credits)

This course will assist students to develop the basic skills to conduct applied research to address contemporary problems in public health. The course will emphasize proposal writing, data collection, research design, statistical analysis, computer application, and writing of research reports. Unique problems associated with data collection in public health settings such as public health departments, neighborhood health centers, and community based organizations will be addressed. Both quantitative and qualitative research designs will be explored. Considerable emphasis is placed on evaluation of public health research published in scholarly publications. A research proposal/capstone service learning proposal is written as one of the course requirements.

Prerequisites: None

HPRO 815 Issues in Public Health: Past & Present 3 credits

The purpose of this course is to acquaint students with key historical incidents, important historical and philosophical themes, and key philosophical controversies in public health.

Prerequisites: None

HPRO 825 Health Care Ethics

This course uses selected topics to outline the history, theory, and methods of health care ethics. It is intended as a core course for graduate students in ethics and related fields--for bioethics teachers, administrators, policy makers, clinicians, and public health professionals.

Prerequisites: none

HPRO 827/HED8270: Interventions in Health Education (3 credits)

Richard Stacy EdD

This course will provide health education students with an opportunity to

investigate, contrast, develop, implement and evaluate a variety of intervention activities, to be applied in different settings. Theories regarding methods to enhance behavior change and teaching strategies to meet the health needs of a diverse population will be explored.

Prerequisites: none

HPRO 830: Foundations of Public Health (3 credits)

Magda Peck ScD /Molly O'Dell MD

This is an introductory survey course, which will ensure that all MPH students, within their first full year of study, are exposed to the fundamental concepts and theories which provide the basis for the body of knowledge in the field of public health. This course will prepare students to work in public health with a sound theoretical, conceptual and historical basis for their work.

Prerequisites: none

HPRO 840/HED8400: Health Promotion Program Planning (3 credits)

Richard Stacy EdD

An in-depth application of the health promotion program planning process utilizing a comprehensive model called PRECEDE-PROCEED. Students submit six papers applying each phase of this model: social diagnosis, epidemiological diagnosis, behavioral/ environmental diagnosis, educational/organizational diagnosis, administrative/policy diagnosis, and evaluation at the process, impact and outcome levels.

Prerequisites: none

HPRO 860/HED8600: Health Behavior (3 credits)

Richard Stacy EdD

The purpose of this course is to study the theoretical foundations of health behavior. Students will develop an understanding of the determinants of health behavior, the models and theories that provide a framework for predicting health behavior, and the strategies employed to bring about behavioral changes for health and disease prevention in individuals and group.

Prerequisites: none

HPRO 875/HED8750: Health Education: Instrumentation and Evaluation

(3 credits)

Richard Stacy EdD

This course will build skills for selection, development and analysis of various types of instruments and techniques for conducting process, impact, and outcome

evaluations in health education and health promotion. Evaluation of health behavior change and its antecedent's changes in community services/programs, and community health status will be discussed. Students will learn methods for developing/choosing psychometric tools, choosing appropriate evaluation designs, procedures for data collection, and describing evaluation results. Emphasis will be placed on political statistical, and theoretical aspects of instrumentation and evaluation practices.

Prerequisites: waived for MPH students

HPRO 895/HED8950: Public Health Leadership & Advocacy (3 credits)

David Corbin PhD

This course incorporates public health leadership theory and practices, which are grounded in biomedical and social science and sanctioned by public law. Also included is the politics of communities and organizations. Advocacy is emphasized as a key tool to secure funding and to help assure that local, state, and federal policy-makers will adopt, implement, and maintain important public health regulations, policies and programs.

Prerequisites: 15 graduate credits or instructor permission

BIostatISTICS

BIOS806: Biostatistics I (3 credits)

This course is designed to prepare the graduate student to understand and apply biostatistical methods needed in the design and analysis of biomedical and public health investigations. The major topics to be covered include types of data, descriptive statistics and plots, theoretical distributions, probability, estimation, hypothesis testing, and one-way analysis of variance. A brief introduction to correlation and univariate linear regression will also be given. The course is intended for graduate students and health professionals interested in the design and analysis of biomedical or public health studies.

Prerequisite for BIOS 806 Biostatistics I: Undergraduate or graduate statistics course or permission of instructor

While successful completion of an undergraduate or graduate statistics course is not required for admission into the MPH program students enrolling for BIOS 806 Biostatistics I must have successfully completed a statistics course or obtain permission of the instructor.

Requirements for the prerequisite course:

- The prerequisite statistics course must have been completed within 5 calendar years of registering for Biostatistics 806.
- The student must have received the equivalent of a B or above (3.00 or higher on the University of Nebraska grade scale in the course.

Permission of the instructor:

- The instructor reserves the right to waive the prerequisite requirements for students who can demonstrate familiarity with basic statistical concepts because of work or research experience, etc.

Some suggested undergraduate statistics courses are:

Omaha:

UNO: Psyc 2130 Statistics for Behavioral Sciences
 Stat 3000 Statistical Methods I
 Soc 2130 Basic Statistics
 HPER 8030 (graduate level) Research in Health, Physical Education and Recreation
 HED 8080 (Recommended for MPH students) Topics in Health Education, Research in Public Health

Metro Community College: Math 1410 Statistics

Lincoln:

UNL: Stat 218 Introduction to Statistics

Southeast Community College: Math 1180 Elementary Statistics

If you have any questions, please contact one of the following individuals:

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BIOS 808 Biostatistics II (3 credits)

This course is designed to prepare the student to understand and apply advanced biostatistical methods needed in the design and analysis of biomedical and public health investigations. The major topics to be covered include multiple linear regression, analysis of covariance, logistic regression, survival analysis, and repeated measures analysis. Prerequisites include Biostatistics I, BIOS806 or an

equivalent course. The course is intended for graduate students and health professionals interested in the design and analysis of biomedical and public health studies.

BIOS 810: Introduction to SAS Programming 2 credits

This course is an introduction to programming for statistical and epidemiologic analysis using the SAS Software System. Students will learn to access data from a variety of sources (e.g. Web, Excel, SPSS, data entry) and create SAS datasets. Data management and data processing skills, including concatenation, merging and sub-setting data, as well as data restructuring and new variable construction using arrays and SAS functions will be taught. Descriptive analysis and graphical presentation will be covered. Concepts and programming skills needed for the analysis of case-control, cohort studies, surveys, and experimental trials will be stressed. Simple procedures for data verification, data encryption and quality control of data will be discussed. Accessing data and summary statistics on the web will be explored. Through in-class exercises and homework assignments, students will apply basic informatics techniques to vital statistics and public health databases to describe public health characteristics and to evaluate public health programs or policies. Laboratory exercises, homework assignments and a final project will be used to reinforce the topics covered in class. The course is intended for graduate students and health professionals interested in learning SAS programming and accessing and analyzing public use datasets from the web. Prerequisites include Biostatistics I, BIOS 806 or an equivalent, introductory statistics course; Epidemiology I, EPI 820; and instructor permission.

BIOS 816: Biostatistical Methods I 3 credits

This course is designed to prepare the graduate student to understand and apply biostatistical methods needed in the design and analysis of biomedical and public health investigations. The major topics to be covered include types of data, descriptive statistics and plots, theoretical distributions, probability, estimation, hypothesis testing, nonparametric methods, and one-way analysis of variance. A brief introduction to correlation and univariate linear regression will also be given. Interpretation of subsequent analysis results will be stressed. Concepts will be explored using the biomedical and public health literature, class exercises, exams, and a data analysis project. Statistical analysis software, SAS (SAS Institute Inc., Cary, NC, USA.), will be used to implement analysis methods. The course is intended for graduate students and health professionals who will be actively

involved in the design, analysis, and interpretation of biomedical research or public health studies. Prerequisites include instructor permission and calculus (covering differential and integral calculus) within the past 5 years resulting in a grade of B- or better.

BIOS 818: Biostatistical Methods II 3 credits

This course is designed to prepare the graduate student to analyze continuous data and interpret results using methods of linear regression and analysis of variance (ANOVA). The major topics to be covered include simple and multiple linear regression model specification and assumptions, specification of covariates, confounding and interactive factors, model building, transformations, ANOVA model specification and assumptions, analysis of covariance (ANCOVA), multiple comparisons and methods of adjustment, fixed and random effect specification, nested and repeated measures designs and models, and diagnostic methods to assess model assumptions. Interpretation of subsequent analysis results will be stressed. Concepts will be explored through critical review of the biomedical and public health literature, class exercises, an exam, and a data analysis project. Statistical analysis software, SAS (SAS Institute Inc., Cary, NC, USA.), will be used to implement analysis methods. The course is intended for graduate students and health professionals who will be actively involved in the analysis and interpretation of biomedical research or public health studies. Prerequisites include instructor permission, prior linear algebra course (covering matrix notation and matrix algebra, equivalent to UNO MATH 2050 or UNL MATH 314), calculus, and Biostatistical Methods I, BIOS 816, or an equivalent, introductory statistics course.

BIOS823: Categorical Data Analysis 3 credits

This course surveys the theory and methods for the analysis of categorical response and count data. The major topics to be covered include proportions and odds ratios, multi-way contingency tables, generalized linear models, logistic regression for binary response, models for multiple response categories, loglinear models, and simple mixture models for categorical data. Interpretation of subsequent analysis results will be stressed. Concepts will be explored through critical review of the biomedical and public health literature, class exercises, an exam, and a data analysis project. Computations will be illustrated using SAS statistical software (SAS Institute Inc., Cary, NC, USA.). The course is intended for graduate students and health professionals who will be actively involved in the analysis and interpretation of biomedical research or public health studies. Prerequisites include

instructor permission, Biostatistical Methods I, BIOS816, or an equivalent, introductory statistics course, and Biostatistical Methods II, BIOS818, or an equivalent, advanced statistics course

BIOS 824: Survival Data Analysis 3 credits

The course teaches the basic methods of statistical survival analysis used in clinical and public health research. The major topics to be covered include the Kaplan-Meier product-limit estimation, log-rank and related tests, and the Cox proportional hazards regression model. Interpretation of subsequent analysis results will be stressed. Concepts will be explored through critical review of the biomedical and public health literature, class exercises, two exams, and a data analysis project. Computations will be illustrated using SAS statistical software (SAS Institute Inc., Cary, NC, USA.). The course is intended for graduate students and health professionals who will be actively involved in the analysis and interpretation of biomedical research or public health studies generating time-to-event data. Prerequisites include Calculus (covering differential and integral calculus), instructor permission, Biostatistical Methods I, BIOS816, or an equivalent, calculus-based, introductory statistics course, and Biostatistical Methods II, BIOS818, or an equivalent, calculus-based, advanced statistics course.

BIOS825: Correlated Data Analysis 3 credits

This course surveys the theory and methods for the analysis of correlated continuous, binary, and count data. The major topics to be covered include linear models for longitudinal continuous data, generalized estimating equations, generalized linear mixed models, impact of missing data, and design of longitudinal and clustered studies. Interpretation of subsequent analysis results will be stressed. Concepts will be explored through critical review of the biomedical and public health literature, class exercises, two exams, and a data analysis project. Computations will be illustrated using SAS statistical software (SAS Institute Inc., Cary, NC, USA.). The course is intended for graduate students and health professionals who will be actively involved in the analysis and interpretation of biomedical research or public health studies. Prerequisites include instructor permission and Biostatistics 823

BIOS 835 Design of Medical Health Studies (3 credits)

James Anderson, PhD

This course is designed to prepare the graduate student to understand and apply principles and methods in the design of biomedical and public health studies, with a particular emphasis on randomized, controlled clinical trials. The major design topics to be covered include sample selection, selecting a comparison group, eliminating bias, need for and processes of randomization, reducing variability, choosing endpoints, intent-to-treat analyses, sample size justification, adherence issues, longitudinal follow-up, interim monitoring, research ethics, and non-inferiority and equivalence hypotheses. Data collection and measurement issues also will be discussed. Communication of design approaches and interpretation of subsequent analysis results also will be stressed. Concepts will be explored through critical review of the biomedical and public health literature, class exercises and a research proposal. The course is intended for graduate students and health professionals interested in the design of biomedical or public health studies. Prerequisites include Biostatistics I, BIOS806 or an equivalent, introductory statistics course and instructor permission.

EPIDEMIOLOGY

EPI 820: Epidemiology Theory and Applications (3 credits)

The objective of the course is to understand the application of survey and research methodology in epidemiology, especially in the community setting. Theoretical aspects will be taught as an integral part of understanding the techniques of study design and community survey. Concepts to be covered include measure of disease occurrence, measures of disease risk, study design, assessment of alternative explanations for data based findings and methods of testing or limiting alternatives. Students will be expected to address an epidemiological question of interest to them, first developing the hypothesis, doing a literature search, then developing a study design and writing in several stages, a brief proposal for the study.

Prerequisites: none

EPI 821 Epidemiology: Advanced Design and Methods (3 credits)

This course presents basic principles and methods of Epidemiology in greater depth and detail than presented in EPI 820. The purpose of the course is to further develop the methodologic concepts underlying the science of epidemiology. The material covered is intended to broaden and extend the student understanding of elements of study design, data analysis, and causal inference in epidemiologic research including specific emphasis on bias and confounding and is expected to

serve as a foundation for advanced study of epidemiologic methods. The primary goal is to provide working knowledge of the fundamentals of epidemiology to graduate students who wish to further their career in public health research and needing more expertise in advanced epidemiologic methods, with the objective of applying these concepts to a broader public health context.

Prerequisites: Epidemiology I (EPI820)

EPI 812 Chronic Epidemiology (3 credits)

The target audience for this course includes, but is not limited to, students, researchers, and practitioners in the field of public health. The course will cover risk factors for major chronic diseases such as cancer, diabetes, musculoskeletal disease, and chronic lung disease. Through the course, students will learn advanced concepts and methodology in chronic disease epidemiology research, including disease surveillance and etiologic and outcomes research. Students will also gain experience developing a proposal to conduct an etiological study of a selected chronic disease.

Required prerequisites: Epidemiology I (EPI820), Biostatistics I (BIOS806)

Recommended prerequisite: Epidemiology II (EPI821), Biostatistics II (BIOS808)

EPI 825 Infectious Epidemiology (3 credits)

This course is an introductory, generic course which presents basic infectious diseases Epidemiology principles and methods. The purpose of the course is to introduce students to concepts of epidemiology as they relate to infectious diseases. Students who wish to know how to conduct population studies in infectious diseases will be better prepared through this course. This course will produce graduates from UNMC who are better-prepared to meet the challenges of infectious diseases. Public health is a cornerstone for healthy living, and improving the health of communities is its broad-based goal. Dealing with infectious disease is intricately related to this goal.

Prerequisite: EPI 820; Introduction to Basic Epidemiology

ENVIRONMENTAL, AGRICULTURAL, AND OCCUPATIONAL HEALTH SCIENCES

ENV 802 Occupational Health and Safety for Health Science (3 credits)

This course is an introduction to fundamental concepts, methods, and application of occupational and safety for various industrial settings including hazard analysis

and control, OSHA regulations, worker's compensation, safety program elements, and safety and health management.

Prerequisites: Graduate student status in health sciences or related discipline and instructor permission

ENV 804 Human Factors and Ergonomics for Work Environments (3 credits)

This course is an introduction to fundamental concepts of physical work, human abilities and capabilities (ergonomics) including psychological and cognitive aspects of human work performance (human factors) for the reduction of occupational injuries and illnesses, reduced costs, productivity improvement, worker well-being and longevity, quality of work life, and job satisfaction.

Prerequisites: Graduate student status in health sciences or related discipline and instructor permission

ENV 892: Public Health, Environment & Society (3 credits)

The purpose of this course is to introduce the students to environmental factors including biological, physical and chemical factors, which affect the health of a community. The main focus of the course will be the effects of exposures that have been associated with human health and environmental problems in the Midwest, specifically water and air pollutants related to animal feeding operations, arsenic in ground water, pesticides, herbicides, lead and radiation. The effects of global warming, ergonomic problems in the meat packing industry and occupational and environmental problems in health care will also be discussed.

Prerequisites: none

HEALTH SERVICES RESEARCH & ADMINISTRATION

HSRA810/PA8760: U.S. Health Care System: An Overview (3 credits)

This course will offer the student an overview of the health and medical care delivery system in the US. Topics covered from a historical, economic, sociological, and policy perspective include the following social values in health care, need, use, and demand for services; providers of health services (people and places); public and private payment systems; alternate delivery systems; and models from other countries. Current health care reform proposals will also be addressed.

Prerequisites: none

HSRA 841/PA 8410 Public Personnel Management (3 credits)

A study of the personnel process in American governmental administration. The processes and problems of recruiting, structuring and operating public bureaucracies are examined as well as problems in personnel leadership, neutrality, accountability and performance.

Prerequisites: PA 8050 or permission of school.

Not open to nondegree students.

HSRA 840/PA 8400 Public Budgeting (3 credits)

The purpose of the course is to familiarize public administration students with the basic characteristics and features of public budgets and enable them to deal competently with them.

Prerequisites: PA 8010, PA 8050, or permission of school.

Not open to nondegree students.

HSRA 860 Health Economics (3 credits)

This course is designed to help students understand how the theories and models of economics can be applied to the study of health and health care. The examination of the markets (demand and supply) for health, health care and health insurance is stressed. In addition, the economic analytic tools such as economic evaluation of medicine will be introduced. The objective of this course is to equip students with the knowledge/tools to examine and analyze the problems/issues of health care from the perspective of economics.

Prerequisite: ECON 2200 (Principles of Economics-Micro) or its equivalent

HSRA 853/PA8530: Strategic Planning (3 credits)

Schumaker/Reed

This course is designed to have the student understand the relationship between public policy, agency strategy, agency operation and the delivery of public services to citizens. It will provide the student an opportunity to devise a model strategy for a public agency or jurisdiction, introduce a variety of systems for managing particular tasks within the public sector and give the student the opportunity to construct operating procedures for a specific public program or subprogram.

Prerequisite: instructor permission

HSRA 872/PA8720: Health Care Finance (3 credits)

This course is the required health care financial management course for the Health Care concentration in the MPA program and a required course in the MPH curriculum. Students are not expected to have prior coursework in financial management, managerial and financial accounting. The course does, however,

assume the students have some experience with spreadsheet models. This course, which focuses on the application of financial management principles and concepts to health care organizations, consists of (1) instructor lectures, (2) case analyses, (3) presentations, and (4) two examinations. Much of the learning in this course will come from your own individual work and from interacting with other students, so the benefits that you receive will be directly related to your individual efforts.

Prerequisites: research methods or epidemiology or biostatistics or instructor permission

HSRA 874/PA8740: Health Care Policy (3 credits)

This course is designed to instill an understanding of major health care policy making and related issues. The course emphasizes history/background; physical, social, and economic environment; policy process; and political marketplace of contemporary U.S. health care policies. Students are expected to be knowledgeable about topics such as policy making process, policy implementation, national and state health care policies, health care reform, rural health care, and health planning.

The course is intended for students who are enrolled in the MPA Health Specialization, MPH, students from other graduate degree programs who have an interest/need for a course in health care policy, and non-degree graduate students.

Prerequisite: graduate standing. Other considerations: A health care background is helpful, but not required.

CAPSTONE COURSES

A community-based experience, designed to provide students with firsthand, scholarly, supervised experience in a practice setting. This experience augments the academic course work, meets actual community needs, and provides students with an opportunity to integrate and apply/test knowledge, principles and skills acquired through classroom instruction. Students will demonstrate mastery of public health principles, values and practice. Contact MPH Program Office.

Prerequisites: HPER 8030 Research Methods or HED 8050 Applied Research in Health. Students must complete all core and concentration area courses, be within 12 hours of graduation (including the 6 hours of service learning/capstone experience), and be in good academic standing to start the Service Learning/Capstone Experience (SL/CE). Please contact MPH Program office before registering for capstone courses.

Public Health Administration Students Register for:

PA8030-002 Public Administration Internship Course (3 credits)

PA8990-002 Public Administration Capstone Project (3 credits)

Community Health Education Students Register for:

HED8980-001/002: Community Health Education Capstone Project (3 credits)