# DEPARTMENT OF PUBLIC HEALTH SCIENCES COURSES
## OFFERED BY QUARTER

## Autumn 2025

**Epidemiology and Population Health**
PBHS 30910
COURSE INSTRUCTOR: Diane Lauderdale
DAY & TIME:  M/W 3-4:20pm
PQ: STAT 22000 or other introductory statistics. PBHS 32100 may be taken concurrently.
CROSS-LIST ID: BIOS 27810; STAT 22810; ENST 27400; HLTH 20910; PPHA 36410
*Epidemiology is the basic science of public health. It is the study of how diseases are distributed across populations and how one designs population-based studies to learn about disease causes, with the object of identifying preventive strategies. Epidemiology is a quantitative field and draws on biostatistical methods. Historically, epidemiology's roots were in the investigation of infectious disease outbreaks and epidemics. Since the mid-twentieth century, the scope of epidemiologic investigations has expanded to a fuller range non-infectious diseases and health problems. This course will introduce classic studies, study designs and analytic methods, with a focus on global health problems.*

**Social Inequalities in Health: Race/Ethnicity & Class**
PBHS 31450
COURSE INSTRUCTOR:  Aresha Martinez-Cardoso
DAY & TIME:  M/W 1:30-2:50pm
PQ:  PBHS 32100 or STAT 22000 or introductory statistics course.
CROSS-LIST ID:  CRES 27450, HLTH 27450
*This course examines how social stratification and social inequality shape racial/ethnic and socioeconomic inequalities in health. In particular, we will explore the production of race and class inequality in the US and draw on the extant theoretical and empirical literature to understand how these social factors influence health behaviors and health outcomes. Finally, we will review both the classic and emerging methodological approaches used by public health and social scientists to measure and test how these features of society get "under the skin" to shape a variety of health outcomes.*

**Climate Change and Human Health**
PBHS 31720
COURSE INSTRUCTOR:  Kate Burrows
DAY & TIME:  T/Th 3:30-4:50pm
PQ:  PBHS 32100 or STAT 22000 or introductory statistics course
CROSS-LIST ID:  CEGU 21720, CEGU 31720, HLTH 21720
*Climate change is one of the greatest global health threats facing the world in the 21st century. Through this course, students will gain foundational knowledge in the health effects of climate change. We will begin with several lectures on climate science as it related to the patterns of weather extremes experienced by populations. We will then identify the varying health outcomes linked to different climate-related exposures, emphasizing the specific impacts in vulnerable and high-risk populations. Specific topics include the effects of air pollution, extreme heat and heat waves, droughts, tropical cyclones, changes in vector habitats, and sea-level rise. Finally, we will discuss strategies for public health practitioners to aid communities in preventing or alleviating these adverse effects.*

**Genetic and Molecular Epidemiology**
PBHS 31831
COURSE INSTRUCTOR: Brandon Pierce
DAY & TIME:  T/Th 9:30-10:20am
PQ:
CROSS-LIST:
*This course is designed for students with strong research interests related to identifying and characterizing the role of genetic and molecular features in human disease. Students will be introduced to the key concepts and methodological issues encountered in epidemiological studies that utilize genetic and molecular data. This course will train students on the theoretical and practical aspects of study design and data generation, and also provide the relevant hands-on training for quality control, management, and analysis of large-scale genomic/molecular data. Students are expected to have taken prior coursework in epidemiology, biostatistics, and genetics.*

**Introduction to Biostatistics**
PBHS 32100
COURSE INSTRUCTOR: John Cursio
DAY & TIME:  T/Th 11a-12:20p
PQ: 2 quarters of pre-calculus
CROSS-LIST ID:
*This course will provide an introduction to the basic concepts of statistics as applied to the bio-medical and public health sciences. Emphasis is on the use and interpretation of statistical tools for data analysis. Topics include (i) descriptive statistics; (ii) probability and sampling; (iii) the methods of statistical inference; and (iv) an introduction to linear and logistics regression.*
***In addition to the course, there is a statistical computing workshop held on Wednesdays from 11:30am-12:20pm.***

**Introduction to Clinical Trials**
PBHS 32901
COURSE INSTRUCTOR: Mei Polley
DAY & TIME:  T/Th 3:30-4:50pm
PQ:  PBHS 32100 or STAT 22000 or Introductory Biostatistics course (or equivalent) **AND** PBHS 32400 or PBHS 32410 (or equivalent); or consent of instructor
CROSS-LIST ID:  STAT 35201
*This course will review major components of clinical trial conduct, including ethical and regulatory issues in human subject research, the formulation of clinical hypotheses and study endpoints, research protocol structure, various design elements, phase I-III trial designs, sample size methods, fundamentals of survival analysis, trial progress monitoring, and the analysis and reporting of clinical trial results. Additional topics may include roles of biomarkers in clinical trials and the broader impact of clinical trials on public health.*

**Multilevel Modeling**
PBHS 33400
COURSE INSTRUCTOR:  Don Hedeker
DAY & TIME: T/TH 12:30-1:50pm
PQ: PBHS 32400 or PBHS 32410 and PBHS 32700 or consent of instructor
CROSS-LIST:  CHDV 32401
*This course will focus on the analysis of multilevel data in which subjects are nested within clusters (e.g., health care providers, hospitals). The focus will be on clustered data, and several extensions to the basic two-level multilevel model will be considered including three-level, cross-classified, multiple membership, and multivariate models. In addition to models for continuous outcomes, methods for non-normal outcomes will be covered, including multilevel models for dichotomous, ordinal, nominal, time-to-event, and count outcomes. Some statistical theory will be given, but the focus will be on application and interpretation of the statistical analyses.*

**Statistical Applications**
PBHS 33500
COURSE INSTRUCTOR: Robert Gibbons
DAY & TIME:  M/W 1:30-2:50pm
PQ:  PBHS 32400 or PBHS 32410 or equivalent, and PBHS 32600/STAT 22600, or PBHS 32700/STAT 22700 or equivalent; or consent of instructor.  Knowledge of STATA and/or R highly recommended
CROSS-LIST ID: STAT 35800; CHDV 32702
*This course provides a transition between statistical theory and practice.  The course will cover statistical applications in medicine, mental health, environmental science, analytical chemistry, and public policy.*
*Lectures are oriented around specific examples from a variety of content areas.  Opportunities for the class to work on interesting applied problems presented by U of C faculty will be provided.  Although an overview of relevant statistical theory will be presented, emphasis is on the development of statistical solutions to interesting applied problems.*

**Sexual Health**
PBHS 33700
COURSE INSTRUCTOR:  David Moskowitz
DAY & TIME: T/Th 11a-12:20p
PQ:
CROSS-LIST ID:  PBHS 23700; GNSE 23702, GNSE 33702; HLTH 23700
*Sexual health is a growing component of public health outreach. The goal of this course is to provide students with a foundational understanding of sexual health from a public health perspective. Through participation in this course,*

*students will increase their knowledge about the history of sexual health promotion in the public health sphere. They will delve into sexual and gender identity construction and explore identity-behavioral expressions. They will critically examine and discuss common sexual health issues addressed by public health practitioners, their epidemiology, and their underlying social determinants; a global health lens will be applied to such examinations. Additionally, recognition of the key methodological considerations in the measurement of sexual behavior and sexual health outcomes will be elucidated (including strengths and limitations of various methodological approaches –quantitative, qualitative, clinical, and biomedical). By the completion of the course, students should be able to demonstrate knowledge and application of key theoretical foundations of sexual health promotion and sexual health behavior change and be able to promote sexual health messages through marketing and dissemination. From a policy perspective, student can expect an increased knowledge about issues related to social and legislative policy analyses, their applications, and implications.*

**Global Maternal and Child Health**
PBHS 33800
COURSE INSTRUCTOR:  Erick Amick
DAY & TIME:  W 4:30-7:30pm
PQ:
CROSS-LIST:  HLTH 23810; GNSE 23180; GNSE 33800
*This course provides a foundation in global perspectives on maternal and child health research, practice, and policy. The course will cover a range of maternal and child health topics to examine critical challenges facing women, children, providers, and policymakers in some of the world's most vulnerable communities. Students in this course will: 1) understand the status of maternal and child health in a variety of communities and contexts, using key health and development indicators; 2) critically analyze past and present public health programs and policies utilized to address maternal and child health needs in diverse communities; 3) assess the economic, political, social, and cultural factors that affect maternal and child health programs and outcomes.*

**Foundations of Public Health**
PBHS 34100
COURSE INSTRUCTOR: Seleeke Flingai
DAY & TIME:  T/Th 2-3:20pm
PQ: <mark>MPH students only; or consent of instructor</mark>
*This course provides an overview and introduction to the role, theories, and methods of health promotion and health behavioral science in addressing the public health needs of the 21st Century. The course will cover a wide range of topics including: the history of public health,  the basic institutional and organizational structures created to monitor public health; socio-cultural factors in disease etiology and the role of social conditions and social policy in addressing critical public health problems; individual, group, and community strategies for health behavior change; and current issues (e.g., eHealth) in behavioral science for health promotion. The course provides students with the opportunity to critically analyze current literature and gain an understanding of health promotion, its evolution, underlying theories, applications, and effectiveness in promoting health and preventing illness.*

**GIS and Spatial Analysis for Public Health**
PBHS 34900
COURSE INSTRUCTOR: Seleeke Flingai
DAY & TIME:  T/Th 9:30-10:50am
PQ:
CROSS-LIST: HLTH 24900
*This course serves as an introduction to the core concepts and tools for applying spatial analytic methods to public health questions. Using a combination of lectures, case studies, and hands-on in-class trainings, students will learn fundamental spatial concepts, as well as how to make sense of and prepare spatial health data for mapping and statistical analyses (including georeferencing, geocoding, merging data sources, and describing and analyzing spatial health patterns and relationships). Throughout the course, we will draw from writings and examples in public health, urban planning, sociology, and critical geography studies to gain an understanding not only of the use of mapping in understanding the spatial nature of health and disease, but also the power dynamics of map-making as a practice. By the end of the course, students will become familiar with a breadth of foundational concepts, technical skills, and critical perspectives to produce and interpret maps and spatial health analyses at an introductory level.*

**Introduction to U.S. Health Policy and Politics**
PBHS 35500
COURSE INSTRUCTOR: Loren Saulsberry & Tamara Konetzka
DAY & TIME:  T/Th 12:30-1:50pm

PQ: N/A
CROSS-LIST ID:  HLTH 25500; PBPL 25500; SSAD 45011; PPHA 37720;
*The purpose of this course is to introduce students to the concepts needed to critically evaluate U.S. health policy issues. The course will 1) provide an overview of the U.S. health system including its institutions, stakeholders, and financing mechanisms, 2) describe the politics of health and illuminate how the structure of our political system shapes health policy outcomes, and 3) offer a framework for assessing the critical features central to health policy debates. Building upon this knowledge, the course will conclude with a discussion of strategies for influencing the health policy process and how they might be employed in future leadership roles within the health sector.*

**Epidemiologic Methods**
PBHS 31001
COURSE INSTRUCTOR:  Brian Chiu
DAY & TIME:  T/Th 12:30-1:50pm
PQ: PBHS 30910 **and** PBHS 32400/STAT 22400 **or** PBHS 32410 (taken concurrently) **or** applied statistics courses through multivariate regression.
CROSS-LIST ID:  STAT 35700
*This course provides students with an in-depth understanding of epidemiologic concepts and methods. It is the second course in the epidemiology series. The focus of this course will be in practical and theoretical considerations of observational research methods; statistical methods and applications in epidemiologic studies; in-depth evaluation of bias, confounding, and interaction; and communicating epidemiologic findings. Students will also learn how to perform data analysis using classic methods.*

**Regression Analysis for Health and Social Research**
PBHS 32410
COURSE INSTRUCTOR: Jim Dignam
DAY & TIME:  T/Th 11am-12:20pm
PQ: PBHS 32100 or STAT 22000 or equivalent
Students can take either PBHS 32400/STAT 22400 or PBHS 32410/STAT 22401, but not both.
CROSS-LIST ID: STAT 22401
*This course is an introduction to the methods and applications of fitting and interpreting multiple regression models. The main emphasis is on the method of least squares. Topics include the examination of residuals, the transformation of data, strategies and criteria for the selection of a regression equation, the use of dummy variables, tests of fit. Stata computer package will be used extensively, but previous familiarity with Stata is not assumed. The techniques discussed will be illustrated by real examples involving health and social science data.*

**Applied Longitudinal Data Analysis**
PBHS 33300
COURSE INSTRUCTOR:  Don Hedeker
DAY & TIME:  T/TH 9:30-10:50am
PQ: PBHS 32400 or PBHS 32410 or equivalent, and PBHS 32600/STAT 22600, or PBHS 32700/STAT 22700 or equivalent; or consent of instructor.
CROSS-LIST ID:  STAT 36900; CHDV 32501
*Longitudinal data consist of multiple measures over time on a sample of individuals.  This type of data occurs extensively in both observational and experimental biomedical and public health sciences, as well as in studies in sociology and applied economics.  This course will provide an introduction to the principles and methods for the analysis of longitudinal data.  Whereas some supporting statistical theory will be given, emphasis will be on data analysis and interpretation of models for longitudinal data.  Problems will be motivated by applications in epidemiology, clinical medicine, health services research, and disease natural history studies.*

**Foundations of Public Health**
PBHS 34100
COURSE INSTRUCTOR: Seleeke Flingai
DAY & TIME:  T/Th 11a-12:20p
PQ:  MPH students only; or consent of instructor
*This course provides an overview and introduction to the role, theories, and methods of health promotion and health behavioral science in addressing the public health needs of the 21st Century. The course will cover a wide range of topics including: the history of public health,  the basic institutional and organizational structures created to monitor public health; socio-cultural factors in disease etiology and the role of social conditions and social policy in addressing critical public health problems; individual, group, and community strategies for health behavior change; and current issues (e.g., eHealth) in behavioral science for health promotion. The course provides students with the opportunity to critically analyze current literature and gain an understanding of health promotion, its evolution, underlying theories, applications, and effectiveness in promoting health and preventing illness.*

**Health Behavior Theory & Health Communication**

PBHS 34200
COURSE INSTRUCTOR:  Marcia Tan and David Moskowitz
Day/Time:  T/Th 2-3:20pm
PQ:  <mark>MPH Student Only; or Consent of Instructor</mark>
*This course addresses the psychological, social, and environmental determinants of a wide range of health and health-related behavior. Theoretical models from the behavioral and social sciences will be used to explain health behavior at the individual, interpersonal, and community levels. The course emphasizes the acquisition of theoretical understandings, but also is intended to improve actions or activities undertaken for the purpose of promoting, preserving, or restoring wellness. Towards that end, students in this course will learn how to use peer-reviewed research and key social marketing principles to develop a comprehensive and effective social marketing campaign; learn how to target health communication efforts towards specific audiences and via varied channels of distribution; understand the role of social media and technology in facilitating/influencing behavior changes; study current examples of successful social marketing initiatives; and discuss the ethics surrounding health communication and social marketing efforts.*

## Computer Programming for Public Health
PBHS 34400
COURSE INSTRUCTOR:  Jason Edelstein
Day/Time:  T 5-7:50pm
PQ:
*This course will provide an introductory and intermediate level overview of computer science and programming skills. Students will learn concepts in computer programming and how programming language works, as well as theories behind information system design and management. Specific topics include: Python and R programming language, data structures and management, algorithm design, data visualizations, and basic project management for reproducible research.*

## Mixed Method Research in Community Settings
PBHS 34600
COURSE INSTRUCTOR:  David Moskowitz
DAY & TIME:  T/Th 9:30-10:50am
PQ:
*This course is designed to train students in mixed methods research design and evaluation. Mixed methods are the use of quantitative AND qualitative methods to explore health problems, engage communities, and evaluate solutions. It includes an in-depth discussion of the rationales for specific techniques and the role of theory in guiding and informing a health research project. Students will learn design considerations that are best suited for qualitative over quantitative methods (and vice versa) or both methods. Specifically, the course focuses on training, through lecture, group work and hands-on experiences, across five data collection methods commonly used in mixed methods research: survey design and implementation, observation, interview, focus group, and use of existing quantitative data. Students will undertake a pilot research study as a means of practicing their mixed methods approaches and data collection skills. Multiple data analyses techniques (e.g., content analysis, narrative analysis, multivariable model construction, qual-quant triangulation) will be conceptually explained. Students will leave the course with practical skills to conduct research through public health practice.*

## Community Health Promotion
PBHS 34700
COURSE INSTRUCTOR:  Jasmin Tiro
DAY & TIME:  T/Th 3:30-4:50pm
PQ:  PBHS 34100 recommended
*A person's health depends not only their genes or behavior, but also where they live, learn, work, play, and age. This course examines how social and community structures and policies influence health and can produce health disparities. Structural issues (e.g., economic stability, housing, food security, health care access and quality, broadband access, health and digital literacy, violence, discrimination) are key social determinants of health.  This course will describe and apply: 1) frameworks for understanding health determinants acting at multiple levels, and 2) community and structural intervention approaches to promote health. Students will learn how to prioritize among health determinants and select among intervention approaches to solve public health problems and improve public health practice.*

## Economic Analysis of Health Policies
PBHS 38010
COURSE INSTRUCTOR:  Betsy Cliff
DAY & TIME:  M/W 1:30-2:50pm
PQ:  Microeconomics course recommended; Consent of instructor for undergrads.

CROSS-LIST ID:  HLTH 28010; PPHA 38290
*This course covers the foundations of the economics of health care as applied to current issues of health care policy. Content includes demand for health, medical care, and insurance; supply of medical care and behavior of health care practitioners; and economic perspectives on measurement in health care research. Using a combination of lectures, readings, problem sets, and discussion of newspaper and journal articles, the goal is for students to acquire a basic understanding of economic knowledge and thinking and to be able to apply that knowledge in analyzing policies. The course is open to graduate students and a limited number of undergraduates. A prior course in microeconomics is recommended; for those students without this preparation, the beginning of the course will include a short primer on key concepts in microeconomics.*

**Applied Bayesian Modeling and Inference**
PBHS 43010
COURSE INSTRUCTOR:  Yuan Ji
DAY & TIME:  M/W 10:30-11:50
PQ:  STAT 24400 and STAT 24500 or master level training in statistics.
CROSS-LIST ID:  STAT 35920
*Course begins with basic probability and distribution theory and covers a wide range of topics related to Bayesian modeling, computation, and inference. Significant amount of effort will be directed to teaching students on how to build and apply hierarchical models and perform posterior inference.  The first half of the course will be focused on basic theory, modeling, and computation using Markov chain Monte Carlo methods, and the second half of the course will be about advanced models and applications.  Computation and application will be emphasized so that students will be able to solve real-world problems with Bayesian techniques.*

# DEPARTMENT OF PUBLIC HEALTH SCIENCES COURSES

## Spring 2026

**Introduction to Mathematical Modeling in Public Health**
PBHS 31100
COURSE INSTRUCTOR:  Olga Morozova
DAY & TIME:  T/Th 11am-12:20pm
PQ:
CROSS-LIST ID:  BIOS 26311
*Modeling is a simplified representation of reality that aims to capture essential features of a real-life object or process. Mathematical modeling in public health encompasses a wide array of methodologies offering a powerful toolkit to approach questions that would otherwise be extremely difficult or impossible to answer. This course will introduce students to the conceptual framework of mechanistic modeling and cover the basics of the most widely used mathematical modeling approaches in public health. The course will combine lectures and interactive computer sessions to help students develop practical skills of using basic quantitative techniques.*

**Introduction to Infectious Disease Epidemiology**
PBHS 31300
COURSE INSTRUCTOR: Jade Pagkas-Bather, Moira McNulty
DAY & TIME:  W 5:30-8:30pm
PQ:  PBHS 30910 (STAT 22810/ENST 27400/HLTH 20910/PPHA 36410) or introductory epidemiology course
CROSS-LIST ID:  BIOS 25419
*This intermediate-level course will build off basic epidemiology foundations to understand principles of infectious disease epidemiology as well as focus on specific diseases & their public health significance. We will examine disease transmission and the interactions between pathogens, hosts, and environment. This course introduces key pathogens, diagnostics, and immune responses. In addition, we will explore the roles of climate change, globalization, and social determinants of health on infectious diseases. Students will learn about research and public health responses to infectious diseases, including study design, modeling, molecular epidemiology, surveillance, outbreak investigation, and prevention*

**Social Inequalities in Health: Race/Ethnicity & Class**
PBHS 31450
COURSE INSTRUCTOR:  Seleeke Flingai
DAY & TIME: M/W 3:00-4:20pm
PQ:  PBHS 32100 or STAT 22000 or introductory statistics course.
CROSS-LIST ID:  CRES 27450, HLTH 27450
*This course examines how social stratification and social inequality shape racial/ethnic and socioeconomic inequalities in health. In particular, we will explore the production of race and class inequality in the US and draw on the extant theoretical and empirical literature to understand how these social factors influence health behaviors and health outcomes. Finally, we will review both the classic and emerging methodological approaches used by public health and social scientists to measure and test how these features of society get "under the skin" to shape a variety of health outcomes.*

**Global Health Metrics**
PBHS 31900
COURSE INSTRUCTOR:  Kavi Bhalla
DAY & TIME:  T/Th 11am-12:20pm
PQ:  PBHS 30910; Consent of instructor for undergrads (limited to 3rd & 4th yr undergrads)
CROSS-LIST ID: HLTH 27905; PBPL 27905
*This course provides an overview of the causes of illness and injury in populations across the world and the most important risk factors. We will discuss how population health is measured using summary indicators that combine mortality and non-fatal health outcomes. We will use these indicators to compare and contrast the health of populations across global regions and in time. Sound measurement of the global burden of disease is essential for prioritizing prevention strategies. Therefore, there will be a strong emphasis on understanding how data sources in information-poor settings are used to generate estimates of population health.*

**Biostatistical Methods**
PBHS 32700

COURSE INSTRUCTOR: Lin Chen
DAY & TIME:  T/Th 12:30-1:50pm
PQ:  PBHS 32400, PBHS 32410 or STAT 24500; or equivalent; or consent of instructor
CROSS-LIST ID:   STAT 22700
*This course is designed to provide students with tools for analyzing categorical, count and time-to-event data frequently encountered in medicine, public health and related biological and social sciences.  The course will emphasize application of the methodology rather than statistical theory, including recognition of the appropriate methods, interpretation and presentation of results.  Methods covered include:  contingency table analysis, Kaplan-Meier survival analysis, Cox proportional-hazards survival analysis, logistic regression, Poisson regression.*

### Introduction to Urban Health
PBHS 33900
COURSE INSTRUCTOR: Seleeke Flingai
DAY & TIME: T/TH 2:00-3:20pm
PQ:
*This seminar course will provide a broad overview of the political, economic, social, and physical conditions that impact the health of populations in urban settings. Using social epidemiological theories and the logics of racial capitalism and neoliberalism as points of departure, this course will take a critical approach to the study of urban health and its determinants. Beginning with a grounding in urban political economy and governance, the rest of the course will explore several fundamental topics in urban health, including the role of neighborhoods, housing, and spatial processes such as segregation, gentrification, and neighborhood redevelopment on health; social cohesion and social capital; the criminal legal system; climate vulnerability and environmental exposures; and accessibility to health-promoting resources such as healthy food, health care facilities, and more. Given the interdisciplinary nature of urban health, we will draw insights from a range of disciplines (e.g., public health, history, political economy, sociology, critical geography, and urban studies); given the constraints of a single course, the material will primarily focus on the U.S. context. The ultimate goal of this course is to have students develop a critical perspective and a set of actionable frameworks to analyze the relationship between urban processes (political, economic, spatial, etc.) and health.*

### Public Health Programs: Planning, Implementation & Evaluation
PBHS 34300
COURSE INSTRUCTOR:  David Moskowitz
DAY & TIME:  M/W 10:30-11:50am
PQ: MPH Students Only; or Consent of Instructor
*The course is designed to provide students with an overview of how to develop public health programs and interventions. Students will learn the best ways to help solve the critical health issues affecting our communities at local, national, and international levels. Students will learn the start-to-finish processes of public health programming including understanding the problem using existent data, needs assessments/surveillance, using goals/objectives, basic design, message construction, planning, implementation, and creating an evaluation system that links back to goals/objectives. The course will also include an overview of effective evidence-based public health interventions that span multiple health domains and delivery modalities. Students will have the opportunity to create their own health programs through the quarter.*

### Machine Learning for Public Health
PBHS 34500
COURSE INSTRUCTOR:  Eric Polley
DAY & TIME:  T/Th 2-3:20pm
PQ: PBHS 32400/STAT 22400 or PBHS 32410 or equivalent AND PBHS 34400 or equivalent programming course.
Limited to MPH Students; Consent of Instructor for PBHS Graduate and Doctoral Students
*This course provides an introduction to machine learning in the context of public health and medical applications. Key concepts in the design and evaluation of machine learning algorithms will be presented. A variety of algorithms will be covered (e.g. random forests, splines, boosting, neural networks, and ensembles) and include hands-on experience with programming in R.*

### Management of Community Health Organizations
PBHS 34800
COURSE INSTRUCTOR:  Brandon Hill
DAY & TIME:  T 3:30-6:20pm
PQ:
*This course encompasses an in-depth exploration of the healthcare environment and its associated organizational implications. It provides students with a comprehensive framework for understanding and effectively managing health services and healthcare sector organizations. The curriculum further delves into the application of managerial leadership*

*skills, highlighting their influence on both individuals and institutions within the dynamic healthcare sector. Additionally, it addresses the intricacies of resource management within a framework that considers principles, personnel, processes, and organizational design. Strategic and organizational management, management tools for performance improvement, and the various roles and functions in healthcare management are covered in detail. Furthermore, the course explores organizational behavior perspectives and theories that serve as the foundation for critically examining management in healthcare. It emphasizes the interpersonal skills and knowledge necessary for managers in this ever-evolving field, allowing students to develop a holistic approach to understanding the complexity of health sector organizations. The curriculum underscores the importance of applying current theories to practical situations, covering areas such as management, employee motivation, group dynamics, team development, power dynamics, conflict resolution, and negotiation skills.*

**Health Services Research Methods**
PBHS 35100
COURSE INSTRUCTOR: Prachi Sanghavi
DAY & TIME:  M/W 1:30-2:50pm
PQ: At least one course in linear regression and basic familiarity with STATA; or consent of instructor.
CROSS-LIST ID: HLTH 29100; PPHA 38010; SSAD 46300;
*The purpose of this course is to better acquaint students with the methodological issues of research design and data analysis widely used in empirical health services research. To deal with these methods, the course will use a combination of readings, lectures, problem sets (using STATA), and discussion of applications. The course assumes that students have had a prior course in statistics, including the use of linear regression methods.*

**Money, Medicine, and Markets: The Financialization of the US Health System**
PBHS 35600
COURSE INSTRUCTOR:  Joseph Bruch
DAY & TIME: T/Th, 3:30-4:50pm
PQ: Knowledge of US health care, such as through an introduction course
CROSS-LIST:  HLTH 25600; SSAD 45601, PPHA 38340
*This class tracks the complex ways finance influences health and health care delivery in the United States. The course is divided into three parts. In Part 1, we review how macro changes in the financial sector have influenced the organization of the economy and the management of health care corporations. In Part 2, we investigate different financialized health care settings where tensions between profit maximization, health care quality, and health equity exist. These settings include nonprofit hospitals, the pharmaceutical industry, private equity investors, medical debt collectors, management consultants, the physician workforce, and women's health startups. In Part 3, we grapple with the link between capitalism and population health using concepts from political economy and public health. This exploration includes discussions on financial lending, macroeconomic conditions, economic inequality, and the commercial determinants of health. Throughout the course, students will be introduced to cutting-edge scholarship across various fields, including policy analysis, epidemiology, and health economics. The course will be of interest to students pursuing careers or research in health care management, health care finance, health policy and advocacy, health economics, social entrepreneurship, nonprofit management, and public health.*

**Policy Analysis and Priority Setting in Health and Medicine**
PBHS 38310
COURSE INSTRUCTOR:  David Kim
DAY & TIME: T/Th 9:30-10:50am
PQ:
*This course introduces evidence-based priority-setting in health and medicine and its key quantitative methods, with particular attention to economic evaluation for health policy assessment. The course assesses the state of current practice in national and global priority settings, describes new tools and methodologies to establish health policy priorities, and tackles important ethical and distributional issues that decision-makers must consider in allocating limited health resources. The course, involving didactic instruction, student-led discussion, policy debate, and a course project, helps students better understand priority-setting processes and research methodology.*

**Advanced Epidemiologic Methods**
PBHS 40500
COURSE INSTRUCTOR:  Dezheng Huo
DAY & TIME:  M/W 10:30-11:50am
PQ:  PBHS 31001 and PBHS 32410/STAT 22401
*This course examines some features of study design but is primarily focused on analytic issues encountered in epidemiologic research. The objective of this course is to enable students to conduct thoughtful analysis of epidemiologic*

*and other population research data. Concepts and methods that will be covered include: matching, sampling, conditional logistic regression, survival analysis, ordinal and polytomous logistic regressions, multiple imputation, and screening and diagnostic test evaluation. The course follows in sequence the material presented in "Epidemiologic Methods."*

# DEPARTMENT OF PUBLIC HEALTH SCIENCES
## COMPLETE LIST OF COURSES

**Epidemiology and Population Health**
PBHS 30910
COURSE INSTRUCTOR: Diane Lauderdale
OFFERED: Autumn
PQ: STAT 22000 or other introductory statistics highly desirable.
CROSS-LIST ID: ENST 27400; HLTH 20910; STAT 22810; PPHA 36410
*Epidemiology is the basic science of public health. It is the study of how diseases are distributed across populations and how one designs population-based studies to learn about disease causes, with the object of identifying preventive strategies. Epidemiology is a quantitative field and draws on biostatistical methods. Historically, epidemiology's roots were in the investigation of infectious disease outbreaks and epidemics. Since the mid-twentieth century, the scope of epidemiologic investigations has expanded to a fuller range non-infectious diseases and health problems. This course will introduce classic studies, study designs and analytic methods, with a focus on global health problems.*

**Epidemiologic Methods**
PBHS 31001
COURSE INSTRUCTOR: Brian Chiu or Dezheng Huo
OFFERED: Winter
PQ: PBHS 30910 **and** PBHS 32400/STAT 22400 **or** PBHS 32410 (taken concurrently) **or** applied statistics courses through multivariate regression.
CROSS-LIST ID: STAT 35700
*This course provides students with an in-depth understanding of epidemiologic concepts and methods. It is the second course in the epidemiology series. The focus of this course will be in practical and theoretical considerations of observational research methods; statistical methods and applications in epidemiologic studies; in-depth evaluation of bias, confounding, and interaction; and communicating epidemiologic findings. Students will also learn how to perform data analysis using classic methods.*

**Introduction to Mathematical Modeling in Public Health**
PBHS 31100
COURSE INSTRUCTOR: Olga Morozova
OFFERED: Spring
PQ:
CROSS-LIST ID: BIOS 26311
*Modeling is a simplified representation of reality that aims to capture essential features of a real-life object or process. Mathematical modeling in public health encompasses a wide array of methodologies offering a powerful toolkit to approach questions that would otherwise be extremely difficult or impossible to answer. This course will introduce students to the conceptual framework of mechanistic modeling and cover the basics of the most widely used mathematical modeling approaches in public health. The course will combine lectures and interactive computer sessions to help students develop practical skills of using basic quantitative techniques.*

**Introduction to Infectious Disease Epidemiology**
PBHS 31300
COURSE INSTRUCTOR: Jade Pagkas-Bather, Moira McNulty
OFFERED: Spring
PQ: PBHS 30910 or Introductory Epidemiology or consent of instructor
CROSS-LIST ID: BIOS 25419
*This intermediate-level course will build off basic epidemiology foundations to understand principles of infectious disease epidemiology as well as focus on specific diseases & their public health significance. We will examine disease transmission and the interactions between pathogens, hosts, and environment. This course introduces key pathogens, diagnostics, and immune responses. In addition, we will explore the roles of climate change, globalization, and social determinants of health on infectious diseases. Students will learn about research and public health responses to infectious diseases, including study design, modeling, molecular epidemiology, surveillance, outbreak investigation, and prevention*

**Social Inequalities in Health: Race/Ethnicity & Class**
PBHS 31450
COURSE INSTRUCTOR: Aresha Martinez-Cardoso (Autumn); Seleeke Flingai (Spring)

OFFERED:  Autumn and Spring
PQ:  Introductory statistics course.
CROSS-LIST ID: CRES 27450, HLTH 27450
*This course examines how social stratification and social inequality shape racial/ethnic and socioeconomic inequalities in health. In particular, we will explore the production of race and class inequality in the US and draw on the extant theoretical and empirical literature to understand how these social factors influence health behaviors and health outcomes. Finally, we will review both the classic and emerging methodological approaches used by public health and social scientists to measure and test how these features of society get "under the skin" to shape a variety of health outcomes.*

**Climate Change and Human Health**
PBHS 31720
COURSE INSTRUCTOR:  Kate Burrows
OFFERED: Autumn
PQ:  PBHS 32100 or STAT 22000 or introductory statistics course
CROSS-LIST ID:  CEGU 21720, CEGU 31720, HLTH 21720
*Climate change is one of the greatest global health threats facing the world in the 21st century. Through this course, students will gain foundational knowledge in the health effects of climate change. We will begin with several lectures on climate science as it related to the patterns of weather extremes experienced by populations. We will then identify the varying health outcomes linked to different climate-related exposures, emphasizing the specific impacts in vulnerable and high-risk populations. Specific topics include the effects of air pollution, extreme heat and heat waves, droughts, tropical cyclones, changes in vector habitats, and sea-level rise. Finally, we will discuss strategies for public health practitioners to aid communities in preventing or alleviating these adverse effects.*

**Genetic & Molecular Epidemiology**
PBHS 31831
COURSE INSTRUCTOR: Brandon Pierce
OFFERED:  Spring (Course not offered every year)
**PQ:** PBHS 30910 (or introductory epidemiology) AND HGEN 47000.
*This course is designed for students with research interests related to identifying and characterizing the role of genetic and molecular factors in human disease risk and prognosis.  Students will be introduced to the key concepts and methodological issues encountered in epidemiological studies that utilize genetic and molecular data. This course will train students on the theoretical and practical aspects of study design and data generation, and also provide the relevant hands-on training for quality control, management, and analysis of large-scale genomic/molecular data. Students are expected to have taken prior coursework in genetics as well as introductory statistics and/or epidemiology.*

**Global Health Metrics**
PBHS 31900
COURSE INSTRUCTOR:  Kavi Bhalla
OFFERED: Spring
PQ:  PBHS 30910; Consent of Instructor; limited to 3rd & 4th yr undergrads
CROSS-LIST ID:  PBPL 27905; HLTH 27905
*This course provides an overview of the causes of illness and injury in populations across the world and the most important risk factors. We will discuss how population health is measured using summary indicators that combine mortality and non-fatal health outcomes. We will use these indicators to compare and contrast the health of populations across global regions and in time. Sound measurement of the global burden of disease is essential for prioritizing prevention strategies. Therefore, there will be a strong emphasis on understanding how data sources in information-poor settings are used to generate estimates of population health.*

**Introduction to Biostatistics**
PBHS 32100
COURSE INSTRUCTOR: John Cursio
OFFERED:  Autumn
PQ: 2 quarters of pre-calculus
CROSS-LIST ID:
*This course will provide an introduction to the basic concepts of statistics as applied to the bio-medical and public health sciences. Emphasis is on the use and interpretation of statistical tools for data analysis. Topics include (i) descriptive statistics; (ii) probability and sampling; (iii) the methods of statistical inference; and (iv) an introduction to linear and logistics regression.*

*In addition to the course, there is a statistical computing workshop held on Wednesdays from 10-11:30am in BSLC 018.*

**Regression Analysis for Health and Social Research**
PBHS 32410
COURSE INSTRUCTOR: Jim Dignam
OFFERED: Winter
PQ: PBHS 32100 or STAT 22000 or equivalent
Students can take either PBHS 32400/STAT 22400 or PBHS 32410/STAT 22401
CROSS-LIST ID: STAT 22401
*This course is an introduction to the methods and applications of fitting and interpreting multiple regression models. The main emphasis is on the method of least squares. Topics include the examination of residuals, the transformation of data, strategies and criteria for the selection of a regression equation, the use of dummy variables, tests of fit. Stata computer package will be used extensively, but previous familiarity with Stata is not assumed. The techniques discussed will be illustrated by real examples involving health and social science data.*

**Biostatistical Methods**
PBHS 32700
COURSE INSTRUCTOR: Lin Chen
OFFERED: Spring
PQ: PBHS 32400, PBHS 32410 or STAT 24500; or equivalent; or consent of instructor
CROSS-LIST ID: STAT 22700
*This course is designed to provide students with tools for analyzing categorical, count and time-to-event data frequently encountered in medicine, public health and related biological and social sciences. The course will emphasize application of the methodology rather than statistical theory, including recognition of the appropriate methods, interpretation and presentation of results. Methods covered include: contingency table analysis, Kaplan-Meier survival analysis, Cox proportional-hazards survival analysis, logistic regression, Poisson regression.*

**Introduction to Clinical Trials**
PBHS 32901
COURSE INSTRUCTOR: Mei Polley
OFFERED: Autumn
PQ: PBHS 32100 or STAT 22000 or Introductory Biostatistics course (or equivalent) **AND** PBHS 32400 or PBHS 32410 (or equivalent); or consent of instructor
CROSS-LIST ID: STAT 35201
*This course will review major components of clinical trial conduct, including ethical and regulatory issues in human subject research, the formulation of clinical hypotheses and study endpoints, research protocol structure, various design elements, phase I-III trial designs, sample size methods, fundamentals of survival analysis, trial progress monitoring, and the analysis and reporting of clinical trial results. Additional topics may include roles of biomarkers in clinical trials and the broader impact of clinical trials on public health.*

**Applied Longitudinal Data Analysis**
PBHS 33300
COURSE INSTRUCTOR: Don Hedeker
OFFERED: Winter
PQ: PBHS 32400, PBHS 32410 or equivalent, and PBHS 32600/STAT 22600 or PBHS 32700/STAT 22700 or equivalent; or consent of instructor.
CROSS-LIST ID: STAT 36900; CHDV 32501
*Longitudinal data consist of multiple measures over time on a sample of individuals. This type of data occurs extensively in both observational and experimental biomedical and public health sciences, as well as in studies in sociology and applied economics. This course will provide an introduction to the principles and methods for the analysis of longitudinal data. Whereas some supporting statistical theory will be given, emphasis will be on data analysis and interpretation of models for longitudinal data. Problems will be motivated by applications in epidemiology, clinical medicine, health services research, and disease natural history studies.*

**Multilevel Modeling**
PBHS 33400
COURSE INSTRUCTOR: Don Hedeker
OFFERED: Autumn (Course not offered every year)
PQ: PBHS 32400 or PBHS 32410 and PBHS 32700 or consent of instructor.

CROSS-LIST ID: CHDV 32401
*This course will focus on the analysis of multilevel data in which subjects are nested within clusters (e.g., health care providers, hospitals). The focus will be on clustered data, and several extensions to the basic two-level multilevel model will be considered including three-level, cross-classified, multiple membership, and multivariate models. In addition to models for continuous outcomes, methods for non-normal outcomes will be covered, including multilevel models for dichotomous, ordinal, nominal, time-to-event, and count outcomes. Some statistical theory will be given, but the focus will be on application and interpretation of the statistical analyses.*

**Statistical Applications**
PBHS 33500
COURSE INSTRUCTOR: Robert Gibbons
OFFERED: Fall
PQ: PBHS 32400, PBHS 32410 or equivalent, and PBHS 32600/STAT 22600 or PBHS 32700/STAT 22700 or equivalent; or consent of instructor. Knowledge of STATA and/or R highly recommended.
CROSS-LIST ID: STAT 35800; CHDV 32702
*This course provides a transition between statistical theory and practice. The course will cover statistical applications in medicine, mental health, environmental science, analytical chemistry, and public policy. Lectures are oriented around specific examples from a variety of content areas. Opportunities for the class to work on interesting applied problems presented by U of C faculty will be provided. Although an overview of relevant statistical theory will be presented, emphasis is on the development of statistical solutions to interesting applied problems.*

**Sexual Health**
PBHS 33700
COURSE INSTRUCTOR: David Moskowitz
OFFERED: Spring
PQ:
CROSS-LIST ID: PBHS 23700; GNSE 23702, GNSE 33702; HLTH 23700
*Sexual health is a growing component of public health outreach. The goal of this course is to provide students with a foundational understanding of sexual health from a public health perspective. Through participation in this course, students will increase their knowledge about the history of sexual health promotion in the public health sphere. They will delve into sexual and gender identity construction and explore identity-behavioral expressions. They will critically examine and discuss common sexual health issues addressed by public health practitioners, their epidemiology, and their underlying social determinants; a global health lens will be applied to such examinations. Additionally, recognition of the key methodological considerations in the measurement of sexual behavior and sexual health outcomes will be elucidated (including strengths and limitations of various methodological approaches –quantitative, qualitative, clinical, and biomedical). By the completion of the course, students should be able to demonstrate knowledge and application of key theoretical foundations of sexual health promotion and sexual health behavior change and be able to promote sexual health messages through marketing and dissemination. From a policy perspective, student can expect an increased knowledge about issues related to social and legislative policy analyses, their applications, and implications.*

**Global Maternal and Child Health**
PBHS 33800
COURSE INSTRUCTOR: Erick Amick
OFFERED: Autumn
PQ:
CROSS-LIST: HLTH 23810; GNSE 23180; GNSE 33800
*This course provides a foundation in global perspectives on maternal and child health research, practice, and policy. The course will cover a range of maternal and child health topics to examine critical challenges facing women, children, providers, and policymakers in some of the world's most vulnerable communities. Students in this course will: 1) understand the status of maternal and child health in a variety of communities and contexts, using key health and development indicators; 2) critically analyze past and present public health programs and policies utilized to address maternal and child health needs in diverse communities; 3) assess the economic, political, social, and cultural factors that affect maternal and child health programs and outcomes.*

**Introduction to Urban Health**
PBHS 33900
COURSE INSTRUCTOR: Seleeke Flingai
OFFERED: Spring
PQ:

*This seminar course will provide a broad overview of the political, economic, social, and physical conditions that impact the health of populations in urban settings. Using social epidemiological theories and the logics of racial capitalism and neoliberalism as points of departure, this course will take a critical approach to the study of urban health and its determinants. Beginning with a grounding in urban political economy and governance, the rest of the course will explore several fundamental topics in urban health, including the role of neighborhoods, housing, and spatial processes such as segregation, gentrification, and neighborhood redevelopment on health; social cohesion and social capital; the criminal legal system; climate vulnerability and environmental exposures; and accessibility to health-promoting resources such as healthy food, health care facilities, and more. Given the interdisciplinary nature of urban health, we will draw insights from a range of disciplines (e.g., public health, history, political economy, sociology, critical geography, and urban studies); given the constraints of a single course, the material will primarily focus on the U.S. context. The ultimate goal of this course is to have students develop a critical perspective and a set of actionable frameworks to analyze the relationship between urban processes (political, economic, spatial, etc.) and health.*

**Foundations of Public Health**
PBHS 34100
COURSE INSTRUCTOR: Seleeke Flingai
OFFERED:  Autumn, Winter
PQ: MPH Student Only; or Consent of Instructor
*This course provides an overview and introduction to the role, theories, and methods of health promotion and health behavioral science in addressing the public health needs of the 21st Century. The course will cover a wide range of topics including: the history of public health,  the basic institutional and organizational structures created to monitor public health; socio-cultural factors in disease etiology and the role of social conditions and social policy in addressing critical public health problems; individual, group, and community strategies for health behavior change; and current issues (e.g., eHealth) in behavioral science for health promotion. The course provides students with the opportunity to critically analyze current literature and gain an understanding of health promotion, its evolution, underlying theories, applications, and effectiveness in promoting health and preventing illness.*

**Health Behavior Theory & Health Communication**
PBHS 34200
COURSE INSTRUCTOR:  Marcia Tan and David Moskowitz
OFFERED:  Winter
PQ: MPH Student Only; or Consent of Instructor
*This course addresses the psychological, social, and environmental determinants of a wide range of health and health-related behavior. Theoretical models from the behavioral and social sciences will be used to explain health behavior at the individual, interpersonal, and community levels. The course emphasizes the acquisition of theoretical understandings, but also is intended to improve actions or activities undertaken for the purpose of promoting, preserving, or restoring wellness. Towards that end, students in this course will learn how to use peer-reviewed research and key social marketing principles to develop a comprehensive and effective social marketing campaign; learn how to target health communication efforts towards specific audiences and via varied channels of distribution; understand the role of social media and technology in facilitating/influencing behavior changes; study current examples of successful social marketing initiatives; and discuss the ethics surrounding health communication and social marketing efforts.*

**Public Health Programs:  Planning, Implementation & Evaluation**
PBHS 34300
COURSE INSTRUCTOR:  David Moskowitz
OFFERED:  Spring
PQ: MPH Student Only; or Consent of Instructor
*The course is designed to provide students with an overview of how to develop public health programs and interventions. Students will learn the best ways to help solve the critical health issues affecting our communities at local, national, and international levels. Students will learn the start-to-finish processes of public health programming including understanding the problem using existent data, needs assessments/surveillance, using goals/objectives, basic design, message construction, planning, implementation, and creating an evaluation system that links back to goals/objectives. The course will also include an overview of effective evidence-based public health interventions that span multiple health domains and delivery modalities. Students will have the opportunity to create their own health programs through the quarter.*

**Computer Programming for Public Health**
PBHS 34400
COURSE INSTRUCTOR:  Jason Edelstein
OFFERED:  Winter
PQ:

*This course will provide an introductory and intermediate level overview of computer science and programming skills. Students will learn concepts in computer programming and how programming language works, as well as theories behind information system design and management. Specific topics include: Python and R programming language, data structures and management, algorithm design, data visualizations, and basic project management for reproducible research.*

## Machine Learning for Public Health
PBHS 34500
COURSE INSTRUCTOR:  Eric Polley
OFFERED:  Spring
PQ:  PBHS 32400/STAT 22400 or PBHS 32410 or equivalent AND PBHS 34400 or equivalent programming course.
Limited to MPH Students; Consent of Instructor for PBHS Graduate and Doctoral Students
*This course provides an introduction to machine learning in the context of public health and medical applications. Key concepts in the design and evaluation of machine learning algorithms will be presented. A variety of algorithms will be covered (e.g. random forests, splines, boosting, neural networks, and ensembles) and include hands-on experience with programming in R.*

## Mixed Method Research in Community Settings
PBHS 34600
COURSE INSTRUCTOR:  David Moskowitz
OFFERED:  Winter
PQ:
*This course is designed to train students in mixed methods research design and evaluation. Mixed methods are the use of quantitative AND qualitative methods to explore health problems, engage communities, and evaluate solutions. It includes an in-depth discussion of the rationales for specific techniques and the role of theory in guiding and informing a health research project. Students will learn design considerations that are best suited for qualitative over quantitative methods (and vice versa) or both methods. Specifically, the course focuses on training, through lecture, group work and hands-on experiences, across five data collection methods commonly used in mixed methods research: survey design and implementation, observation, interview, focus group, and use of existing quantitative data. Students will undertake a pilot research study as a means of practicing their mixed methods approaches and data collection skills. Multiple data analyses techniques (e.g., content analysis, narrative analysis, multivariable model construction, qual-quant triangulation) will be conceptually explained. Students will leave the course with practical skills to conduct research through public health practice.*

## Community Health Promotion
PBHS 34700
COURSE INSTRUCTOR:  Jasmin Tiro
OFFERED:  Winter
PQ:  PBHS 34100 recommended.
*A person's health depends not only their genes or behavior, but also where they live, learn, work, play, and age. This course examines how social and community structures and policies influence health and can produce health disparities. Structural issues (e.g., economic stability, housing, food security, health care access and quality, broadband access, health and digital literacy, violence, discrimination) are key social determinants of health.  This course will describe and apply: 1) frameworks for understanding health determinants acting at multiple levels, and 2) community and structural intervention approaches to promote health. Students will learn how to prioritize among health determinants and select among intervention approaches to solve public health problems and improve public health practice.*

## Management of Community Health Organizations
PBHS 34800
COURSE INSTRUCTOR:  Brandon Hill
OFFERED:  Spring
PQ:
CROSS-LIST:  HLTH 24800
*This course encompasses an in-depth exploration of the healthcare environment and its associated organizational implications. It provides students with a comprehensive framework for understanding and effectively managing health services and healthcare sector organizations. The curriculum further delves into the application of managerial leadership skills, highlighting their influence on both individuals and institutions within the dynamic healthcare sector. Additionally, it addresses the intricacies of resource management within a framework that considers principles, personnel, processes, and organizational design. Strategic and organizational management, management tools for performance improvement, and the various roles and functions in healthcare management are covered in detail. Furthermore, the course explores*

*organizational behavior perspectives and theories that serve as the foundation for critically examining management in healthcare. It emphasizes the interpersonal skills and knowledge necessary for managers in this ever-evolving field, allowing students to develop a holistic approach to understanding the complexity of health sector organizations. The curriculum underscores the importance of applying current theories to practical situations, covering areas such as management, employee motivation, group dynamics, team development, power dynamics, conflict resolution, and negotiation skills.*

**GIS and Spatial Analysis for Public Health**
PBHS 34900
COURSE INSTRUCTOR: Seleeke Flingai
OFFERED: Autumn
CROSS-LIST:  HLTH 24900
*This course serves as an introduction to the core concepts and tools for applying spatial analytic methods to public health questions. Using a combination of lectures, case studies, and hands-on in-class trainings, students will learn fundamental spatial concepts, as well as how to make sense of and prepare spatial health data for mapping and statistical analyses (including georeferencing, geocoding, merging data sources, and describing and analyzing spatial health patterns and relationships). Throughout the course, we will draw from writings and examples in public health, urban planning, sociology, and critical geography studies to gain an understanding not only of the use of mapping in understanding the spatial nature of health and disease, but also the power dynamics of map-making as a practice. By the end of the course, students will become familiar with a breadth of foundational concepts, technical skills, and critical perspectives to produce and interpret maps and spatial health analyses at an introductory level.*

**Health Services Research Methods**
PBHS 35100
COURSE INSTRUCTOR: Prachi Sanghavi
OFFERED:  Spring
PQ: At least one course in linear regression and basic familiarity with STATA; or consent of instructor.
CROSS-LIST ID: HLTH 29100; PPHA 38010; SSAD 46300;
*The purpose of this course is to better acquaint students with the methodological issues of research design and data analysis widely used in empirical health services research. To deal with these methods, the course will use a combination of readings, lectures, problem sets (using STATA), and discussion of applications. The course assumes that students have had a prior course in statistics, including the use of linear regression methods.*

**Introduction to U.S. Health Policy and Politics**
PBHS 35500
COURSE INSTRUCTOR:  Loren Saulsberry
OFFERED:  Autumn
PQ:
CROSS-LIST ID:  HLTH 25500; PBPL 25500; SSAD 45011; PPHA 37720;
*The purpose of this course is to introduce students to the concepts needed to critically evaluate U.S. health policy issues. The course will 1) provide an overview of the U.S. health system including its institutions, stakeholders, and financing mechanisms, 2) describe the politics of health and illuminate how the structure of our political system shapes health policy outcomes, and 3) offer a framework for assessing the critical features central to health policy debates. Building upon this knowledge, the course will conclude with a discussion of strategies for influencing the health policy process and how they might be employed in future leadership roles within the health sector.*

**Money, Medicine, and Markets: The Financialization of the US Health System**
PBHS 35600
COURSE INSTRUCTOR:  Joseph Bruch
OFFERED:  Autumn
PQ: Health policy course
CROSS-LIST ID:  HLTH 25600; SSAD 45601, PPHA 38340
*This class tracks the complex ways finance influences health and health care delivery in the United States. The course is divided into three parts. In Part 1, we review how macro changes in the financial sector have influenced the organization of the economy and the management of health care corporations. In Part 2, we investigate different financialized health care settings where tensions between profit maximization, health care quality, and health equity exist. These settings include nonprofit hospitals, the pharmaceutical industry, private equity investors, medical debt collectors, management consultants, the physician workforce, and women's health startups. In Part 3, we grapple with the link between capitalism and population health using concepts from political economy and public health. This exploration includes discussions on financial lending, macroeconomic conditions, economic inequality, and the commercial determinants of health.*

*Throughout the course, students will be introduced to cutting-edge scholarship across various fields, including policy analysis, epidemiology, and health economics. The course will be of interest to students pursuing careers or research in health care management, health care finance, health policy and advocacy, health economics, social entrepreneurship, nonprofit management, and public health.*

### Economic Analysis of Health Policies
PBHS 38010
COURSE INSTRUCTOR: Betsy Cliff
OFFERED: Winter
PQ: Microeconomics course; Consent of instructor for undergrads.
CROSS-LIST ID: HLTH 28010; PPHA 38290;
*This course covers the foundations of the economics of health care as applied to current issues of health care policy. Content includes demand for health, medical care, and insurance; supply of medical care and behavior of health care practitioners; and economic perspectives on measurement in health care research. Using a combination of lectures, readings, problem sets, and discussion of newspaper and journal articles, the goal is for students to acquire a basic understanding of economic knowledge and thinking and to be able to apply that knowledge in analyzing policies. The course is open to graduate students and a limited number of undergraduates. A prior course in microeconomics is recommended; for those students without this preparation, the beginning of the course will include a short primer on key concepts in microeconomics.*

### Decision Modeling for Health Economic Evaluation
PBHS 38120
COURSE INSTRUCTOR: David Kim
OFFERED: Autumn
PQ:
CROSS-LIST: CCTS 42006 (PARENT)
*This course introduces decision science and economic evaluation that has been increasingly used to inform public health and health care decisions. With a specific focus on the development and application of decision-analytic models, students will learn the state of the current practice of economic evaluation, new tools, and methodologies to conduct decision modeling, and emerging areas of research, including the value of information analysis. The course will provide hands-on computer-based learning using the R programming language for data analysis and modeling. A prior experience in R is welcomed, but not required. Applying the concepts and techniques learned in the course, students will undertake a course project of their choice to conduct economic evaluation using decision-analytic models. By the end of this course, students will gain knowledge and practical skills in economic evaluation and decision modeling to help make informed decisions.*

### Policy Analysis and Priority Setting in Health and Medicine
PBHS 38310
COURSE INSTRUCTOR: David Kim
OFFERED: Spring
PQ:
*This course introduces evidence-based priority-setting in health and medicine and its key quantitative methods, with particular attention to economic evaluation for health policy assessment. The course assesses the state of current practice in national and global priority settings, describes new tools and methodologies to establish health policy priorities, and tackles important ethical and distributional issues that decision-makers must consider in allocating limited health resources. The course, involving didactic instruction, student-led discussion, policy debate, and a course project, helps students better understand priority-setting processes and research methodology.*

### Master's Readings in Public Health Sciences
PBHS 39000
COURSE INSTRUCTOR: *Varies*
*Arrange course content and meeting times with instructor.*

### Master's Research in Public Health Sciences
PBHS 39100
COURSE INSTRUCTOR: *Varies*
*Arrange course content and meeting times with instructor.*

### Public Health in Practice
PBHS 39200
COURSE INSTRUCTOR: Seleeke Flingai

OFFERED:  Summer/T 6-8pm

**MPH Reading/Research**
PBHS 39210
COURSE INSTRUCTOR
*Arrange course content and meeting times with instructor.*

**MPH Capstone**
PBHS 39300
COURSE INSTRUCTOR:
OFFERED:  Autumn, Winter, Spring

**Advanced Epidemiologic Methods**
PBHS 40500
COURSE INSTRUCTOR:  Dezheng Huo
OFFERED:  Spring
PQ:  PBHS 31001
*This course examines some features of study design, but is primarily focused on analytic issues encountered in epidemiologic research. The objective of this course is to enable students to conduct thoughtful analysis of epidemiologic and other population research data. Concepts and methods that will be covered include: matching, sampling, conditional logistic regression, survival analysis, ordinal and polytomous logistic regressions, multiple imputation, and screening and diagnostic test evaluation. The course follows in sequence the material presented in "Epidemiologic Methods."*

**Applied Bayesian Modeling and Inference**
PBHS 43010
COURSE INSTRUCTOR:  Yuan Ji
OFFERED:  Winter
PQ:  STAT 24400 and STAT 24500 or master level training in statistics.
CROSS-LIST ID:  STAT 35920
*Course begins with basic probability and distribution theory, and covers a wide range of topics related to Bayesian modeling, computation, and inference. Significant amount of effort will be directed to teaching students on how to build and apply hierarchical models and perform posterior inference.  The first half of the course will be focused on basic theory, modeling, and computation using Markov chain Monte Carlo methods, and the second half of the course will be about advanced models and applications.  Computation and application will be emphasized so that students will be able to solve real-world problems with Bayesian techniques.*

**Ph.D. Readings in Public Health Sciences**
PBHS 49000
COURSE INSTRUCTOR: *Varies*
*Arrange course content and meeting times with instructor.*

**Ph.D. Research in Public Health Sciences**
PBHS 49100
COURSE INSTRUCTOR: *Varies*
*Arrange course content and meeting times with instructor.*