MASTER OF PUBLIC HEALTH (MPBH)

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MPBH 400 Determinants of Population Health (3 Credit Hours)
This course will introduce students to the public health perspective population perspective. A major focus of the course is understanding the fundamentals of health disparities and how they are produced and reproduced, and how simple solutions to our most pressing public health problems are unlikely to succeed. Graduate standing in the MPH or Public Health Certificate Program, or permission of instructor.

MPBH 401 Environmental Health (3 Credit Hours)
This course is designed as an introduction to environmental public health issues, laws, regulations, research, and advocacy. Environmental factors including biological, physical and chemical factors that affect the health of a community will be presented. The environmental media (air, water and land) and various community exposure concerns will also be presented. The course will utilize available internet resources to access environmental data, and focus related research. A team project will be completed requiring literature review and presentation and critical assessment of a successful (or unsuccessful) environmental advocacy campaign.
Course equivalencies: X-ENVS301/PUBH301/MBPH401

MPBH 402 Public Health Practice and Management (3 Credit Hours)
This course will provide an introduction to public health practices and cover management basics as applied to the public health field. The topics covered in the course will be examined through the lenses of prevention, social justice and the role of governmental public health. In Part I of the course, we will study basic public health concepts, core public health functions and practices, public health infrastructure at the local, state and federal levels, and the major areas of public health services and interventions. In Part II, we will cover management principles and functions such as planning, organizing, controlling and leading. We will apply these concepts to the administration of public health organizations.
Outcomes:
Assess population needs, assets and capacities that affect communities' health; Apply awareness of cultural values and practices to the design or implementation of public health policies or programs; Design a population-based policy, program, project or intervention; Explain basic principles and tools of budget and resource management; Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making

MPBH 403 Introduction to Epidemiology (3 Credit Hours)
Epidemiology is the study of the distribution and determinants of disease in populations and remains the basic science of public health. This methodology is unique to epidemiology, and in some cases, has even been appropriated by other fields. The objective of this course is to familiarize students with the range of tools used to conduct epidemiologic analysis, including design and measures of association. This course will be taught as an online course combined with an intensive interactive session with faculty and students one weekend in Spring.
Course equivalencies: X- PUBH 303/ENVS 303/MPBH 403

MPBH 404 Biostatistics for Health and Biological Science (3 Credit Hours)
Introductory course allows students to utilize SAS software to perform analytical methods including Graphical and Numerical Descriptive Statistics, Probability calculations and distributions with emphasis on the binomial(discrete) and normal (continuous) distributions, Inferential Statistics: Point Estimation, Interval Estimation and Hypothesis Testing, Nonparametric statistical methods and Sample Size Calculation.
Course equivalencies: CRME420/BMSC402/MPBH404

MPBH 407 Public Health Policy: Concepts and Practice (3 Credit Hours)
Pre-requisites: Open for registration for MPH students; All other students require department approval
No course description is available
Course equivalencies: PUBH 307/MPBH 407

MPBH 409 Biostatistics I (3 Credit Hours)
Pre-requisites: Introductory course
Introductory biostatistics course which allows students to utilize STATA software and perform/ operate analytic methods. Course provides outline of tests of statistical significance and probability theory. Students will conduct statistical hypothesis testing using methods presented in class.

MPBH 410 MPH Practicum (1-3 Credit Hours)
All MPH students are required to complete at least 1 credit of a practicum (internship) to gain a better understanding of a public health practice, directly utilize their own MPH training, and network with public health professionals in the field. Students need to provide a signed agreement and must be in the process of completing 21 credit hours, including at least four core courses.

MPBH 411 MPH Capstone (1-3 Credit Hours)
The goal of the Capstone project is to provide students the opportunity to demonstrate knowledge and skills acquired in the academic coursework and through practicum experience. The objective is to enable the student to work on a project which translates both general and discipline specific information into public health practice. Students should complete the core, program specific courses. We recommend to split credits over last two semesters and register 1 credit each semester.
Outcomes:
The Capstone will provide the students an opportunity to exhibit their proficiency in public health skills through a written report and oral presentation

MPBH 412 Intro to Statistical Computing for Public Health (1-3 Credit Hours)
Pre-requisites: This course is designed for students who have taken or are taking Introduction to Epidemiology (MPBH 403) and Biostatistics I (MPBH 404 or 409)
This course introduces students to statistical computing. The emphasis is on manipulating data sets and basic statistical procedures such as t-tests, chi-square tests, and correlations. The course currently focuses on the use of SAS and STATA software packages., data importation from various sources, cleaning, validation, subsetting, merging, and transforming datasets); Construct clear and concise documentation of newly created datasets; Use SAS data-step programming, macros, and built-in procedures for statistical analysis and visualization (i.e., PROC MEANS, FREQ, SGPLOT, and UNIVARIATE); Demonstrate the ability to use descriptive techniques to summarize public health data (i.e., t-tests, chi-square tests, and basic regression models); Describe the results of basic statistical analyses.
Outcomes:
Execute data management techniques to create public health analytical datasets (i.e

MPBH 413 The Epidemiology of Obesity: An Energy Balance Perspective (3 Credit Hours)
Pre-requisites: MPBH 403 or department consent
This course is a survey course designed to expose MPH and other interested inter-professional students, e.g., nursing and dietetic students, to the multiple domains of the worldwide obesity epidemic. The course will explore determinants, outcomes and public health policy associated with obesity from the perspective of energy balance, i.e., that ultimately all determinants and outcomes of obesity.
Outcomes:
Describe the concept of energy balance and how it is related to the development, treatment and prevention of overweight and obesity; Explain the scope and historical trends of obesity prevalence among children and adults in both the industrialized and developing worlds

MPBH 414 Introduction to Global Health (3 Credit Hours)
Introduction to Global Health is an introductory course to global health, both epidemiology and policy aspects, focusing on health disparities on the international level.
Course equivalencies: X-HSM210/PUBH314/ENVS385

MPBH 415 Non-Communicable Disease Epidemiology (3 Credit Hours)
Pre-requisites: MPBH 403 or consent of instructor
This course covers public health topics related to non-communicable diseases (NCDs). The course explores topics such as: burden of NCDs in populations; the conceptual frameworks for studying chronic disease causation and control; the epidemiology of cardiometabolic diseases as well as the epidemiologic transition in relation to risk factors for the major chronic diseases (e.g. nutrition, obesity, physical exercise, alcohol and tobacco use) as well as upstream factors impacting on diseases such as food policy and the built environment; integrated healthcare services and public health interventions; and, the study designs used to assess associations between exposures and NCDs.
Outcomes:
Apply frameworks to understand social and ecological determinants of non-communicable diseases, as well as the biological and behavioral risk factors across the life-course; Articulate the methodological issues in the study of non-communicable diseases including tools for surveillance, the limits of observational evidence, life-course epidemiology and genetic associations, assessment of risk and risk scores, burden of disease estimates; Explain the drivers of non-communicable disease epidemiology; Discuss interventions to prevent and control non-communicable diseases low-middle income countries

MPBH 416 Health Services Research Methods (3 Credit Hours)
This course introduces students to the scope of health services research by addressing issues central to understanding and applying modern research to public health and health policy. Formulate questions and develop studies using primary data collection approach that are timely and relevant to contemporary organization, financing, and delivery of U.S. public health.
Outcomes:
Determine health services research's scope

MPBH 417 Global Maternal & Child Health (3 Credit Hours)
Pre-requisites: MPBH 414 Introduction to Global Health and MPBH 403 Introduction to Epidemiology; This course will be required for the newly approved Global Health Equity track of the Master in Public Health Program
No course description is available
Course equivalencies: X-HSM210/PUBH314/ENVS385

MPBH 420 Public Health Law: Theories and Cases (3 Credit Hours)
This course explores how the law can be utilized to promote, or impede, proposed public health interventions at the local, state, federal level. Students review key theories of public health law that examine the role of the legislature, executive agencies, and the courts in crafting, executing, reviewing public health policy. This course is geared towards MPH students in Public Health Policy and Management track, and no prior training in law or legal analysis is assumed.
Outcomes:
Describe the inter-dependence of law and public health; Identify areas of law applicable to promoting public health; Articulate the legal, ethical and practical conflicts that arise in approaching public health through law

MPBH 421 Biostatistics II (3 Credit Hours)
Pre-requisites: MPBH 409 Biostatistics I Students will utilize text on Biostatistics for Public Health
Course will cover linear and logistic regression and ANOVA. Students will utilize STATA software for hypothesis testing.
Outcomes:
Students will conduct statistical hypothesis testing using methods presented in class

MPBH 422 Population Health Planning & Management (3 Credit Hours)
This course prepares students to confront--thoughtfully and systematically-resource allocation decisions by developing the knowledge, tools, and skills needed to plan, implement, and evaluate programs, interventions, and services that address public health problems, improve population health, and reduce inequities.

MPBH 423 Intermediate Epidemiology (3 Credit Hours)
Pre-requisites: MPBH 403 Introduction to Epidemiology and MPBH 412 Introduction to Statistical Computing for Public Health Research
Intermediate Epidemiology focuses on analysis of observational data. Students should have completed Introduction to Epidemiology and Biostatistics I prior to enrolling in this course.

MPBH 424 Health Economics and Healthcare Financing (3 Credit Hours)
This course will examine selected topics in health economics with major implications for healthcare delivery, healthcare financing and clinical and public health research. Essential economic theories and methods for exploring each topic will be discussed along a review of existing empirical research.
Outcomes:
Describe the US health delivery and financing system; Apply essential economic theories/methods to study consumer behavior and healthcare demand, healthcare market and supply of services, and medical cost-effectiveness analysis

MPBH 425 Policy Analysis (3 Credit Hours)
This course will provide an introduction to the issues and methods of health policy analysis. Health policy analysis requires several distinct sets of skills: technical understanding of analytical tools, understanding the policy and managerial context within and outside of your organization, and the ability to produce and communicate practical advice. This is a track-specific requirement for MPH Graduates in the Health Policy track.
Outcomes:
Students will develop a good working understanding of the methods specific to these issues examined through this course and will also learn how to apply these to specific problems

MPBH 426 Infectious Disease Epidemiology (3 Credit Hours)
Pre-requisites: Introduction to Epidemiology (MPBH 403)
This course will introduce the basic methods for infectious disease epidemiology and review case studies of important disease syndromes and entities. Important terminology and definitions for infectious disease epidemiology will be reviewed, including nomenclature related to outbreak investigations, disease surveillance, laboratory diagnosis, molecular epidemiology, disease transmission and susceptibility.

MPBH 427 Advanced Statistical Methods (1-3 Credit Hours)
Co-requisites: MPBH 421 (or prior completion of a two-semester course sequence in Biostatistics) and one course in statistical computing such as MPBH 412
This course covers a broad overview of statistical models and estimation methods for outcome variables (normal and non-normal) that are clustered or measured repeatedly in time or space. The focus is on applications and computer software methods for correlated regression models, including ANOVA based methods, hierarchical linear models, etc.
Outcomes:
Apply generalized linear models to regress a set of explanatory variables against non-normally distributed outcomes, including binary outcomes (logistic regression), multinomial outcomes (ordinal and multinomial logistic regression), and count outcomes (Poisson and negative-binomial regression); Identify and employ appropriate methods for the analysis of repeated measures, including the use of generalized estimating equations (GEE models) and/or mixed-effects models for nested and hierarchical data; Analyze data using Parametric methods for time-to-event data; Conduct Bayesian estimation for unknown parameters; Employ multivariate methods to solve real-world problems and dimensionality reduction; Use statistical programming to apply learned statistical models and estimation methods; Explain the results of statistical analyses

MPBH 430 Environmental Health Policy (3 Credit Hours)
This course provides an introduction overview of the health consequences associated with climate change and the local, federal, and global response to mitigate these negative health outcomes. During the course students will be expected incorporate course content and develop a realistic response public health plan to climate change for a locality of their choosing. This course is offered both online and in-person.
Outcomes:
1) Outline fundamental public health concerns that have been associated with climate change; 2) Identify and critique future steps forward to reduce public health concerns of climate change

MPBH 431 Grant Writing (3 Credit Hours)
This course will provide an overview of the NIH extramural funding process, with additional information on funding opportunities outside NIH. Students will learn the key components of successful grants and factors that may lead to grants not being reviewed favorably. The focus will be on grant writing skills.
Outcomes:
Students will be required to write a 10-12 page R01-style grant proposal (application), as described in the NIH guidelines

MPBH 432 Health Impact Assessment (3 Credit Hours)
This course is an introduction to health impact assessment which is a decision-support tool that uses a combination of procedures, methods, and approaches to determine how a policy, project/program may affect the health of a community, and the distribution of those effects within the population of the community.

MPBH 433 Clinical Trials (3 Credit Hours)
Clinical Trials course is designed for students interested in the design, implementation and management of clinical trials and their ethical and clinical implications. Topics include trial design, randomization, recruitment and sample size, monitoring and analysis. Students should have completed Introduction to Epidemiology and Biostatistics I prior to enrolling in this course.

MPBH 434 Systematic Review and Meta-Analysis (3 Credit Hours)
Meta analysis course provides instruction on methods for synthesizing clinical research information and how to assess the strength of the evidence for policy development and clinic contexts. The course is designed to highlight rigorous systematic review methods while students complete a systematic review on a topic of their choice. Students should have completed Introduction to Epidemiology and Biostatistics I prior to enrolling in this course.

MPBH 449 Biostatistics for Public Health Interventions (3 Credit Hours)
This course targets the application of sophisticated statistical methodologies to enhance the efficacy and precision of public health interventions. At the heart of this course is a rigorous examination of strategies for reducing bias in observational studies through advanced techniques such as imputation for missing data and propensity scores. The curriculum is expanded to include psychometric analysis, providing essential tools for the evaluation of measurement instruments, and ecological analysis, which aids in the interpretation of population-level health outcomes. A significant addition to this course is the analysis of screening and diagnostic tests, focusing on studying measures of accuracy and agreement critical for evaluating the performance of these tests in public health. The course also explores the complexities of survey design, offering insights into managing and analyzing data from multifaceted study designs to ensure the reliability and validity of intervention assessments.
Outcomes:
Apply advanced statistical techniques including imputation for missing data, and propensity score analysis to reduce bias in observational studies; Evaluate the design of public health research studies and interventions for methodological soundness; Apply psychometric principles to evaluate the reliability and validity of measurement instruments used in public health research; Use ecological analysis to interpret population-level health outcomes, understanding the impact of environmental and social factors on public health

MPBH 450 Biostatistics for Electronic Health Record (EHR) Data (3 Credit Hours)
Pre-requisites: Students must have completed MPBH 449
This course delves into the analysis and interpretation of data from Electronic Health Records (EHRs), a cornerstone of clinical, epidemiologic, and translational research. Emphasizing a hands-on approach, it covers EHR system fundamentals, data extraction and cleaning, privacy standards, case identification, study design, and advanced statistical analysis. Students will learn to navigate EHR data structures, medical vocabularies, and relational databases, applying these skills to design research studies and create patient cohorts. The goal is to equip students with the ability to harness EHR data for innovative healthcare solutions., ICD, CPT, NDC, SNOMED, and LOINC codes) for accurate case identification; Develop skills in constructing patient cohorts and extracting relevant data; Identify controls and apply propensity score matching in observational research; Design robust matched case-control and retrospective cohort studies using EHR data; Recognize privacy and security standards, including HIPAA regulations; Apply advanced statistical methods to analyze EHR data and assess research findings critically.
Outcomes:
Explain relational database and data warehouse models pertinent to EHR data; Use medical vocabularies and ontologies (i.e

MPBH 460 Public Health Data Visualization and Reporting (3 Credit Hours)
Pre-requisites: Students must have completed MPBH 421 (Biostatistics II) or equivalent experience in biostatistical methods and public health principles
This course is designed to navigate the intersection of public health data, visual communication, and ethical representation, focusing on creating impactful visuals that cater to diverse audiences including patients, healthcare providers, policymakers, and the broader community. It emphasizes the ethical considerations in data visualization, tackling potential biases, and ensuring visuals are both informative and accessible. Through practical applications, students will learn to craft infographics, community health maps, dashboards, and effective manuscript tables, all while understanding the unique needs of different user groups. The course will explore advanced visualization techniques like heatmaps, interaction visuals, and temporal data displays, equipping students with the skills to present complex health data.
Outcomes:
Develop the ability to create impactful and ethically responsible visual representations of public health data tailored to diverse audiences, including patients, healthcare providers, policymakers, and the general public; Explore advanced data visualization techniques, including heatmaps, interactive visuals, and temporal data displays, to effectively present complex health information; Apply ethical considerations in data visualization, addressing potential biases and ensuring that visuals are accurate, accessible, and inclusive; Design visual communication strategies into public health research and reporting to enhance the impact and understanding of data-driven insights

MPBH 495 Special Topics (1-3 Credit Hours)
This course covers a specific topic in public health. Restricted to students in the Master of Public Health (MPH) program, or with permission of the instructor. Outcome: students will be able to articulate a general understanding of the selected topic.

MPBH 499 Public Health in Action (3 Credit Hours)
Public Health in Action prepares MPH students for the real world through practical hands-on learning that addresses the cross-disciplinary competencies in advocacy, leadership, budgeting, planning and implementing programs with limited resources, building a shared vision and mission, setting priorities and goals, contributing on inter-professional teams, advancing cultural diversity and inclusiveness in community health efforts, building partnerships, leading community initiatives, and communicating to media. It is intended students will take this course at the end of the MPH program. Enrollment Conditions: Graduate standing in the MPH Program and graduating in the current or following semester, or permission of instructor. Students should have completed at least 18 credit hours of coursework, including all other core courses. MD/MPH students may take this course in the spring of their first year in the program.