

DEPARTMENT OF HEALTH STUDIES
COURSE DESCRIPTIONS
2009-2010

HSTD 30500

Issues in Women's Health

Course Instructor: Lianne Kurina

Offered: 2008-2009; (Alternate) **Spring**; T/Th 9:00-10:20am

PQ:

ID: BIOS 29317; GNDR 30500

The course will focus on important sources of morbidity and mortality in women, such as heart disease, breast cancer, depression, eating disorders, and HIV. In addition to learning about the etiology, biology, and epidemiology of these conditions, we will explore related social, historical, political and cultural issues. The course will be comprised of presentations by the instructor, guest lectures by clinical experts in the condition of interest, and student-led discussions of readings.

HSTD 30700

Clinical Epidemiology

Course Instructors: Lianne Kurina & Jerry Krishnan

Offered: 2009-2010; **Summer - July through August**; T/Th 9:00-11:00am

PQ: Introductory Statistics recommended, may be taken concurrently.

Clinical epidemiology is the "application of epidemiologic principles and methods to problems encountered in clinical medicine." This course introduces the basic principles of epidemiologic study design, analysis and interpretation, with a particular focus on clinical applications. The course includes lectures and discussions based on critical appraisal of significant research articles. The course is primarily intended for, but not restricted to, students with prior clinical training. Health Studies 30700 and 30900 may not both be taken for credit, either will fulfill the basic epidemiology requirement for the MSCP in Health Studies and either will serve as the epidemiology prerequisite for Health Studies 31001.

HSTD 30900

Principles of Epidemiology

Course Instructor: Lianne Kurina

Offered: 2009-2010; **Autumn**; T/Th 9:00-10:20am

PQ: Introductory statistics recommended

ID: STAT 35000, PPHA 36400, ENST 27400; BIOS 29318

Epidemiology is the study of the distribution and determinants of health and disease in human populations. This course introduces the basic principles of epidemiologic study design, analysis, and interpretation, through lectures, assignments, and critical appraisal of both classic and contemporary research articles. The course objectives include: (1) To be able to critically read and understand epidemiologic studies; (2) To be able to calculate and interpret measures of disease occurrence and measures of disease-exposure associations; and (3) To understand the contributions of epidemiology to clinical research, medicine and public health.

HSTD 31001

Epidemiologic Methods

Course Instructor: Lianne Kurina

Offered: 2009-2010; **Winter**; T/Th 9:00-10:20am

PQ: HSTD 30700 or HSTD 30900 and HSTD 32400/applied statistics courses through multivariate regression or consent of instructor

ID: STAT 35700

This course expands on the material presented in "Principles of Epidemiology," further exploring issues in the conduct of epidemiologic studies. The student will learn the application of both stratified and multivariate methods to the analysis of epidemiologic data. The final project will be to write the "specific aims" and "methods" sections of a research proposal on a topic of the student's choice.

HSTD 31400**Social Epidemiology**

Course Instructor: Diane Lauderdale

Offered: 2008-2009; (Alternate) **Spring**; T/Th 1:30-2:50pm

PQ: A course in epidemiology, demography, medical sociology or the equivalent, and familiarity with multivariate statistical methods.

This course will examine research that has sought to understand how social factors influence health. We will survey and evaluate different types of measurements used in social epidemiology (such as measurements of socioeconomic status, race, ethnicity, stress, social support and neighborhood characteristics), types of study designs, and debates and theories in the literature. A prior course in epidemiology or closely related field (such as demography or medical sociology) is highly desirable. Familiarity with the statistical methods used in the literature we will be reading, in particular multivariate regression analysis, is necessary.

HSTD 31510**Critical Readings in Epidemiology**

Course Instructor: Epi Faculty

Offered: 2009-2010; **Spring**; M 2:30-5:00pm

HSTD 31601**Epidemiology of Childhood Diseases**

Course Instructor: Rebecca Lipton

Offered: 2007-2008; (Alternate) **Autumn**; Th 4-6:50pm

This course will familiarize the student with issues unique to research on children as well as the epidemiology of specific childhood diseases. For each topic we will cover general epidemiology and touch on appropriate study designs, confounders and sources of bias, and we will examine a particular syndrome or an important study.

HSTD 31800**Epidemiology of Mental Health**

Course Instructor: Ben Lahey

Offered: 2008-2009; (Alternate) **Winter**; T/Th 3-4:20pm

The course will use a lecture format, but with some seminar elements. Most class time will be devoted to lecture and discussion, but each student will briefly present an overview of one significant article and lead the discussion of that paper. Students will be evaluated using a mid-term and a final written examination. Students may negotiate to replace one examination with a written paper under some circumstances.

HSTD 31820**Behavior Genetics**

Course Instructor: Ben Lahey

Offered: TBD

This course will introduce students to the use of behavior genetic methods in research on population-based samples to draw inferences regarding genetic and environmental causal influences on socially significant aspects of human behavior. Both basic aspects of human behavior, such as intelligence and personality traits, and dysfunctional behavior, including juvenile delinquency and mental health problems, will be addressed. The use of genetically-informative samples to study environmental causes will receive as much coverage as the use of such samples to study genetic causes of variations in behavior. The focus will be on the use of samples of siblings, twins, and adopted children. Basic concepts of genetics will be surveyed and current developments in molecular genetics relevant to human behavior will be discussed. Previous coursework in biology is desirable.

HSTD 31830**Introduction to Genetic Epidemiology**

Course Instructor: Ben Lahey

Offered: 2009-2010; (Alternate) **Spring**; T/Th 10:30-11:50am

HSTD 32100**Introduction to Biostatistics**

Course Instructor: Paul Rathouz & Tyler VanderWeele

Offered: 2009-2010; **Summer July through August;** T/W/Th 3:00-4:20pm

PQ: 2 quarters of precalculus (Required course for MSCP; recommended course for CRTP)

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.

HSTD 32400

Applied Regression Analysis

Course Instructor: Vanja Dukic

Offered: 2009-2010; **Autumn;** T/Th 10:30-11:50am

PQ: HSTD 32100; STAT 22000 or equivalent

ID: STAT 22400

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 biological and social science data.

HSTD 32600

Analysis of Categorical Data

Course Instructor: Mei Wang

Offered: 2009-2010; **Winter;** T/Th 3:00-4:20 p.m.

PQ: HSTD 32100; STAT 22000; or consent of instructor. Knowledge of web usage and ability to use a statistical package.

ID: STAT 22600

The course is intended to provide students who already have some experience with linear regression with tools for analyzing data, which are largely categorical (rather than continuous measurements). Such data often arise in epidemiology, medicine, demography, sociology, and other social sciences. The course emphasizes good data analysis practice and use of appropriate statistical methods, rather than focusing on statistical theory. A strong emphasis is placed on both computational aspects of data analysis and on clear interpretation and presentation of results.*

**Students interested in a more theoretical course should consider STAT 347.*

HSTD 32700

Biostatistical Methods

Course Instructor: Ron Thisted

Offered: 2009-2010; **Winter;** T/Th 10:30-11:50am

PQ: HSTD 32400/STAT 22400; or STAT 24500; or equivalent; or consent of instructor

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.

HSTD 32800

Modern Data Analysis in Biostatistics

Course Instructor: Paul Rathouz

Offered: 2006-2007; **Spring**

PQ: HSTD 32400 and HSTD 32700 or equivalent; or STAT 24400, STAT 24500, STAT 34300, STAT 34700

ID:

This course will introduce a variety of modern tools for data analysis. Leading examples will focus on modeling problems wherein when the data do not conform to the standard toolbox of regression models. Focus will be on data analysis for continuous, binary and censored time-to-event outcomes.

HSTD 32901

Introduction to Clinical Trials

Course Instructor: James Dignam

Offered: 2008-2009; (Alternate) **Autumn**; T 3:00-5:50pm

PQ: HSTD 32100; STAT 22000; introductory statistics; or consent of instructor

ID: STAT 35201

This course will review major components of clinical trial conduct, including the formulation of clinical hypotheses and study endpoints, trial design, development of the research protocol, trial progress monitoring, analysis, and the summary and reporting of results. Other aspects of clinical trials to be discussed include ethical and regulatory issues in human subjects research, data quality control, meta-analytic overviews and consensus in treatment strategy resulting from clinical trials, and the broader impact of clinical trials on public health.

HSTD 33100

Applied Survival Analysis

Course Instructor: James Dignam

Offered: 2009-2010; (Alternate) **Autumn**; T/Th 10:30-11:50am

PQ: HSTD 32100; STAT 22000; or equivalent, and HSTD 32400/STAT 22400 or equivalent; or consent of instructor.

ID: STAT 35600

This course will provide an introduction to the principles and methods for the analysis of time-to-event data. This type of data occurs extensively in both observational and experimental biomedical and public health studies, as well as in industrial applications. While some theoretical statistical detail is given (at the level appropriate for a Master's student in statistics), the primary focus will be on data analysis. Problems will be motivated from an epidemiologic and clinical perspective, concentrating on the analysis of cohort data and time-to-event data from controlled clinical trials.

HSTD 33300

Applied Longitudinal Data Analysis

Course Instructor: Paul Rathouz

Offered: 2009-2010; **Autumn**; T/TH 9:00-10:20am

PQ: HSTD 32400/STAT 22400 or equivalent, and HSTD 32600/STAT 22600 or HSTD 32700/STAT 22700 or equivalent; or consent of instructor.

ID: STAT 36900

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 studies, 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.

HSTD 35100

Health Services Research Methods

Course Instructor: Tamara Konetzka

Offered: 2009-2010; **Spring**; M/W 1:30-2:50pm

PQ: At least one course in linear regression and basic familiarity with STATA; or consent of instructor.

ID: 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.

HSTD 35200

Demography of Aging and the Life Course

Course Instructor: Kate Cagney

Offered: 2008-2009; **Winter**; M/W 1:30-2:50 p.m.

PQ: Introductory statistics

ID: SSA 49200; PPHA 36500; SOCI 30310, CHDV 35202

This is a course in population aging and its social, economic and political ramifications. It will examine basic models of demographic and health transitions, trends in aging and health status, characteristics of medical care and long-term care, and the implications of these for the development of public policy. Emphasis will be placed on life course approaches to the study of aging. Specific topics include health, functional status, and well-being; socioeconomic

status and inequality; family structure and living arrangements; formal and informal long-term care; early life predictors of health and longevity; generational equity; neighborhood social context. We will begin with micro-level considerations such as health and functional status, then shift the unit of analysis to family formation and social networks, then to neighborhood effects. We will use the City of Chicago as case study. We will examine the extent to which age, and aging neighborhoods, shape political and social forces in our community. To extend this theme, we will explore in depth the 1995 Chicago heat wave; we will pay particular attention to the roles that social isolation and neighborhood social context play in the lives of older adults.

HSTD 35301

Aging and Health Policy

Course Instructor: Tamara Konetzka

Offered: 2009-2010; **Spring;**T 3:00-5:50pm

PQ: Graduate standing or consent of instructor.

ID: PPHA 42401; SSAD 49022

This course is a seminar in aging and health policy and the relationships between policy, financing, access to care, and quality of care for the elderly. The focus is on health care systems and policy as opposed to demography and biological aspects of aging. Specific topics include Medicaid and Medicare policy; long-term care insurance and financing; workforce issues; dementia and end-of-life care; the culture change movement; work and retirement as it relates to health policy; and cross-national comparisons of health policy toward the elderly. Students will engage in an ongoing discussion of policy options and learn to evaluate their potential to improve quality and ensure access for the elderly to health care and long-term care.

HSTD 37100

Cost Effectiveness Analysis

Course Instructor: Willard Manning

Offered: 2009-2010; **Autumn;**T/Th 10:30-11:50am

PQ: Some microeconomics previous to this course OR the consent of instructor.

ID: PPHA 38200

Cost Effectiveness Analysis (CEA) and Cost Utility Analysis (CUA) are widely used for the economic evaluation of health and medical treatments. Emphasis will be on understanding the basic foundations of CEA/CUA and the implications for the components in the evaluation. The course will address the measurement of health and medical effectiveness, health care and societal costs, and their integration into a formal assessment of alternative treatments. Applications from the literature will be used. By the end of the course, students are expected to be able to critique methods used in published papers.

HSTD 38000

Health Status Assessment: Measurement and Inference

Course Instructor: Kate Cagney

Offered: 2009-2010; **Spring;** T/Th 10:30-11:50am

PQ: Descriptive and bivariate statistics. Recommended: Multivariate statistics, epidemiology

ID: PPHA 38000

This course will be an introduction to survey design and sampling methodology focused on health outcomes and the quality of medical care. We will address two central questions: 1) How do we measure health outcomes and the quality of medical care?; 2) How do we insure that the study population is representative of the population of interest? Topics will include concepts of quality and health status assessment, scaling and scoring health status and quality of life measures, assessing validity and reliability of these measures, uses and limitations of outcomes data, sample design, sampling methodology, and survey implementation

HSTD 38300

Health Economics and Public Policy

Course Instructor: Willard Manning

Offered: 2008-2009; **Spring**

PQ: Microeconomics at the level of the Econ 200-201series or PPHA 323 & 324 or an equivalent of an intermediate microeconomics course.

ID: PPHA 38300; ECON 27700

This course analyzes the economics of health and medical care in the United States with particular attention to the role of government. The first part of the course examines the demand for health and medical and the structure and the consequences of public and private insurance. The second part of the course examines the supply of medical care,

including professional training, specialization and compensation, hospital competition, and finance and the determinants and consequences of technological change in medicine. The course concludes with an examination of recent proposals and initiatives for health care reform.

<http://harrisschool.uchicago.edu/Programs/courses/syllabi/38300spring08.pdf>

HSTD 39000

Master's Readings in Health Studies

Course Instructor: *Varies*

Arrange course content and meeting times with instructor.

HSTD 39100

Master's Research in Health Studies

Course Instructor: *Varies*

Arrange course content and meeting times with instructor.

HSTD 40500

Advanced Epidemiologic Methods

Course Instructor: Dezheng Huo

Offered: 2009-2010; **Autumn;** T/Th 1:30-2:50pm

PQ: HSTD 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."

HSTD 43000

Bayesian Methods and Computation

Course Instructor: *Vanja Dukic*

Offered: 2008-2009; **Autumn;** T/Th 3:00-4:20pm

PQ: *Stat 301-302; 244-245; 343: 312-313; or consent of instructor*

ID: *Stat 32300*

This course will cover basics of modern statistical computation, with emphasis on Bayesian computational methods. It will begin with the introduction to Bayesian statistics, and cover normal and non-normal approximation to likelihood and posterior distributions, the EM algorithm, data augmentation and Markov Chain Monte Carlo (MCMC) methods. Time permitting, we will conclude with some recent developments in the MCMC area, such as perfect and adaptive sampling methods. Biostatistical and environmental examples will be given throughout the course. There will be weekly homeworks, and students will be expected to complete a project by the end of the course. There will be no final exam, but there will be an in-class final project presentation. Algorithms can be implemented in any language, but familiarity with R and Matlab will be assumed.

HSTD 43001

Advanced Bayesian Methods and Computation

Course Instructor: *Vanja Dukic*

Offered: 2008-2009; **Winter or Spring**

PQ: *HSTD 43000/STAT 32300; or consent of instructor*

ID: *Stat 32301*

This class is a continuation of the Bayesian Topics (Stat 32300/HSTD 43000). We will move beyond the material learned there (the basics of Bayesian statistics and computation (importance sampling, EM, MCEM, data augmentation, Metropolis-Hastings and Gibbs sampling). In particular, we will focus on extensions to MCMC geared for dealing with high-dimensional problems with potential multimodality (simulated tempering, sequential Monte Carlo, Hamiltonian MCMC, Langevin MCMC). We will also discuss issues and algorithms for model comparison (transdimensional MCMC and algorithms for computation of normalizing constants). Algorithms can be implemented in any language, but familiarity with R or Matlab will be assumed. The class will have a seminar format.

HSTD 43501

Theory and Methods for Multivariate & Longitudinal Data

Course Instructor: Paul Rathouz

Offered: 2007-2008; **Winter**

PQ: Statistics 304, 301, 302, 343, 347. Statistics 244, 245,246 with experience or coursework in matrix linear algebra may be substituted for Statistics 304, 301, 302.

ID:

This course presents a theoretical treatment of methods for multivariate and longitudinal data. The course covers both continuous and categorical data. Focus will be primarily on likelihood-based methods and their direct extensions. The first two-thirds of the course will cover mean and covariance models for multivariate normal data. Applications and special cases will include Hotelling's T-test, multivariate linear regression, linear mixed and growth curve models, linear structural equations models and graphical models. The last one-third of the course will focus on categorical outcomes and will include generalized linear mixed models, structural equations models for categorical data and generalized linear marginal models. Readings will be taken from selected texts and original articles in the statistical literature. Students should expect four homework sets focused on theory and programming tasks related to methods developed in the course, as well as a final programming project.

HSTD 49000

Ph.D. Readings in Health Studies

Course Instructor: *Varies*

Arrange course content and meeting times with instructor.

HSTD 49100

Ph.D. Research in Health Studies

Course Instructor: *Varies*

Arrange course content and meeting times with instructor.

HSTD 59000

Medical School Readings in Health Studies

Course Instructor: *Varies*

Arrange course content and meeting times with instructor.

HSTD 59001

American Medicine: An Economic and Policy Overview

Course Instructor: *Michael Koetting*

Offered: 2009-2010; **Autumn** 11/2-11/18; M/W 5:00-7:00pm

PQ: *Consent of instructor*

Short, intensive review of health policy and health finance issues in a seminar format. Reviews how health care is paid for, (or not paid for) how providers react to these stimuli and what trajectories follow from today's choices.

HSTD 59100

Medical School Research in Health Studies

Course Instructor: *Varies*

Arrange course content and meeting times with instructor.