

**COLORADO SCHOOL OF PUBLIC HEALTH- CU ANSCHUTZ MEDICAL CAMPUS
2017-2018 Course Book**

BIOSTATISTICS

[BIOS 6601 Applied Biostatistics I](#)

3.0 cr.

(Summer, Fall)

Applied biostatistical methods including descriptive and statistical inference; odds ratio and relative risk, probability theory, parameter estimation, tests for comparing statistics of two or more groups, correlation and linear regression and overviews of: multiple and logistic regression and survival analysis.

[BIOS 6602 Applied Biostatistics II](#)

3.0 cr.

(Spring) Prereq: BIOS 6601

A continuation of BIOS 6601 extending the basic principles of descriptive and inferential statistics to modeling more complex relationships using linear regression, logistic regression, and Cox regression. The statistical package SAS is used extensively.

[BIOS 6603 Statistical Computing – SAS](#)

1.0 cr.

(Spring, Summer, Fall) Prereq/Coreq: BIOS 6601 or equivalent. Restriction: Credit may be counted toward a CSPH degree for only one of BIOS 6603, 6604 or 6605.

This course will emphasize statistical analysis and data interpretation through use of the SAS statistical computing package. Instruction will be provided through laboratory exercises and interactive demonstrations.

[BIOS 6604 Statistical Computing - SPSS](#)

1.0 cr.

(Spring, Summer, Fall) Prereq/Coreq: BIOS 6601 or equivalent. Restriction: Credit may be counted toward a CSPH degree for only one of BIOS 6603, 6604 or 6605.

This course will emphasize statistical analysis and data interpretation through use of the SPSS statistical computing package. Instruction will be provided through laboratory exercises and interactive demonstrations.

[BIOS 6605 Statistical Computing - R](#)

1.0 cr.

(Spring Summer, Fall) Prereq/Coreq: BIOS 6601 or equivalent. Restriction: Credit may be counted toward a CSPH degree for only one of BIOS 6603, 6604 or 6605.

This course will emphasize statistical analysis and data interpretation through use of the R statistical computing package. Instruction will be provided through laboratory exercises and interactive demonstrations.

[BIOS 6606 Statistics for the Basic Sciences](#)

3.0 cr.

(Fall) Restrictions: Enrollment in UCD-AMC graduate program or permission of the instructor.

This course is designed for those wishing to obtain a basic understanding of statistics and its applications in biological research. Students will develop statistical literacy and an ability to perform basic statistical analyses, basic graphical statistics, data summarizations, and estimation and inference using statistical software.

[BIOS 6611 Biostatistical Methods I](#)

3.0 cr.

(Fall) Prereq: Differential calculus or permission of instructor

This first course in applied statistics covers basic descriptive methods and probability; parametric and nonparametric inference for the one- and two-sample location problem; ANOVA, ANCOVA, and multiple linear regression. Matrix notation, R and SAS are used.

[BIOS 6612 Biostatistical Methods II](#)

3.0 cr.

(Spring) Prereq: BIOS 6611

This is a continuation of BIOS 6611, covering univariate linear modeling and emphasizing multiple regression and analysis of variance. Logistic regression and methods for correlated data are also covered. Matrix algebra and the statistical package SAS will be used.

[BIOS 6621 Statistical Consulting I](#)

1.0 cr.

(Fall) Coreq: BIOS 6611 and consent of instructor/program director.

Students will gain experience with statistical consulting and common statistical problems and techniques encountered in consulting through a combination of real examples and consultations with investigators. Emphasis will be on methods for effective consulting and communication with investigators.

BIOS 6622 Statistical Consulting II**1.0 cr.**

(Spring) Prereq: BIOS 6611; Coreq: BIOS 6612 and consent of instructor/program director.

Students will gain experience with statistical consulting and common statistical problems and techniques encountered in consulting through a combination of real examples and consultations with investigators. Emphasis will be on analytic methods, and on interpretation and presentation of analyses.

BIOS 6623 Advanced Data Analysis**3.0 cr.**

(Fall) Prereq: BIOS 6601 and BIOS 6602 or BIOS 6611 and BIOS 6612 or permission of instructor.

This course teaches the students how to be effective collaborators. Students will learn to modify project hypotheses to be statistical hypotheses. The students will identify and perform the appropriate data analyses and communicate their analyses both verbally and in writing.

BIOS 6628 Latent Variable Methods**3.0 cr.**

(Fall) Prereq: BIOS 6601 and 6602 or equivalent. Cross-listed: CBHS 7010

Covers statistical approaches commonly used in behavioral sciences research, including reliability analysis, exploratory and confirmatory factor analysis, path analysis, structural equation modeling, and advance modeling procedures. Students will analyze data using statistical software, interpret results, and write summaries of findings.

BIOS 6629 Applied Survival and Longitudinal Data Analysis**3.0 cr.**

(Fall) Prereq: BIOS 6601 and 6602 or BIOS 6611 and 6612 and permission of instructor. Restrictions: Offered in even years.

This course will focus on the application of regression modeling to time-to-event and longitudinal data. Descriptive and inferential methods will be developed for each type of data with an emphasis on graphical inspection at all stages of analysis.

BIOS 6631 Statistical Theory I**3.0 cr.**

(Fall) Prereq: Differential and integral calculus

This course presents an introductory coverage of the theory of discrete and continuous random variables and applications to statistical problems. Topics include probability theory, transformations and expectations, common families of distributions, multiple random variables, and properties of a random sample.

BIOS 6632 Statistical Theory II**3.0 cr.**

(Spring) Prereq: BIOS 6631 and differential and integral calculus

This course covers theoretical and applied fundamentals of statistical inference. The course is a continuation of BIOS 6631. The primary topics include point estimation, hypothesis testing, interval estimation and asymptotic methods.

BIOS 6640 Python and R in Data Science**3.0 cr.**

(Spring, Fall) Pre/Coreq: BIOS 6612 or permission of instructor. Restrictions: Offered variable terms and years. Statistical programming in Python and R, including data managing, vectors, matrices, frames, subscripting, loops, functions, input/output, packages, etc. Concepts and methods for reproducible research will be covered as well as computationally intensive statistical methods. These methods are used to analyze data and present results.

BIOS 6641 Causal Analytics in Public Health**3.0 cr.**

(Spring, Fall) Pre/Coreq: BIOS 6611 or BIOS 6602 and permission of instructor; knowledge of R. Restrictions: Offered variable terms and years.

Introduction to causal inference models and machine learning; causal diagrams, propensity scores, matching, covariate balance and special topics.

BIOS 6643 Analysis of Longitudinal Data**3.0 cr.**

(Fall) Prereq: BIOS 6632 and BIOS 6612 or permission of instructor

Theory and application of models appropriate for clustered and longitudinal data are studied. Models for different types of outcome variables (e.g., normal, Poisson, binomial) are covered, with an emphasis on linear mixed models for normal outcomes.

- BIOS 6646 Survival Analysis** **3.0 cr.**
(Spring) Pre/Coreq: BIOS 6612 and BIOS 6632 or instructor permission. Restrictions: Offered in even years. This course covers the analysis of time-to-event data with applications to biology, medicine, and public health. Nonparametric methods for group comparisons and semi-parametric regression models will be emphasized. Parametric methods and distribution theory for survival analysis will also be included.
- BIOS 6648 Design and Conduct of Clinical Research** **3.0 cr.**
(Fall) Prereq: BIOS 6601 or BIOS 6611 or instructor permission. Restrictions: Offered in odd years. Design and conduct of clinical research studies. Intended for non-biostatistics students. Topics include specifying the research question, study endpoints, study populations, study interventions, sample size evaluation, and choice of comparison groups. Common study designs and methods for study conduct are described.
- BIOS 6649 Clinical Trials: Statistical Design and Monitoring** **3.0 cr.**
(Spring) Pre/Coreq: BIOS 6612 or instructor permission. Restrictions: Offered in odd years. Statistical and scientific design of clinical trials. Intended for biostatistics graduate students. Topics include scientific and statistical aspects of the research question, endpoints, treatments, sample size evaluation. A wide range of trial designs including group sequential and adaptive trial designs are covered.
- BIOS 6650 MPH Research Paper** **1.0-2.0 cr.**
(Spring, Summer, Fall) Prereq: Permission of department required
Independent research project resulting in a publishable paper. All projects will involve the analysis of primary or secondary data.
- BIOS 6651 BIOS MS Research Paper** **1.0-6.0 cr.**
(Spring, Summer, Fall) Masters research paper in Biostatistics is completed under this course.
- BIOS 6655 Statistical Methods in Genetic Association Studies** **3.0 cr.**
(Fall) Prereq: BIOS 6612 or permission of instructor. Restrictions: Offered in variable years. This course is designed to give an introduction to statistical methods in genetic association studies. Topics include an introduction to population genetics topics relevant to genetic association studies, design strategies, and analysis methods for case-control and family data.
- BIOS 6660 Analysis of Genomics Data using R and Bioconductor** **3.0 cr.**
(Spring) Prereq/Coreq: BIOS 6602 or BIOS 6612, or consent of instructor. Restrictions: Offered variable terms and years
This course provides students with hands on experience in solving real life biological problems using the statistical software R and Bioconductor. Students will work and communicate with participating researchers and clinicians on their case studies of genomics data.
- BIOS 6670 Special Topics: Biostatistics** **1.0-3.0 cr.**
(Spring, Summer, Fall) Special interest areas of current biostatistics research and practice are presented and analyzed. The course format is lecture and discussion or seminar. Check with CSPH website for offerings and topics for this course each semester.
- BIOS 6680 Data Management Using SAS** **3.0 cr.**
(Fall) Students will learn how to use SAS software for data management to prepare data for analyses. Main topics include importing and exporting data, variable and dataset manipulations. Introductions to producing reports, basic statistics, figures and SAS macros are also covered.
- BIOS 6685 Introduction to Public Health Informatics** **3.0 cr.**
(Spring) Survey course explores public health informatics topics such as current public health informatics initiatives, data sources, public health information systems, standards, health information exchange, system development/procurement, threats to information security and privacy, and decision support in the public health context.
- BIOS 6840 Independent Study for MPH in Biostatistics** **1.0-3.0 cr.**
(Spring, Summer, Fall) Course Restrictions: Open only to MPH students; Department consent required
Faculty directed independent study for MPH students in topics related to biostatistics.

- BIOS 6841 Independent Study for MS in Biostatistics** **1.0-3.0 cr.**
(Spring, Summer, Fall) Course Restrictions: Open only to MS students or permission of instructor.
Resources of the program are available to those MS students who elect to carry out research in chosen topics related to biostatistics. A faculty member will provide guidance throughout the project.
- BIOS 6950 Masters Thesis: Biostatistics** **1.0-6.0 cr.**
(Spring, Summer, Fall) Biostatistics Master thesis work is completed under this course.
- BIOS 6990 MPH Capstone Preparation-BIOS** **1.0 cr.**
(Spring, Summer, Fall)
MPH Capstone Preparation will focus on developing the basis for a strong capstone project, culminating in the finalization of the capstone proposal that meets the expectations of the concentration.
- BIOS 7659 Statistical Methods in Genomics** **3.0 cr.**
(Fall, Spring) Prereq: BIOS 6611/6612 or BIOS 6631/6632 or permission of instructor; Restrictions: Offered in variable terms and variable years.
Analysis of genomic data is an integral component of biomedical research. This course will give an introduction to problems in genomics and review both the pioneering and more recent statistical methods developed for analyzing expression data and molecular sequences.
- BIOS 7670 Advanced Special Topics - Biostatistics** **1.0-3.0 cr.**
(Spring, Summer, Fall) Advanced special interest areas of current biostatistics research and practice are presented. The course format is lecture and discussion or seminar. Check the CSPH Website for offerings and topics for this course each semester.
- BIOS 7712 Statistical Methods for Correlated Data** **1.0 cr.**
(Spring) Prereq: BIOS 6643. Restrictions: offered variable years.
This course will cover statistical models and methods for serially correlated data, including autoregressive models, Markov models, and Markov chain Monte Carlo methods.
- BIOS 7713 Statistical Methods for Missing Data** **1.0-2.0 cr.**
(Spring) Prereq: BIOS 6643. Restrictions: offered variable years in either 1 credit or 2 credits course version.
This course covers methodological research being carried out for longitudinal studies with missing data. Topics may include missing data mechanisms, non-ignorable missing data, multiple imputation, mixture models and sample size determinations. 1 credit or 2 credit course versions offered in variable years.
- BIOS 7714 Advanced Statistical Computing** **3.0 cr.**
(Spring, Fall) Prereq: BIOS 6612 and BIOS 6632, or permission of instructor. This course is intended for students in the Biostatistics PhD program. Restrictions: offered variable terms and years.
This course covers the theory & implementation of estimation algorithms used in statistical analysis. Possible topics: numerical analysis (quadrature), optimization (Newton-Raphson, EM algorithm, stochastic optimization), and simulation (pseudo-random numbers, rejection sampling, Markov chain methods).
- BIOS 7715 Stochastic Modeling** **2.0 cr.**
(Spring) Prereq: BIOS 6643 and BIOS 6632 or permission of instructor. This course is intended for Biostatistics PhD students. Restrictions: offered variable years.
This course covers theory, application and software for stochastic models commonly used in healthsciences, including time to event, recurrent event, multi-type recurrent event, and multi-state models.
- BIOS 7716 Topics in Statistical Genetics** **1.0 cr.**
(Spring) Prereq: BIOS 6632 or permission of instructor. This course is intended for Biostatistics PhD students. Restrictions: offered variable years.
This course covers theory of causal models and inference as applied in Statistical Genetics. Specific methods include counterfactuals, Directed Acyclic Graph (DAG), d-separated, G-computation, marginal structural models.
- BIOS 7717 Bayesian Biostatistical Methods** **3.0 cr.**
(Spring, Fall) Prereq: BIOS 6612 and BIOS 6632 or permission of instructor. Restrictions: Instructor consent required. Offered variable term and year.
This course will introduce students to modern Bayesian statistical modeling and inference. Topics include a comparison of frequentist and Bayesian approaches, Markov Chain Monte Carlo (MCMC) methods for simulating posterior distributions, inference for regression, hierarchical models and mixed models.

BIOS 7731 Advanced Mathematical Statistics I**3.0 cr.**

(Fall) Prereq: BIOS 6632 or equivalent. This course is intended for Biostatistics PhD students. Restrictions: offered in odd years.

This course will provide the framework for understanding the formal concepts, models and assumptions in statistical theory. Topics include random variables, parameter estimation, measures of performance, hypothesis testing and asymptotic approximations.

BIOS 7732 Advanced Mathematical Statistics II**3.0 cr.**

(Spring) Prereq: BIOS 7731 or equivalent. This course is intended for Biostatistics PhD students. Restrictions: offered in even years.

The foundations of the theory of point estimation. A basic introduction to measure-theoretic probability, integration, and convergence. Large sample theory, interval estimation, and efficient likelihood estimation.

BIOS 7899 Independent Study for PhD-Biostatistics**1.0-4.0 cr.**

(Spring, Summer, Fall) Prereq: PhD student or permission of instructor

This course is for the PhD student who wishes to pursue one or more topics in depth. These topics may involved biostatistical material, or biological material necessary to the student's biostatistical work. Supervision by a full-time faculty member is necessary.

BIOS 8990 Doctoral Thesis**1-10 cr.**

(Spring, Summer, Fall) PhD Dissertation work is completed under this course.

COMMUNITY BEHAVIORAL HEALTH SCIENCES**CBHS 6610 Social and Behavioral Factors and Health****3.0 cr.**

(Spring, Summer) Considers social, behavioral, and cultural factors that affect the health of individuals and populations, and contribute to health disparities. Development, implementation and evaluation of programs and policies to promote and sustain health environments and lifestyles are examined. Online in summer.

CBHS 6611 Foundations of Health Behavior**3.0 cr.**

(Spring, Fall) Course will cover basic theories, concepts, models from a range of social/behavioral disciplines used in public health research and practice. Applications of theoretical frameworks in specifying multiple targets and levels of intervention to public health research will be addressed.

CBHS 6612 Methods in Research and Evaluation**3.0 cr.**

(Spring, Fall) Prereq: BIOS 6601. EPID 6630 recommended prior to this course

Course covers social science research methods, including qualitative/quantitative research designs, data collection, and program evaluation (formative, process, outcome), to assess effectiveness of public health programs.

CBHS 6613 Program Planning and Implementation**3.0 cr.**

(Spring, Fall) Prereq: CBHS 6611 and CBHS 6612

Course examines planning and implementation process with specific focus on health promotion programs. Students will learn about: needs assessments; specifying program objectives; using behavior change theory and evidence-based strategies; developing program, evaluation, adoption, implementation & sustainability plans.

CBHS 6614 Childhood Obesity**1.0 cr.**

(Spring) Restrictions: This course cannot be taken for credit toward the Public Health Nutrition program.

This course provides an overview of childhood obesity assessment, prevention and treatment. Key childhood obesity topics and challenges will be covered within the context of public health.

CBHS 6615 Health Literacy & Public Health**2.0 cr.**

(Fall) Restrictions: Offered in even years

This course provides an in-depth examination of health literacy...what it is, what implications it has for health, and how healthcare and public health professionals can ensure that treatment and intervention approaches are appropriate for people across health literacy levels.

CBHS 6616 Intimate Partner Violence: Epidemiology, Theory and Prevention 1.0 cr.

(Spring) This course will provide an overview of intimate partner violence, addressing the epidemiology of the problem; theory of causes and consequences; and evidence-based prevention and treatment strategies. Critiques of past approaches and gaps in research and prevention will be highlighted.

CBHS 6617 Nutrition and Public Health 1.0 cr.

(Spring, Fall) Restrictions: This course cannot be taken for credit toward the Public Health Nutrition program. This survey course begins with an overview of nutrition and its relation to health and disease. The learner will gain experience in reading and evaluating published nutrition research. The second half of the course focuses on public health nutrition topics.

CBHS 6618 Current Research in American Indian and Alaska Native Child Health and Development 1.0 cr.

(Fall) The Native Children's Research Exchange assembles researchers studying child and adolescent development in American Indian and Alaska Native communities. Students will attend this conference and examine lessons learned in presentations and through background readings, facilitated by faculty.

CBHS 6619 Public Health in the Global Community 3.0 cr.

(Spring, Summer) Restrictions: Credit will only be given for one of the following courses: PSCY 5170, ANTP 5710 or CBHS 6619

This course is a study of population health issues around the world. It enables students to (1) assess the current health status of a country and (2) understand and critically appraise the magnitude and likely causes of various health-related conditions.

CBHS 6620 Survey Research 2.0 cr.

(Spring) Course examines survey research methodology, including face-to-face, telephone, mail and Internet surveys, includes: developing and ordering questions; formatting; reliability and validity; sampling; implementation; maximizing response rate; data issues; survey ethics and reporting.

CBHS 6621 Maternal & Child Health 3.0 cr.

(Spring) Examines nature and scope, including legislation and programs, of health issues facing mothers and children in US. Child health care, newborn screening, children with special needs, prenatal and perinatal care, childhood obesity and maternal mental health are discussed.

CBHS 6622 Qualitative Research Methods 3.0 cr.

(Fall) This course is designed to teach graduate students how and when to use a variety of qualitative methods in public health research. Students will gain experience and skills in designing, implementing, analyzing, and writing up the results of qualitative research.

CBHS 6624 Community Health Assessment 3.0 cr.

(Spring, Fall) Prereq: EPID 6630; CBHS 6610 or CBHS 6611

Course teaches how to assess the social, cultural, economic, physical, and environmental components of population health. Students use national/local demographic and health data. Includes working with community clients and off-campus community-based fieldwork.

CBHS 6625 Current Regional Issues in Maternal & Child Health 1.0 cr.

(Fall) Current regional issues, best practices and emerging practices in maternal and child health are explored at a large regional public health conference, and debriefed daily with an instructor. Pre-conference study and post-conference synthesis are required.

CBHS 6626 Public Health and Aging 2.0 cr.

(Spring) Restrictions: Offered even years. Credit will not be given for both CBHS 6626 and GERO 6400. CBHS 6626 cannot substitute for GERO 6400.

Introduces students to 1) factors across the social-ecological spectrum that will affect population patterns of health, disease, and risk factors to older adults; and 2) appropriate responses by public health, aging services and the research community.

CBHS 6627 Maternal Nutrition 1.0 cr.

(Fall) Restrictions: This course cannot be taken for credit toward the Public Health Nutrition program. This course provides an overview of nutrition issues affecting pregnant and breastfeeding women. Using a life

cycle perspective, the course integrates clinical information with public health practice.

CBHS 6628 Tech-Based Health Promotion **3.0 cr.**

(Fall) This course will introduce students to health promotion programs delivered using computers, the internet and mobile phones. Students will learn strategies for designing, implementing and evaluating technology-based programs and will develop a technology-based health promotion program as a class project.

CBHS 6629 Health and Human Rights **3.0 cr.**

(Spring) Restrictions: Offered in odd years

Examines the relationship between health and human rights with an emphasis on the principles of confidentiality, autonomy, justice, and beneficence. Using case studies, students will discuss practical, concrete strategies for improving health and well-being while protecting rights.

CBHS 6630 Mental Health **3.0 cr.**

(Spring) Restrictions: Offered in even years

This course examines mental health from the public health perspective. Students will learn the epidemiology of and interventions developed to treat major mental disorders and develop critical awareness of how (1) the prison system and (2) disaster affect mental health.

CBHS 6631 Introduction to Sexual and Reproductive Health **1.0 cr.**

(Spring) Restrictions: Credit toward a CSPH certificate or degree will only be given for either this course or CHBH 5750

Introduction to the biology of human sexuality and reproduction, components of healthy sexual relationships, prevention of sexually transmitted infections and fertility control and issues related to sexual orientation.

CBHS 6632 Public Health in the Caribbean and Latin America **3.0 cr.**

(Fall) Restrictions: Offered in even years

Course provides overview of global health issues related to community health assessment, program planning and implementation, and program evaluation by providing an intensive study of public health in the Caribbean and Latin America.

CBHS 6633 Intensive Study of Public Health Services in Cuba **3.0 cr.**

(Spring) Restriction: Permission of instructor required.

Intensive study of public health system in Cuba, with 2-week trip. Examines health status; public health infrastructure; primary care and prevention services; environmental health; program effectiveness; resource allocation; and social, political, and economic factors influencing health/health services delivery.

CBHS 6634 Adolescent Health **1.0 cr.**

(Fall) This course will provide an overview of the major adolescent health issues, with a strong focus on the United States. The course will take a public health perspective and integrate a review of evidence-based prevention strategies into each health topic covered.

CBHS 6635 Child Nutrition **1.0 cr.**

(Fall) Prerequisite: CBHS 6617 or a basic nutrition course at the undergraduate or graduate level or permission of the instructor.

This course provides an overview of child nutrition from infancy to adolescence. Key child nutrition topics and challenges will be covered within the context of public health.

CBHS 6636 Early Childhood Health in America **1.0 cr.**

(Fall) This course will provide an overview of early childhood health issues in the United States. By advancing a compelling new documentary series 'The Raising of America' the course will use a child equity and public health lens to address how brain development and early life conditions affect long term health outcomes.

CBHS 6637 Applied Quantitative Analysis for Community Health Science **3.0 cr.**

(Summer) Prerequisite: BIOS 6601

This course is designed to provide students with an introduction to database management and common statistical analyses used in community health science. Emphasis will be placed on understanding how to prepare data to be analyzed and on being able to run and evaluate common statistical techniques using SPSS.

CBHS 6638 Advanced Qualitative Research Methods **3.0 cr.**

(Fall)

This course provides advanced graduate students in public health instruction in advanced qualitative paradigms and methods and training in analyzing, interpreting and writing qualitative research.

- CBHS 6640 Leadership for Public Health Practice** **2.0 cr.**
 (Fall) Restrictions: Enrollment in Leadership and Public Health Practice MPH concentration required.
 Permission of instructor required.
 Part of a 2-year sequence. Focus of year 1: 1) assessing, using and developing personal strengths for leadership, 2) acquiring basic skills for developing and supporting the work of others in the workplace, 3) building teams for successful work in public health and 4) constructing a personal model for leadership in public health.
- CBHS 6642 Applied Program Evaluation – Field School** **1.0-3.0 cr.**
 (Spring, Fall) Prereq: CBHS 6612 Restriction: Permission of instructor required
 This course is designed to provide an applied learning experience that engages MPH students in all aspects of a program evaluation process over 2 semesters. Students will work with an actual client and design and carry out a program evaluation.
- CBHS 6650 MPH Research Paper** **1.0-2.0 cr.**
 (Spring, Summer, Fall) Restriction: Permission of department required
 Independent research project resulting in a publishable paper. All projects will involve the analysis of primary or secondary data.
- CBHS 6670 Special Topics: Community & Behavioral Health** **1.0-3.0 cr.**
 (Spring, Summer, Fall) Special interest areas of community and behavioral health are analyzed in depth. The course format is lecture and discussion or seminar. Check the CSPH website for offerings and topics for this course each semester.
- CBHS 6840 Independent Study- Community & Behavioral Health** **1.0-3.0 cr.**
 (Spring, Summer, Fall) Restriction: Permission of department required.
 Faculty directed independent study in topics related to community and behavioral health.
- CBHS 6990 MPH Capstone Preparation-CBHS** **1.0 cr.**
 (Spring, Summer, Fall)
 MPH Capstone Preparation will focus on developing the basis for a strong capstone project, culminating in the finalization of the capstone proposal that meets the expectations of the concentration.
- CBHS 7010 Latent Variable Methods** **3.0 cr.**
 (Fall) Prereq: BIOS 6601 and 6602 or equivalent. Cross-listed: BIOS 6628
 Covers statistical approaches commonly used in behavioral sciences research, including reliability analysis, exploratory and confirmatory factor analysis, path analysis, structural equation modeling, and advance modeling procedures. Students will analyze data using statistical software, interpret results, and write summaries of findings.
- CBHS 7020 DrPH Seminar in Leadership** **3.0 cr.**
 (Summer) Prereq: DrPH Seminar; Restriction: Restricted to CSPH DrPH students; Cross-list: EHOH 7020 and EPID 7020
 Leadership topics: vision, values, collaborative action, teamwork, and practices with skills and application at personal, interpersonal and organizational levels necessary for effective leadership.
- CBHS 7030 DrPH Directed Reading** **1.0-2.0 cr.**
 (Spring, Summer, Fall) Restrictions: Permission of course director and instructor required; Cross-listed: EPID 7030
 This course will prepare DrPH students for comprehensive exams & dissertation research by becoming an expert in their specific areas of research, including understanding of historical development of specific areas, current research findings in the specific areas, & current practice.
- CBHS 7670 CBH Advanced Seminar** **3.0 cr.**
 (Fall) Prereq: CBHS 6611, 6612, 6613, 6624 or equivalent or permission of instructor; Restrictions: Offered in even years. Enrollment in DrPH or permission of instructor.
 This doctoral level course will address theory and practice at a level beyond that covered in CBH Master's level courses. Students will acquire advanced skills in developing, testing, and applying health behavior theory and methods to public health problems.
- CBHS 8991 DrPH Dissertation-Community and Behavioral Health** **1.0-10.0 cr.**
 (Spring, Summer, Fall) Doctoral thesis work in Community and Behavioral Health.

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

EHOH 6540 Principles of Ergonomics

3.0 cr.

(Fall) Cross-listed Course: ERHS 5400 (CSU)

This course will cover principles of occupational ergonomics with a focus on physiological and anatomical capabilities of the worker and interaction with work environment. Review of anthropometry, physiological basis of work, patterns of work, job analysis, workplace and job design.

EHOH 6614 Occupational and Environmental Health

3.0 cr.

(Spring, Fall)

Students will learn about the relationship between the environment, workplace and health. Topics include facets of industrial hygiene, air and water pollution, radiation monitoring, toxicology, occupational medicine, policy, environmental justice and sustainability. Methods include risk assessment, GIS and epidemiology.

EHOH 6616 Environmental & Occupational Toxicology

3.0 cr.

(Spring)

Presents an overview of information needed to assess the relationship between the environment, workplace and health. Topics include facets of industrial hygiene, air and water pollution, radiation monitoring, toxicology studies, clinical occupational medicine and biologic monitoring.

EHOH 6617 Environmental & Occupational Epidemiology

3.0 cr.

(Spring) Prereq: EHOH 6614 Restriction: Offered in even years.

Overall goal of course is to provide a background in epidemiology of diseases related to environmental and/or occupational exposures. Application of epidemiologic research methods to determine and prevent such diseases will be discussed.

EHOH 6618 Environmental Health Policy and Practice

3.0 cr.

(Spring) Prereq: EHOH 6614

Examine the environmental policy-making and planning and regulatory and non-regulatory approaches to controlling environmental hazards. A wide variety of topics will be introduced with cross-disciplinary perspectives ranging from water and air to the built environment and climate change.

EHOH 6619 Environmental Exposures and Health Effects

3.0 cr.

(Fall) Prereq: EHOH 6614 Coreq: EPID 6630

This course integrates earth sciences, exposure sciences and biological sciences to understand conditions and circumstances of recent env/occ exposure events, the methods to assess exposures; and related health impacts. Case studies and laboratory exercises are used to guide instruction.

EHOH 6620 Risk Analysis & Decision Making

3.0 cr.

(Fall) Prereq: EHOH 6614

A general survey of risk analysis and risk-based decision making covering the basic components of risk assessment, communication, and management and how they are applied in various fields.

EHOH 6621 GIS for Public Health Research/Practice

3.0 cr.

(Spring, Fall)

This course will expose students to the fundamentals of Health Geographic Information Systems (GIS), including hands-on software experience, across a variety of application areas in the health sciences, particularly focusing on integrating GIS technologies appropriately into research design and practice.

EHOH 6622 Intro to Public Health Emergency Preparedness

3.0 cr.

(Spring, Summer) This introductory course focuses on the public health role in community disaster preparedness. It explores the relationship between 10 essential public health services and how these services support the ability to prevent, respond, and rapidly recover from public health emergencies.

EHOH 6623 Geographic Perspective on Global Health

1.0 cr.

(Spring, Summer) This course will review geographic concepts and tools taking a regional, holistic approach to understanding the world's peoples, places, and processes in order to lay a foundation for an improved knowledge of global health.

EHOH 6624 Infectious Diseases, Environmental Contexts **3.0 cr.**

(Spring) Prereq: EHOH 6614, EPID 6630 Restriction: Offered in odd years.
Students will study the impact of environmental factors, from sanitation to climate, on infectious diseases. Topics include infectious disease emergence, water- and vector-borne diseases, zoonoses and analytic approaches for evaluating environmental determinants of infectious disease.

EHOH 6625 International Disasters and Global Humanitarianism **3.0 cr.**

(Fall) This course will unveil the unique context of disasters at the international level. It will examine competing perspectives on both the human and natural causes of disaster that trigger disaster response and humanitarian action, discuss the actors in the international disaster network, and challenges in response to global emergencies.

EHOH 6626 Public Health Emergency and Disaster Responder **3.0 cr.**

(Spring, Summer) Prereq: EHOH 6622 or FEMA ICS 100, 200, 700 exams
This course will advance the skill set for emergency public health professionals by examining and applying the challenges of collaborating, coordinating and inter facing with internal and external emergency management response partners through case studies and an emphasis on practical applications of public health emergency response skill sets.

EHOH 6627 Water Quality and Public Health **3.0 cr.**

(Fall) This course covers public health concerns involving water quality issues ranging from contamination of drinking water to socio-political issues that impact accessibility to clean water. The fundamental concept is that access to clean water is a basic human right.

EHOH 6628 Health Protection/Promotion in the Workplace **3.0 cr.**

(Fall) Course emphasizes wellness in the workplace to promote health and improve health behaviors among workers. Worksite wellness is an interdisciplinary field in public health practice, including topics such as nutrition, physical activity, safety, leadership, assessment, program development and communication.

EHOH 6629 Introduction to Occupational Safety and Ergonomics **2.0 cr.**

(Spring) Restriction: Offered in even years.
This course will form a foundation for understanding of workplace factors important in the prevention of injuries. Students will recognize safety and ergonomic hazards that may lead to injury as well as learn strategies to abate these hazards.

EHOH 6630 EOH Interdisciplinary Symposium **2.0 cr.**

(Spring) This course is a multidisciplinary field and consultation experience for students interested in understanding workplace health protection and promotion. Students apply principles and knowledge to effectively protect and promote occupational health and safety by providing consultative services in complex occupational settings.

EHOH 6631 Public Health and Occupational Medicine Seminar for Residents **1.0 cr.**

(Spring, Summer, Fall) This course is designed to capture the activities of Occupational and Environmental Medicine residents as advanced, integrated practice of medical and public health in a structured manner, providing a mechanism for resident and programmatic evaluation and academic credit toward the resident MPH degree.

EHOH 6632 Occupational Health Policy and Practice for Occupational Medicine Residents **3.0 cr.**

(Spring, Fall) OEM residents need to develop knowledge and skills in policy development and implementation in the field of Occupational Health. This course will develop deep comprehension of the Colorado Workers' Compensation system and the Division's efforts to comply with the legislative charge to assure appropriate medical care at a reasonable cost.

EHOH 6633 International Travel and Health **1.0 cr.**

(Spring) Restriction: This course is required for all CSPH students planning international travel for any independent coursework, Practicum and/or Capstone.
This course is designed to help students understand and respond to health and safety risks that accompany international travel. It emphasizes using available resources to create recommendations based on both travel itinerary and specific activities. Some medical subjects are included but medical jargon will be avoided.

- EHOH 6634 Spectrum of Professions Protecting/Promoting Worker Health** **1.0 cr.**
(Fall) Introduction to multiple occupational health professions including industrial hygiene, ergonomics, occupational health psychology, occupational safety, health physics, occupational medicine, epidemiology, health promotion and wellness, program evaluation and risk management. Practice issues, current research and methods are covered.
- EHOH 6635 Climate Change and Health** **3.0 cr.**
(Fall) Prerequisite: EHOH 6614
This course will study the potential health impacts of climate change with an emphasis on understanding the state of the science, and developing skills to identify vulnerable populations, evaluate climate adaptation and mitigation measures and communicate with stakeholders.
- EHOH 6650 MPH Research Paper** **1.0-2.0 cr.**
(Spring, Summer, Fall) Restriction: Permission of department required
Independent research project resulting in a publishable paper. All projects will involve the analysis of primary or secondary data.
- EHOH 6670 Special Topics: Environmental & Occupational Health** **1.0-3.0 cr.**
(Spring, Summer, Fall)
Special interest areas of current environmental and occupational research and practice are presented and analyzed. The course format is lecture and discussion or seminar. Check the CSPH website for offerings and topics for this course each semester.
- EHOH 6710 Disasters, Climate Change and Health** **3.0 cr.**
(Spring) Cross-listed: GEOG 5710
This course provides a review of the impacts of all types of disasters and climate change on human health, using a broad framework of preparedness, mitigation, response, recovery, with an emphasis on vulnerability and adaptation.
- EHOH 6840 Independent Study: Environmental & Occupational Health** **1.0-3.0 cr.**
(Spring, Summer, Fall) Restriction: Permission of department required
Faculty directed independent study in topics related to environmental and occupational health.
- EHOH 6990 MPH Capstone Preparation-CBHS** **1.0 cr.**
(Spring, Summer)
MPH Capstone Preparation will focus on developing the basis for a strong capstone project, culminating in the finalization of the capstone proposal that meets the expectations of the concentration.
- EHOH 7020 DrPH Seminar in Leadership** **3.0 cr.**
(Summer) Prereq: DrPH Seminar; Restriction: Restricted to CSPH DrPH students; Cross-list: CBHS 7020 and EPID 7020
Leadership topics: vision, values, collaborative action, teamwork, and practices with skills and application at personal, interpersonal and organizational levels necessary for effective leadership.
- EHOH 7030 DrPH Directed Reading** **1.0-2.0 cr.**
(Spring, Summer, Fall) Restrictions: Permission of Program Director and instructor required
This course will prepare DrPH students for comprehensive exams & dissertation research by becoming an expert in their specific areas of research, including understanding of historical development of specific areas, current research findings in the specific areas and current practice.
- EHOH 7631 Advanced Methods in EOH** **2.0 cr.**
(Fall) Prereq or Coreq: EHOH 6614 Restriction: Permission of instructor required
This course will focus on five areas of advanced methodology for EOH: exposure assessment, toxicology, epidemiology, epidemiology, built environment, and worker health. Methods covered include survey design, environmental sampling, risk assessment, biomarkers, and on issues associated with analysis of secondary datasets. This course is the first of a two course series.
- EHOH 7632 Advanced Field Methods in EOH** **1.0 cr.**
(Spring) Prereq: EHOH 7631 Restriction: Permission of instructor required
This course follows and will build on the Advanced Methods in EOH course (EHOH 7631) where the EOH DrPH students prepare an NIH R21-style grant proposal. This course will then provide practical field and laboratory applications on the project from the Fall course that is based on the students' interests.

EHOH 8991 DrPH Dissertation – Environmental and Occupational Health

1.0-10.0 cr.

DrPH Dissertation work in Environmental and Occupational Health

EPIDEMIOLOGY

EPID 6601 A History of Public Health

1.0 cr.

(Spring) This course provides a broad overview of public health history and the political, economic, medical, legal and ethical factors that have shaped the environment in which the public health care professional of today must function.

EPID 6622 Cancer Prevention and Control

2.0 cr.

(Spring) Prereq: EHOH 6614, EPID 6630. Restriction: Offered in alternate years
Course provides overview of preventable cancers, epidemiology and contributing factors. Phases of cancer control research and appropriate methodologies are discussed. Basic principles of intervention development are reviewed. Psychosocial issues related to cancer are discussed. Students research topic related to course.

EPID 6624 Public Health Surveillance

2.0 cr.

(Fall) Prereq: EPID 6630. Restriction: Offered alternate years. Please check current course offerings online. This course focuses on characteristics, development, uses, and evaluation of major public health surveillance systems. History, goals, public health authority, analysis, interpretation, dissemination and privacy issues are covered. Key surveillance systems (incl. communicable diseases, STI/HIV, vital statistics, cancer, risk factor and health behaviors) are explored.

EPID 6626 Research Methods in Epidemiology

3.0 cr.

(Spring, Fall) Prereq: BIOS 6601, BIOS 6680, EPID 6630
Principles, concepts and methods for conducting ethical, valid and scientifically correct observational studies in epidemiological research are the focus of this class. Lectures and practical experience reinforce hypothesis formulation, study design, data collection and management, analysis and publication strategies.

EPID 6629 Clinical Epidemiology

2.0 cr.

(Summer) Prereq: EPID 6630; Restriction: Offered in variable years.
This course provides an overview of the design, conduct and appraisal of clinical research. Topics include study design, issues in randomized trials, measurement error, assessment of diagnostic and screening tests, measurement of health-outcomes, meta-analysis and use of questionnaires.

EPID 6630 Epidemiology

3.0 cr.

(Spring, Fall) This course provides an introduction to descriptive and analytic methods in epidemiology and their application to research, preventive medicine and public health practice.

EPID 6631 Analytical Epidemiology

3.0 cr.

(Spring, Fall) Prereq: EPID 6630, BIOS 6601, BIOS 6602
Course emphasizes analytical foundations of epidemiology and its application to etiologic studies and public health practice. Topics include determining rates of disease occurrence, assessing exposure disease relationships, stratified analysis, measurement error and sampling. Final project requires analysis/interpretation of epidemiologic data.

EPID 6632 CU Advanced Epidemiology

3.0 cr.

(Spring) Prereq: EPID 6630, EPID 6631, BIOS 6601
This is an advanced course on epidemiologic methods designed to improve the student's ability to conduct and interpret observational epidemiologic studies.

EPID 6633 Clinical Preventive Services: Evidence-Based Practice

2.0 cr.

(Spring) Prereq: EPID 6630 or equivalent or permission of instructor. Restriction: Prior or in-progress clinical degree or training (e.g., MD, RN, PA, LPN, EMT). Offered in odd years.
This course introduces students to evidence-based recommendations for (and against) key clinical preventive services; methods for developing evidence-based practice guidelines and implementation of clinical preventive services in diverse practice settings; and effective implementation at the individual, provider, and system levels.

EPID 6634 Applied Global Health Epidemiology

2.0 cr.

(Spring) Restriction: Offered in even years

This course provides the opportunity to apply previously gained analytic skills to “real world” examples of global public health investigations as well as US public health investigations covering topics/skill sets with global importance. It also provides opportunities to explore in depth the practical applications of skills.

EPID 6635 Communicable Disease Epidemiology

2.0 cr.

(Spring) Prereq: EPID 6630

This overview course covers a broad range of topics including basic epidemiologic concepts, vaccines, emerging pathogens, hospital infection control, foodborne illness and outbreaks. Specific pathogens are also reviewed due to their public health importance or their ability to demonstrate important epidemiologic principles.

EPID 6636 Chronic Disease Epidemiology

3.0 cr.

(Fall) Prereq: EPID 6630

The epidemiology of major chronic diseases of Western countries will be reviewed including heart disease, cancer, stroke, diabetes, neurological diseases, and selected other conditions. Methodologic issues related to the study of these diseases, disease surveillance and strategies for prevention will also be covered.

EPID 6637 Injury & Violence Epidemiology and Prevention

2.0 cr.

(Spring) Prereq: EPID 6630 or permission of instructor; Restrictions: Offered in even years.

Students will learn the major causes of and risk factors for injuries and violence, identify and use key data sources to characterize injury problems, develop and evaluate injury control and prevention strategies, critically analyze literature and explore injury related research questions.

EPID 6638 Global Cardiovascular Epidemiology

2.0 cr.

(Spring) Prereq: EPID 6630.; Restriction: Offered alternate years.

A review of the major issues in global cardiovascular disease epidemiology, including trends, the extent of the disease nationally and internationally, implications of major epidemiologic studies, and strategies for prevention. Emphasis of the course will be on review and interpretation of the cardiovascular epidemiology literature.

EPID 6640 Investigation of Disease Outbreaks

2.0 cr.

(Summer) Prereq: EPID 6630

This course will cover the epidemiologic steps in a disease outbreak investigation and the methods used in detection, investigation and control of disease outbreaks. Outbreak case studies will be used to illustrate concepts and approaches. Students will describe, analyze and interpret outbreak data.

EPID 6641 Epidemiology of Foodborne and Diarrheal Diseases

2.0 cr.

(Fall) Prereq: EPID 6630; Restriction: Offered alternate years

Agents causing foodborne and diarrheal diseases have different clinical presentations, environmental niches, and modes of transmission. Students will learn about important foodborne agents, surveillance and epidemiological methods used to investigate risk factors for disease, and prevention and control strategies.

EPID 6642 Genetics in Public Health

2.0 cr.

(Spring) Prereq: EPID 6630; Restriction: Offered alternate years.

Course introduces public health and research applications in genetics. Topics will include population genetics, genetic epidemiologic principles, screening, ethics, and the effect of genetics on population health. Interactive discussions and lectures will be based on current topics from literature.

EPID 6643 Epidemiology and Prevention of TB/HIV/STDs

2.0 cr.

(Fall) Prereq: EPID 6630; Restriction: Offered alternate years

Surveillance and control of tuberculosis, HIV/AIDS, and sexually transmitted diseases require a range of public health and epidemiologic approaches. Students will apply descriptive and analytical epidemiologic methods to the study of these infectious diseases.

- EPID 6644 Maternal Child Health Epidemiology** **3.0 cr.**
 (Fall) The purpose of this course is to train public health students to use epidemiologic tools for the appropriate interpretation of data and information to drive MCH program assessment, planning, evaluation and policy development.
- EPID 6646 Introduction to Systematic Reviews** **1.0 cr.**
 (Summer) Prereq: EPID 6630 or permission of instructor; Restriction: Offered in variable years.
 Introduces methods of conducting systematic reviews to identify the best available evidence about health and public health interventions. Topics will include the design and implementation of reviews, publication bias, search strategies, meta-analysis, and reporting results through the Cochrane Library.
- EPID 6650 MPH Research Paper** **1.0-2.0 cr.**
 (Spring, Summer, Fall) Restriction: Permission of department required
 Independent research project resulting in a publishable paper. All projects will involve the analysis of primary or secondary data.
- EPID 6651 EPID MS Research Paper** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Masters research paper in epidemiology is completed under this course.
- EPID 6670 Special Topics: Epidemiology** **1.0-3.0 cr.**
 (Spring, Summer, Fall) Restrictions: Permission of instructor.
 Special interest areas of current epidemiology research and practice are presented and analyzed. The course format is lecture and discussion or seminar. Check the CSPH website for offerings and topics for this course each semester.
- EPID 6840 Independent Study: Epidemiology** **1.0-3.0 cr.**
 (Spring, Summer, Fall) Restrictions: Permission of department required
 Faculty directed independent study in topics related to epidemiology.
- EPID 6950 Masters Thesis** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Epidemiology thesis work is completed under this course.
- EPID 6990 MPH Capstone Preparation-EPID** **1.0 cr.**
 (Spring, Summer, Fall)
 MPH Capstone Preparation will focus on developing the basis for a strong capstone project, culminating in the finalization of the capstone proposal that meets the expectations of the concentration.
- EPID 7020 DrPH Seminar in Leadership** **3.0 cr.**
 (Summer) Prereq: DrPH Seminar; Restrictions: Restricted to CSPH DrPH students; Cross-listed: CBHS 7020 and EHOH 7020
 Leadership topics: vision, values, collaborative action, teamwork, and practices with skills and application at personal, interpersonal and organizational levels necessary for effective leadership.
- EPID 7030 DrPH Directed Reading** **1.0-2.0 cr.**
 (Spring, Summer, Fall) Restriction: Permission of course director and instructor required
 This course will prepare DrPH students for comprehensive exams and dissertation research by becoming an expert in specific areas of research, including understanding of the historical development of specific areas, current research findings in specific areas, and current practice.
- EPID 7605 Research Methods with Secondary Data Sources** **3.0 cr.**
 (Spring) Restriction: Offered in alternate years
 Covers the principle methods of research design and analysis specific to secondary data use including surveillance, population and community-based data, national surveys, and medical record data. Methods explored include: identifying and working with secondary data, complex sampling design and weighting, triangulation, handling missing data, non-random allocation/propensity score, and power/sample size.
- EPID 7615 Pharmacoepidemiology** **2.0-4.0 cr.**
 (Spring) Prereq: EPID 6630, 2 course biostatistics series (BIOS 6601-6602 or BIOS 6611-6612);
 Restrictions: Offered in odd years, NA for 2 credit section. This course builds upon fundamental concepts and methods of epidemiology, applied to the study of pharmaceuticals. Topics include: The FDA approval process, mechanisms of adverse drug effects, methods and data systems for studying drug-effect relationships, and evaluating published pharmacoepidemiology studies.

EPID 7640 Genetic Epidemiology

2.0 cr.

(Spring) Prereq: EPID 6630, BIOS 6601; Restriction: Offered alternate years.

This course will be a problem-based class, covering basic genetic principles and teaching epidemiologic methods employed in the investigation of the genetic susceptibility to chronic disease.

EPID 7911 Epidemiologic Field Methods

1.0-4.0 cr.

(Spring, Summer, Fall). Prereq. EPID 6626, EPID 6630, EPID 6631, EPID 6632, BIOS 6611, BIOS 6612.

Restriction: Enrollment in Epidemiology PhD program or permission of instructor.

PhD students have the opportunity to work with faculty on current epidemiologic projects to develop skills in field research, proposal writing, budget development, staff hiring and training, protocol and instrument development and implementation, and specific methods topics.

EPID 7912 Developing a Research Grant

3.0 cr.

(Fall) Prereq: Enrollment in a doctoral program and permission of Instructor.

PhD/DrPH students prepare high quality, successful, research grant applications through development of cogent research questions & appropriate study designs. Students familiarize themselves with grant writing and review process and improve critical thinking skills and quality of scientific writing.

EPID 7915 Analytic Methods in Epidemiology

1.0-4.0 cr.

(Spring, Summer, Fall) Prereq: EPID 6626, EPID 6630, EPID 6631, EPID 6632, BIOS 6601/ 6602 or BIOS 6611/ 6612.

Advanced treatment of techniques in the analysis of epidemiological studies, including longitudinal, time-dependent, survival data, casualty, missing data, etc. Students will analyze data sets currently on file using contemporary epidemiological methods.

EPID 8990 Doctoral Thesis

1.0-10.0 cr.

(Spring, Summer, Fall) Restriction: Permission of Instructor.

PhD Doctoral thesis work Epidemiology.

EPID 8991 DrPH Dissertation – Epidemiology

1.0-10.0 cr.

(Spring, Summer, Fall)

DrPH Dissertation work in Epidemiology

HEALTH SYSTEMS, MANAGEMENT AND POLICY

HSMP 6601 Introduction to HSMP

3.0 cr.

(Spring, Fall) Provides an introduction to health systems, management and policy. Topics include the financing and organization of the U.S. healthcare system; introduction to health policy, including stakeholder analysis; and basic managerial skills, including human resources and budgeting.

HSMP 6602 Health Equity

3.0 cr.

(Fall) Addresses health inequities affecting the poor, racial and ethnic minorities, prisoners, rural residents, disabled, GLBTI and other populations. The course studies: 1) measurement/data issues in health inequity research; 2) institutionalized, personally mediated and internalized causes; and 3) solutions/challenges.

HSMP 6604 Health Care Economics

3.0 cr.

(Fall) Uses economic theory to analyze and understand the US health care system. Topics include: Demand and supply of health and health care, health insurance, hospital, pharmaceuticals, and physicians. Analyzes institutional and legal incentives that affect physician, patient, and insurer decision-making.

HSMP 6605 Health Policy

3.0 cr.

(Spring) Course focuses on important U.S. health policy issues and analysis, implementation, and communication skills for the practice of health policy. Evaluation is based on in-class labs, group projects, and analysis paper of a health policy case example.

- HSMP 6606 Public Health Administration** **2.0 cr.**
(Fall) Course provides an introduction to public health management and administration. Components aim to stimulate interactions around important problems and issues including managerial decision-making and increasing practical knowledge, tools, and strategies required by organizational decision-makers. Business plans are produced.
- HSMP 6607 Current Legal Issues in Health Care** **2.0 cr.**
(Spring) Course trains students in foundational Constitutional principles that guide public health law at the state and federal levels. It also explores cornerstone public health law problems and encourages analysis of contemporary legal questions in public health and health care administration.
- HSMP 6608 Ethical and Legal Issues in Public Health** **2.0 cr.**
(Fall) Course explores the legal and ethical dimension of public health. It focuses on topics that generate legal and ethical controversies, including governmental duties to protect citizens, nature and extent of the government's ability to regulate conduct, and responses to epidemics.
- HSMP 6609 Cost Benefit and Effectiveness in Health** **2.0 cr.**
(Spring) Prereq: HSMP 6604 or permission of instructor
Introduces students to the basics of economic evaluations of health care interventions or technology. Economic evaluations provide a method to assimilate different cost and health outcomes associated with medical treatments into a common metric.
- HSMP 6610 Health Care Financial Management** **3.0 cr.**
(Fall) Students will acquire the tools to incorporate financial, strategic, and mission-based objectives into capital investment decisions. The material also enables students to assess financing options and understand asset evaluation techniques, create financial statements and perform pro-forma financial analyses.
- HSMP 6611 Strategic Management in Health Care** **2.0 cr.**
(Spring) Students will learn the principles of competition, strategic analysis and management, and will develop important skills necessary to analyze the healthcare environment and adapt strategies, systems, products, services and culture to effectively manage healthcare organizational change and renewal.
- HSMP 6614 MCH Program Management & Policy Analysis** **3.0 cr.**
(Fall) Students will learn and apply program management concepts and policy analysis methods to choose among potential policy and programmatic solutions to improve the health outcomes of pregnant women, infants, children, and children with special health care needs.
- HSMP 6615 Current Global Health Policy Issues** **2.0 cr.**
(Fall) Students will identify major actors and their roles in global health policy; discuss major policy issues focusing on poverty reduction using case study examples; and write a health policy analysis paper for the assessment in this course.
- HSMP 6616 Introduction to Health Policy Analysis and Communication** **1.0 cr.**
(Fall) Introduces a framework for systemically and critically evaluating the health policy literature. Reviews effective oral and written communication skills for presenting policy analyses. Evaluation is based on a written analysis of a policy paper of the student's choosing.
- HSMP 6617 Interpreting Health Policy and Management Research** **2.0 cr.**
(Spring) This course explores the methods used in health policy and management research. Students learn to read and interpret research, with an emphasis on understanding the strengths and weaknesses of different analytical approaches to become an effective consumer of the literature.
- HSMP 6618 Comparative Health Systems** **2.0 cr.**
(Spring) This course provides framework for students to analyze the different ways that health care is organized and delivered in settings around the world including low-, middle- and high-income countries. Exploration of how a country's history, geography, government and economy influence the way that health care is provided.

HSMP 6619 Leading Individuals and Teams **2.0 cr.**
(Spring) Strengths and weaknesses of management styles and how to work with individual differences. Course covers how to form teams around purpose/task, diagnose problems, identify and implement solutions by utilizing leadership skills such as setting goals, developing processes, interpersonal communication, motivation and conflict management.

HSMP 6621 Interprofessional Education and Development I **1.0 cr.**
(Spring) Restriction: Permission of instructor required.
This IPED course is part one of a two-semester course for students from public health, dental, medical, nursing and pharmacy schools. Students work in interdisciplinary teams to improve population health and quality of care, reduce costs and provide patient-centered care.

HSMP 6622 Interprofessional Education and Development II **1.0 cr.**
(Fall) Restriction: Permission of instructor required.
This IPED course is part two of a two-semester course for students from public health, dental, medical, nursing and pharmacy schools. Students work in interdisciplinary teams to improve population health and quality of care, reduce costs and provide patient-centered care.

HSMP 6630 Grant Writing for Public Health Professionals **2.0 cr.**
(Spring) Prereq: BIOS 6601, EPID 6630 and the core course within the student's MPH concentration.
This course focuses on basic skills required to develop, fund and evaluate data-driven, evidence-based public health programs. The course involves the construction of a 3-step logic model: Need, intervention and outcomes. In addition, organization/individual capacity, partnerships and budget is discussed.

HSMP 6633 Management of Non-Profit Organizations in Public Health **2.0 cr.**
(Spring) Course introduces nonprofit theory, focuses on nonprofit leadership and management, and explores nonprofit innovation and change within the context of public health. A highly practical and applied approach for students working in the nonprofit sector or with nonprofit partners.

HSMP 6634 Management, Budgeting and Public Health Administration **3.0 cr.**
(Fall) This course is designed to prepare public health professionals for management and administration of public health programs and community initiatives. Content addresses program planning, development, budgeting, management and evaluation.

HSMP 6640 Leadership for Public Health Practice Part 2 **2.0 cr.**
(Spring) Restrictions: Enrollment in Leadership and Public Health Practice MPH concentration required. Completion of CBHS 6640 required or permission of instructor.
The focus of this course will be: 1) understanding public health structure, laws, regulations and policies; 2) creating a collaborative environment to deliver essential public health services; 3) Create and disseminate work plans and results to communities and stakeholders.

HSMP 6641 The Affordable Care Act and the U.S. Healthcare System **1.0 cr.**
(Fall) Restrictions: Offered in variable terms and years.
Presents the management and financing of the U.S. Healthcare System, with a focus on the Affordable Care Act and incentives built into the health care system. Provider reimbursement (hospital, physician, pharmaceutical), insurance and health exchanges are discussed. Denver South Campus Program.

HSMP 6642 Principles of Decision Analysis in Health Care **2.0 cr.**
(Fall) Restrictions: Offered in variable terms and years.
Introduction to decision analysis, with emphasis on the use of economic tools. Students will learn about the Patient-Centered Outcomes Research Institute and best practices for comparative effectiveness analysis and decision tools to satisfy the requirements of the Affordable Care Act. Denver South Campus Program.

HSMP 6643 Data-Driven Quality Improvement **1.0 cr.**
(Spring) Restrictions: Offered in variable terms and years.
This class introduces students to principles of performance-improvement measurement in health care, including NCQA HEDIS measures and Lean Six Sigma principles. The Colorado All-Payer Claims Database will be introduced for evaluating quality and cost metrics across health delivery systems.

- HSMP 6644 Applied Financial Decision Making in Health Care** **2.0 cr.**
 (Spring) Restrictions: Offered in variable terms and years.
 Students learn how to assess capital investment opportunities as applied in a variety of health care settings. The course incorporates hands-on training on how to apply the financial tools to create a strong business case.
- HSMP 6650 MPH Research Paper** **1.0-2.0 cr.**
 (Spring, Summer, Fall) Restriction: Permission of department required
 Independent research project resulting in a publishable paper. All projects will involve the analysis of primary or secondary data.
- HSMP 6651 MS Research Paper** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Masters Research Paper in HSR is completed under this course.
- HSMP 6670 Special Topics: Health Systems, Management and Policy** **1.0-3.0 cr.**
 (Spring, Summer, Fall) Special interest areas of current health systems, management, and policy research and practice are presented and analyzed. The course format is lecture and discussion or seminar. Check with CSPH website for offerings and topics for this course each semester.
- HSMP 6840 Independent Study: Health Systems, Management and Policy** **1.0-3.0 cr.**
 (Spring, Summer, Fall) Restriction: Department consent required
 Faculty directed independent study in topics related to health systems, management and policy.
- HSMP 6950 MS Thesis** **1.0-6.0 cr.**
 (Spring, Summer, Fall) HSR thesis work is completed under this course.
- HSMP 6990 MPH Capstone Preparation-HSMP** **1.0 cr.**
 (Spring, Summer, Fall)
 MPH Capstone Preparation will focus on developing the basis for a strong capstone project, culminating in the finalization of the capstone proposal that meets the expectations of the concentration.
- HSMP 7010 Foundations in Health Services Research** **1.0 cr.**
 (Spring, Fall) Restriction: Permission of instructor required
 Introduces students to the academic health services research literature. This seminar course requires students to participate in small seminars led by faculty on different health services research topics plus attending larger HSMP departmental seminars. Evaluation is based on weekly papers.
- HSMP 7601 Research Design and Proposal Preparation** **3.0 cr.**
 (Fall) Prereq: Upper division course in statistics
 Research as a systematic method for examining questions derived from related theory and/or health service practice. Major focus is on the logic of causal inference, including the formulation of testable hypotheses relating to health services organization and management, the design of methods and measures to facilitate study.
- HSMP 7607 Methods in Health Services Research I** **3.0 cr.**
 (Spring) Prereq: BIOS 6611
 The first of a two-course sequence in empirical methods in health services research. The statistical theory underlying basic empirical methods and the thoughtful implementation/practice of these methods is emphasized. Topics covered include: OLS, Gauss-Markov assumptions, logit/probit. Stata will be used.
- HSMP 7609 Methods in Health Services Research II** **3.0 cr.**
 (Fall) Prereq: HSMP 7607, enrolled in PhD or DrPH or permission of instructor
 Students will learn how to specify and estimate econometric models to test theory-driven hypotheses. The course builds on HSMP 7607 and covers advanced methods related to panel/longitudinal, multinomial, survival, and count data models. Stata software will be used.
- HSMP 8990 Doctoral Thesis - Health Systems Management and Policy** **1.0-10.0 cr.**
 (Spring, Summer, Fall) Restriction: Permission of instructor required.
 Doctoral thesis work in Health Systems Management and Policy.

PUBLIC HEALTH - GENERAL

PUBH 6600 Foundations in Public Health

2.0 cr.

(Spring, Summer, Fall) This course examines the historical and conceptual bases of public health, the key issues and problems faced by the public health system, and the tools available for the protection and enhancement of the public's health.

PUBH 6606 MPH Practicum

2.0 cr.

(Spring, Summer, Fall) Prereq: PUBH 6600 and successful completion of 3 additional core courses; Restriction: Student must be in good academic standing to enroll. Only open to MPH Students. Instructor consent required. All MPH concentrations require students to successfully complete a practicum in which the student demonstrates competencies and integrates knowledge. It is intended to enrich student's experience by providing an opportunity to apply theory and skills in a public health setting.

PUBH 6640 Clinical Experience for MD-MPH Students

1.0 cr.

(Spring, Summer, Fall) Restriction: This course is only open to MD-MPH joint degree students. MD-MPH students work in the clinic of an academic physician-scientist who specializes in a clinical area of interest to the student. The goals of this course are to maintain and further the clinical skills learned during medical school.

PUBH 6651 MPH Research Paper

1.0-2.0 cr.

(Spring, Summer, Fall) Prereq: BIOS 6601, CBHS 6610 or CBHS 6611, EHOH 6614, HSMP 6601, EPID 6630, PUBH 6600 and permission of instructor.

Independent research project resulting in a publishable paper. All projects will involve the analysis of primary or secondary data.

PUBH 6670 Special Topics: Public Health

1.0-3.0 cr.

(Spring, Summer, Fall) Special interest areas of current public health research and practice are presented and analyzed. The course format is lecture and discussion or seminar. Check the CSPH website for offerings and topics for this course each semester.

PUBH 6840 Independent Study: Public Health

1.0-3.0 cr.

(Spring, Summer, Fall) Restriction: Permission of department required
Faculty directed independent study in topics related to public health.

PUBH 6842 DrPH Seminar

1.0 cr.

(Spring, Summer, Fall) Restriction: Enrollment in DrPH or permission of instructor.

This doctoral level course will address theory and practice at a level beyond that covered in Master's level courses. Students will acquire advanced skills in developing, testing, and applying theory and methods to public health problems.

PUBH 6850 DrPH Practicum

2.0-4.0 cr.

(Spring, Summer, Fall) Restriction: Permission of instructor

DrPH Practicum is minimum 240 hours field experience under joint direction of CSPH Faculty mentor and practicing professional in community with leadership experience in public health agency. Written report/oral presentation specifying activities/ products/outcomes of experience required upon practicum hours completion.

PUBH 6955 MPH Capstone Project

2.0 cr.

(Spring, Summer, Fall) Prereq: BIOS 6601, CBHS 6610 or CBHS 6611, EHOH 6614, EPID 6630, HSMP 6601, and permission of instructor.

Self-directed student project experience course, intended to connect all aspects of curriculum, including seminars, lectures, course work, independent studies, projects & practice experiences to demonstrate competency in student's chosen concentration. Class concludes with student presentations at public health forum.

PUBH 6956 Continued MPH Studies

1.0 cr.

(Spring, Summer, Fall) Prereq: PUBH 6955 and permission of instructor.
Continuation of MPH study experience.

PUBH 6991 MPH Capstone Integration

1.0 cr.

(Spring, Summer, Fall)

MPH Capstone Integration will focus on interaction between MPH students from across concentrations to Build communication skills and facilitate the students' integration of their projects within the broader scope of public health.

COLORADO SCHOOL OF PUBLIC HEALTH- COLORADO STATE UNIVERSITY

AGRICULTURE

- AGRI 5000 Advanced Issues in Agriculture** **3.0 cr.**
(Fall) Scientific, technical, cultural and social issues facing agriculture, and their interrelationships.
- AGRI 5460 Principles of Cooperative Extension** **3.0 cr.**
(Spring, Summer, Fall) Traditional and contemporary delivery systems of Cooperative Extension emphasizing structures of non- formal education.
- AGRI 5470 Delivery of Co-operative Extension Programs** **4.0 cr.**
(Spring) Prereq: Written consent of instructor.
Methods, techniques, and procedures in planning, implementation, and deliver of Cooperative Extension programs.
- AGRI 6340 Animal Production Systems** **3.0 cr.**
(Spring, Fall) Developing animal management systems for a variety of animal species in a forage-based environment.
- AGRI 6370 Understanding Policy & Emerging Issues** **3.0 cr.**
(Spring, Fall) Origination, purposes and effects of policy on land-based enterprises; policy effects on management decisions.
- AGRI 6950 Independent Study- Agriculture** **1.0-18.0 cr.**
(Spring, Summer, Fall) Independent study in agriculture.

ANIMAL SCIENCES

- ANEQ 5670 HAACP Meat Safety** **2.0 cr.**
(Spring) Prereq: ANEQ460.
Control of health problems in meat products through hazard analysis critical control point (HAACP) and total quality management (TQM) practices.
- ANEQ 6600 Topics in Meat Safety** **1.0 cr.**
(Fall) Prereq: ANEQ 5670.
Topics of current concern in meat safety.
- ANEQ 6760 Molecular Approach to Food Safety** **3.0 cr.**
(Spring) Prereq: MIP 300 and MIP 301 or MIP 334 and MIP 335.
Molecular subtyping, tracking, and control; molecular ecology and evolution of food-borne pathogens; molecular pathogenesis of food-borne disease.

ANTHROPOLOGY

- ANTP 5200 Women, Health, and Culture** **3.0 cr.**
(Spring) Women's experiences and interpretations of their health; cultural, political, and economic forces affecting women's health.
- ANTP 5320 Culture of Disaster** **3.0 cr.**
(Spring, Fall) This course is designed to introduce students to the way social scientists study disaster.
- ANTP 5400 Medical Anthropology** **3.0 cr.**
(Spring) Restriction: Graduate level
Cultural and bio-cultural approaches to health, illness, and the body; theory and application in medical anthropology.

ANTP 5450 Global Mental Health – Theory and Method **4.0 cr.**

(Fall) Cross-cultural study of mental health and healing; cultural, clinical, and biological perspectives; integrations of theory and method.

ANTP 5470 Mind, Medicine and Culture **4.0 cr.**

(Spring) Restriction: Graduate level
Cultural-psychological influences on health and healing; mind-body medicine; complementary and alternative medicine; Indigenous and spiritual healing.

ANTP 5710 Anthropology and Global Health **3.0 cr.**

(Fall) Restrictions: Graduate level. Credit will only be given for one of the following courses: PSCY5170, ANTP 5710 or CBHS 6619
Global health concerns and problems including poverty, urbanization, malnutrition, diet, war and refugees, climate, and environment.

ANTP 6430 Advanced Ethnographic Field Methods **4.0 cr.**

(Spring) This course builds from a cognitive anthropological cultural models approach to research, though this foundation is integrated with more standard social scientific perspectives. Within this framework, the course proposes that mixed qualitative and quantitative methods provide the richest insight into human experience as shaped by culture.

ANTP 6950 Independent Study: Anthropology **1.0-18.0 cr.**

(Summer) Prerequisite: Graduate level
Independent Study: Anthropology.

EDUCATION RESEARCHMETHODS

EDRM 6060 Principles of Quantitative Data Analysis **3.0 cr.**

(Spring, Summer, Fall) This course is designed to prepare graduate students in the social and health sciences to understand and use some of the primary tools of descriptive and inferential statistics.

EDRM 7010 Applied Linear Models **3.0 cr.**

(Spring, Fall) Prereq: EDRM 6060
General Linear model applications in educational research emphasizing conceptual understanding and characteristics of non-experimental designs.

EDRM 7030 Appl Longitudinal Data Analysis **3.0 cr.**

(Fall) Prereq: EDRM 7010
Methods and empirical applications of individual growth modeling and discrete-time event history analysis in educational research.

ENVIRONMENTAL AND RADIOLOGICAL HEALTH SCIENCES

ERHS 5200 Environmental and Occupational Health **3.0 cr.**

(Fall) Prereq: CHEM 245 or CHEM 341 or CHEM 345; BZ 110 or LIFE 102
Issues in environmental and occupational health sciences in the context of public health and regulatory concerns.

ERHS 5320 Epidemiologic Methods **3.0 cr.**

(Fall) Prereq: STAT 307
Method of epidemiologic investigation and study design. Applications to disease control with literature examples.

- ERHS 5340 SAS and Epidemiologic Data Management** **3.0 cr.**
 (Fall) This course will provide the basic concepts and skills needed to use SAS programming to manage and analyze data typically used in epidemiologic research. The emphasis will be on learning and practicing good data and programming management practices and will cover tools needed for basic understanding of SAS syntax and coding structure.
- ERHS 5350 R Programming for Research** **3.0 cr.**
 (Fall) In-depth instruction on data collection, data management, programming and visualization using data examples relevant to academic research.
- ERHS 5380 Geographic Information Systems and Health** **3.0 cr.**
 (Spring) Prereq: ERHS 5320 or permission of the instructor
 This course will familiarize students with applications of geographic information systems (GIS) in public health. Topics include a basic understanding of geodatabases, geocoding, production of effective disease maps, global positioning systems (GPS), visualization, classification and accuracy assessment.
- ERHS 5810 Experimental Course-ERHS** **1.0-5.0 cr.**
 (Spring, Summer, Fall) Experimental course in environmental and radiological health sciences.
- ERHS 6400 CSU Advanced Epidemiology** **3.0 cr.**
 (Spring) Prereq: ERHS 532.
 In-depth exploration of advanced epidemiologic methods.
- ERHS 6420 Appl Logistic Regression** **3.0 cr.**
 (Spring) Prereq: ERHS 532; ERHS 542.
 Basic and advanced concepts of logistic regression with focus on practical applications in epidemiology using SAS.
- ERHS 6580 Environmental/Occupational Epidemiology** **3.0 cr.**
 (Spring) Prereq: ERHS 5320
 Epidemiologic analysis of effects of exposure to environmental and occupational health hazards.
- ERHS 6930 Research Seminar – Epidemiology** **1.0 cr.**
 (Spring, Fall) Presentation of student research and discussion of publications from scientific literature.
- ERHS 6932 Research Seminar – Toxicology** **1.0 cr.**
 (Spring, Fall) Presentation of student research and discussion of publications from scientific literature.
- ERHS 6950 Independent Study – Epidemiology** **1.0-5.0 cr.**
 (Spring, Summer, Fall) Specialized study in epidemiology under supervision of faculty.
- ERHS 6951 Independent Study: Occupation and Environmental Health** **1.0-5.0 cr.**
 (Spring, Summer, Fall) Specialized study in environmental and occupational health under supervision of faculty.

ETHNIC STUDIES

- ETHS 5020 Research Methods** **3.0 cr.**
 (Fall) This course focuses on gaining a basic understanding of qualitative inquiry with a particular emphasis on narrative research, phenomenology, grounded theory, ethnography and case study. Interpretive frameworks such as feminist theories, critical ethnography and case study. Interpretive frameworks such as feminist theories, critical theory and critical race theory, queer theory and disability theories will be addressed.
- ETHS 5100 Ethnicity, Race & Health Disp** **3.0 cr.**
 (Fall) Health status of ethnic / racial populations; cultural dimensions that underlie health and health disparities

ETHS 6950 Independent Study **1.0-18.0 cr.**
(Spring, Summer, Fall) Independent study in ethnic studies.

FOOD SCIENCE AND HUMAN NUTRITION

FSHN 5000 Food System, Nutrition, Food Security **2.0 cr.**
(Fall) Prereq: FSHN 350
Global and local food systems and their potential influence on nutrition and food security.

FSHN 5200 Advanced Medical Nutrition Therapy **3.0 cr.**
(Summer) Prereq: FSHN 5500 or 5510
Role of nutrition in etiology and treatment of selected disorders.

FSHN 5250 Nutrition Education, Theory and Practice **2.0 cr.**
(Fall) Prereq: FSHN 350. Restriction: Instructor permission if not in Public Nutrition focus area.
Examination of current theories, skills, and models used in nutrition education programs as preparation for research and practice.

FSHN 5500 Advanced Nutritional Science I **3.0 cr.**
(Spring) Prereq: BC 351 or BC 403; FSHN 350.
Protein, vitamin, mineral metabolism: human studies, animal models.

FSHN 5510 Advanced Nutritional Science II **3.0 cr.**
(Fall) Prereq: BC 351 or BC 403; FSHN 350. Restriction: Instructor permission if not in Public Nutrition focus area. Carbohydrate, lipid, energy metabolism; human studies, animal models.

FSHN 6200 Community Nutrition Plan and Evaluation **3.0 cr.**
(Spring) Prereq: FSHN 350.
Community nutrition assessment; nutrition program planning and evaluation; nutrition policy analysis.

FSHN 6280 Advanced Nutrition Counseling Techniques **2.0 cr.**
(Summer, Fall)
Principles, strategies, and techniques for interviewing, assessing, and providing nutrition counseling in community settings.

FSHN 6400 Select Topics in Nutritional Epidemiology **2.0 cr.**
(Fall) Prereq: FSHN 350; STAT 301 or STAT 307/ERHS 307
Overview of topics in nutritional epidemiology, study design, interpretation of findings, linkage of data to action.

FSHN 6500 Recent Dev in Human Nutrition – Proteins **2.0 cr.**
(Spring, Fall) Prereq: FSHN 5500
The purpose of this course is to read and discuss the recent literature on nutrition topics that are of emerging importance and relevance to major health promotion/disease prevention issues. This course covers protein, vitamins, and minerals.

FSHN 6501 Human Nutrition-Carbohydrates, Lipids, Energy **2.0 cr.**
(Fall) Prereq: FSHN 350 Restriction: Instructor permission if not in Public Nutrition focus area.
Appraisal of literature on human nutritional status.

FSHN 6502 Developments in Human Nutrition-Genomics, Proteomics and Metabolomics **2.0 cr.**
(Spring) Prereq: Organic Chemistry; Biochemistry; 300-level human nutrition course; FSHN 5510
Students will learn about recent human nutrition developments pertaining to genomics, proteomics and metabolomics.

FSHN 6600 Women's Issues in Lifecycle: Nutrition **2.0 cr.**
(Spring) Prereq: FSHN 459.
Current nutritional issues related to selected stages of the lifecycle compared to normal adult nutritional needs.

FSHN 6610 International Nutrition **2.0 cr.**

(Fall) Prereq: FSHN 350 Restriction: Instructor permission if not in Public Nutrition focus area.
Roles of technological programs and international agencies in meeting nutritional needs.

FSHN 6750 Regulation of Energy Intake **3.0 cr.**

(Spring) Prereq: FSHN 350.
Central and peripheral mechanisms controlling energy intake with emphasis on humans. Current theories, experimental approaches, and new research.

FSHN 6950 Independent Study: Food Science **1.0-18.0 cr.**

(Spring, Summer, Fall) Restrictions: Instructor permission if not in Public Health Nutrition focus area.
Specialized study in food science under supervision of Faculty.

FSHN 6951 Independent Study: Nutrition **1.0-18.0 cr.**

(Spring, Summer, Fall) Restrictions: Instructor permission if not in Public Health Nutrition focus area.
Specialized study in nutrition under supervision of Faculty.

FOODTECHNOLOGY

FTEC 5720 Food Biotechnology **2.0 cr.**

(Spring) Interrelationships among microorganisms, food processing methods, advances in biotechnology and food quality, spoilage, shelf-life and safety.

FTEC 5740 Current Issues in Food Safety **2.0 cr.**

(Spring) Current food safety issues from field to table; microbiological, consumer, processing and agricultural issues.

FISH AND WILDLIFE

FWLD 5440 Ecotoxicology **3.0 cr.**

(Spring) Prereq: Statistics and introductory biology required.
The purpose of this course is to provide students with an overview of ecological and environmental aspects of toxicology and pollution ecology. The course will emphasize population, community, and ecosystem responses to contaminants and other anthropogenic stressor.

HUMAN DEVELOPMENT AND FAMILY STUDIES

HDFS 5920 Grant Writing: Human Services **3.0 cr.**

(Fall) Prereq: STAT 201
Writing grant proposals that support client services or for research

HDFS 6070 Prevention Science Across the Life-Span **3.0 cr.**

(Spring, Fall) Prereq: One of the following: CBHS 6610; CHBH 5090; HESC 5560; PBHC 5500
Overview of prevention theory, methods and standards of evidence. Introduction to efficacious and effective interventions across the lifespan.

HDFS 6080 Program Design and Implementation **3.0 cr.**

(Spring) Restrictions: Credit will not be given for both HDFS 6080 and CBHS 6613 or CHBH 6100.
HDFS 6080 cannot substitute for CBHS 6613 or CHBH 6100.
This course provides students with a theoretical and practical foundation for selecting and implementing effective prevention strategies across multiple settings such as schools and community-based organizations.

HDFS 6090 Prevention Program Evaluation **3.0 cr.**

(Spring) Restrictions: Credit will not be given for both HDFS 6090 and CBHS 6612 or CHBH6100.
HDFS 6090 cannot substitute for CBHS 6612 or CHBH 6100.

This course provides students with a theoretical and practical foundation for evaluating the impact of prevention strategies across multiple settings such as schools and community-based organizations.

HDFS 6100 Risk and Resilience **3.0 cr.**

(Spring) Prereq: 6 cr. in behavioral sciences.

Risk and resilience processes in human development.

HDFS 6120 Adolescent Development **3.0 cr.**

(Fall) Prereq: One course in adolescence; three cr. of upper-division behavioral sciences; or permission of instructor.

Course focuses on current theoretical and empirical issues in the field of adolescent development. Students will critically evaluate current research in the field of adolescent development, debate central issues, and gain in-depth knowledge of one topic of their choice.

HDFS 6500 Research Methods II **3.0 cr.**

(Fall) Restriction: Credit will not be given for both HDFS 6500 and STAS 5110.

This course covers a range of quantitative methods with an emphasis on parametric inferential statistics. It will focus on parametric versions of both univariate and multivariate statistics along with important assumptions of each test statistic, when each should and should not be used, and how to compute each test statistic using SPSS.

HDFS 6950 Independent Study- Human Development **1-18 cr.**

(Spring, Summer, Fall) Independent study in human development and family studies.

HDFS 6970 Group Study- Human Development **1-18 cr.**

(Spring, Summer, Fall) Group study in human development and family studies.

HDFS 7400 Family Policy **3.0 cr.**

(Fall) This course will utilize a lifespan developmental framework for examining social and family policy initiatives, with special attention aimed at policies that serve vulnerable populations such as the poor, the elderly, and children

HEALTH AND EXERCISE SCIENCE

HESC 6000 Data Analysis and Research Design **3.0 cr.**

(Summer)

Restriction: Instructor permission if not in Health and Exercise Science focus area. Prerequisite of one course in statistics.

Methods of research applied to health and exercise science including quantitative techniques of analysis and research design.

HESC 6001 Research Design **3.0 cr.**

(Fall) This course will discuss research and academic integrity, the responsible conduct of science, research and experimental design, an overview of basic and scientific writing skills, how to read/interpret scientific writing, and inferential statistics.

HESC 6450 Epidemiology of Health and Physical Activity **3.0 cr.**

(Spring) Prereq: HES 600.

Foundation in chronic disease epidemiology that will enable students to evaluate the current epidemiologic literature.

HESC 6500 Health Promotion Program **3.0 cr.**

(Spring, Fall) Development of skills in health promotion program design, implementation and evaluation.

HESC 6920 Seminar-Health and Exercise Sciences **1.0 cr.**
(Spring, Fall) Restriction: Instructor permission if not in Health and Exercise Science focus area.
Consideration of graduate education in health and exercise science.

HESC 6950 Independent Study: Health **1.0-18.0 cr.**
(Spring, Summer, Fall) Restriction: Instructor permission if not in Health and Exercise Science focus area.
Independent study in health.

INTERNATIONAL EDUCATION

IE00 6790 Advanced International Development **3.0 cr.**
(Spring) In-depth interdisciplinary analysis of theoretical and practical issues in implementing economic and community-based international development programs.

IE00 6920 International Dev Seminar **3.0 cr.**
(Fall) Exploration of contemporary issues in international development from interdisciplinary perspectives.

JOURNALISM AND TECHNICAL COMMUNICATION

JTCM 5010 Process and Effects of Communication **4.0 cr.**
(Fall) Prereq: JTCM 5000
Examination of communication theory including communicator credibility, messages, channels, audiences and information, behavior and attitude change.

JTCM 5440 Corporate and Institutional Media Production **3.0 cr.**
(Summer) Advanced techniques in media production and management in corporate and institutional settings.

JTCM 6140 Public Communication Campaigns **3.0 cr.**
(Fall) Prereq: JTCM 5010
Conceptual, methodological issues and decisions underpinning determination of communication campaign effects, planning, implementation and evaluation.

JTCM 6300 Health Communication **3.0 cr.**
(Fall) Prereq: 5010
Role of health communication in public health programs and campaigns.

JTCM 6500 Public Relations Management **3.0 cr.**
(Spring) Prereq: JTCM 5010
Theoretical and practical management techniques for public relations campaigns including societal, ethical, and legal issues involved.

JTCM 6600 Communication/Technology Transfer **3.0 cr.**
(Fall) Prereq: JTCM 5010
Communication's role in technology transfer as related to nature, process, and effects of technology transfer, knowledge dissemination, and utilization.

JTCM 6610 Information Design **3.0 cr.**
(Fall) Prereq: JTCM 5010
Theoretical and empirical review of creation, presentation storage, and distribution of information.

JTCM 6620 Comm Science/Technology **3.0 cr.**
(Spring) Prereq: JTCM 5010
Examination of theoretical and empirical studies concerning communication of science and technology subject matter.

JTCM 6700 Social Processes of Risk **3.0 cr.**
(Spring) Provides students with a broad entry to this sprawling and cross-disciplinary literature, from seminal work that served to coalesce study of risk perception and risk communication to the most current literature that's redefining this field and charting its future.

JTCM 6950 Independent Study: Communication **1.0-3.0 cr.**
(Spring, Summer, Fall) Independent study in Journalism and Technical Communication.

JTCM 7920 Journalism and Technical Communication Seminar **1.0 -3.0 cr.**
(Spring, Fall) Topics will vary.

MICROBIOLOGY IMMUNOLOGY AND PATHOLOGY

MIPO 5550 Principles & Mechanism of Disease **3.0 cr.**
(Fall) Prereq: BMS 300; coursework in histology, physiology and anatomy. Restriction: Permission of instructor needed if prerequisites not met.
Principles of disease processes; emphasis on reactivity of the diseased cell, tissue, organ or organism.

NATURAL RESOURCES

NROO 5920 Seminar in Natural Resources **1.0-18.0 cr.**
(Spring, Summer, Fall) Topics will vary by semester.

NATURAL RESOURCES RECREATION AND TOURISM

NRRT 6650 Survey Research and Analysis **3.0 cr.**
(Spring) Prerequisite: Statistics course
Survey research, design and analysis in human dimensions of natural resources.

PUBLIC HEALTH

PBHC 5160 Public Health Foundations **2.0 cr.**
(Fall) This course will provide students with an overview of key concepts underlying public health in historical and contemporary perspective. The course will include attention to the main functions of public health as well as ethical principles associated with public health practice.

PBHC 5200 Healthcare Systems, Policy and Management **3.0 cr.**
(Spring) This course provides an overview of the U.S. healthcare system, its key components and their functional relationships. Students learn about the organization and financing of the U.S. system, how health policy is developed and implemented, and key principles of leadership and management for health professionals.

PBHC 5300 Environmental Public Health and Policy **3.0 cr.**
(Spring) This course provides a broad understanding of the factors that influence natural, urban, rural, and workplace environments as well as human health risks from chemical, biological, and physical agents.

- PBHC 5400 One Health in Public Health** **3.0 cr.**
 (Fall) This course will examine the interconnectedness of environmental, human and animal health. Issues will be addressed from the perspectives of public health, medicine, veterinary science, and ecology bearing in mind the implications for health policy.
- PBHC 5500 Applied Behavior Change Theory** **3.0 cr.**
 (Spring, Fall) Prereq: Students can only receive credit for one of the following: PBHC 5500, HESC 5560, CBHS 6610 or CHBH 5090
 This course reviews a wide range of behavior change theories used in public health promotion/disease prevention interventions. Development, implementation and evaluation of programs and policies to promote and sustain healthy environments and lifestyles are examined.
- PBHC 5600 Qualitative Methods in Public Health** **3.0 cr.**
 (Spring, Fall) Applied biostatistical methods including descriptive and statistical inference; odds ratio and relative risk, probability theory, parameter estimation, tests for comparing statistics of two or more groups, correlation and linear regression and overviews of multiple and logistic regression and survival analysis.
- PBHC 5700 Epidemiology for Public Health** **3.0 cr.**
 (Fall) This course will provide an introduction to descriptive and analytic methods in epidemiology and their application to research and practice in public health.
- PBHC 6300 Field Methods of Disease Investigation** **3.0 cr.**
 (Spring, Fall) Prereq: One course in epidemiology
 The application of epidemiologic tools to collect, analyze and interpret data and test results important for disease surveillance and investigation.
- PBHC 6860 Public Health Practicum** **2.0 cr.**
 (Spring, Summer, Fall) Prereq: PBHC 5160 or equivalent and successful completion of 3 additional core courses. Restriction: Permission of instructor required. Student must be in good academic standing to enroll. Only open to MPH students.
 All MPH students are required to successfully complete a practicum in which the student demonstrates competencies and integrates knowledge. It is intended to enrich the student's experience by providing an opportunity to apply theory and skills in a public health setting.
- PBHC 6920 Public Health Seminar - APE** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.
- PBHC 6921 Public Health Seminar - EPI** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.
- PBHC 6922 Public Health Seminar - GHHD** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.
- PBHC 6923 Public Health Seminar - HCOM** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.
- PBHC 6924 Public Health Seminar - PAHL** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.
- PBHC 6925 Public Health Seminar - PHN** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.
- PBHC 6926 Public Health Seminar – Public Health** **1.0-6.0 cr.**
 (Spring, Summer, Fall) Seminars pertaining to current public health issues. Topics will vary.

PBHC 6950 CSU Public Health Independent Study **1.0-3.0 cr.**
(Spring, Summer, Fall) Restriction: Permission of instructor required
Faculty directed independent study in topics related to public health.

PBHC 6960 Public Health Group Study **1.0-18.0 cr.**
(Spring, Summer, Fall) Public Health Group Study at CSU. Topics will vary.

PBHC 6980 MPH Capstone -CSU **2.0 cr.**
(Spring, Summer, Fall) Restriction: Permission of instructor required
Capstone project for CSU Master of Public Health students.

PHILOSOPHY

PHLY 5640 Seminar in Animal Rights **3.0 cr.**
(Fall) Contemporary issues concerning nature and moral status of non-human animals.

PHLY 6660 Science and Ethics **3.0 cr.**
(Spring) Science, skills, and beliefs directed at the maintenance and improvement of health for all people.

POLITICALSCIENCE

POLS 6650 Public Policy Analysis **3.0 cr.**
(Spring) Prereq: Previous or concurrent coursework in statistics
Course will help students develop skills that allow them to define and critically analyze policy issues/problems, specify how decisions will be made regarding analysis of problems, evaluate alternative methods/solutions, and assess the means and costs of implementing policies.

POLS 6700 Politics of the Environment and Sustainability **3.0 cr.**
(Fall) Prereq: Statistics and introductory biology required
This course addresses the following questions: What is the relationship between nature and society? What interventions/strategies are proposed? How are the two related? Included is the discussion of the different approaches to managing/governing nature.

PSYCHOLOGY

PSCY 5150 Women'sHealth **3.0 cr.**
(Spring) Current issues in women's health.

PSCY 5170 Perspectives in Global Health **3.0 cr.**
(Spring) Restriction: Credit will only be given for one of the following courses: PSCY 5170, ANTP 5710, CBHS 6619
Science, skills, and beliefs directed at the maintenance and improvement of health for all people.

PSCY 6000 Health Psychology **3.0 cr.**
(Fall) This course will examine the connections between humans' cognitions, emotions, and behaviors and their mental and physical health.

PSCY 6530 Methods of Research in Psychology II **4.0 cr.**
(Spring) Prerequisite: BIOS 6601 or equivalent
Students will develop a strong understanding of the general linear model and learn how to use the model to answer substantive questions in their field of research. The course will include statistical analyses.

PSCY 7920 Applied Soc Psy Seminar **1.0-18.0 cr.**

(Spring, Summer, Fall) Seminar in Applied Social Psychology; topics will vary.

PSCY 7922 Prevention of Occupational Injury and Illness **3.0 cr.**

(Fall) Understanding of the basic public health approach to the prevention and control of occupational illnesses and injuries.

SOCIOLOGY

SOCO 5620 Sociology of Food Systems and Agriculture **3.0 cr.**

(Spring, Fall) This course is designed to explore how agricultural choices generate intended and unintended consequences for human communities and the natural environment.

SOCO 6130 Multiple Regression and Path Analysis **3.0 cr.**

(Fall) This course focuses on multiple regression but also includes logistical regression and other topics. Students will gain the cognitive tools to start doing and meaningfully reading quantitative research in a way that locates all regression analyses within a context of causal thinking.

SOCO 6620 Sociological Policy Analysis **3.0 cr.**

(Fall) The main objective of this course is to develop an understanding of (1) the processes by which societies come to perceive of particular issues as social problems and formulate policies in response to these perceptions; and (2) the factors that affect these processes.

SOCO 6950 Independent Study – Sociology **1.0-6.0 cr.**

(Spring, Summer, Fall) Independent study in sociology.

COMMUNICATION

SPCM 5380 Relating and Organizing for Health **3.0 cr.**

(Spring) Organizational, interpersonal, and intercultural dimensions of communicating in public health clinical settings.

SPCM 6320 Theory of Interpersonal Comm **3.0 cr.**

(Fall) Theories of communication in development, maintenance, and deterioration of friendship, couple, family, group, and business relationships.

SPCM 6340 Communication – Global Diversity **3.0 cr.**

(Spring) Ethnographic approach to communication issues and concerns in a global context.

SPCM 6390 Communication Theory **3.0 cr.**

(Fall) Examination of communication philosophies and perspectives; analysis of modern theories of face-to-face communication.

SOCIAL WORK

SOWK 5200 Social Welfare Policy Analysis **3.0 cr.**

(Spring) This course helps students develop a perspective for understanding social welfare policies and the impact of these policies on people and their families, groups and communities. The course builds on students' knowledge of social welfare services and introduces the concept of human rights as a bedrock for social justice.

SOWK 5720 Large Client Systems: Theory and Practice

3.0 cr.

(Spring) Theories and practice principles relevant to social work practice with large client systems. Systems will include groups, organizations, institutions and communities.

SOWK 6310 Advanced Generalist Practice with Communities

2.0 cr.

(Spring) This course provides in-depth knowledge regarding the planned change process with communities.

STATISTICS

STAS 5110 Design and Data Analysis for Researchers

4.0 cr.

(Fall) Prerequisite: Statistics course Restriction: Credit will not be given for both HDFS 6500 and STAS 5110. Statistical methods for experimenters and researchers emphasizing design and analysis of experiments using R software.

CLINICAL SCIENCES

VSCS 5330 Epidemiologic Infections Disease/Zoonosis

3.0 cr.

(Spring) Epidemiologic features of infectious and parasitic diseases that have a major impact on community medicine.

VSCS 6480 Food Animal Production and Food Safety

2.0 cr.

(Spring) Basic orientation to food animal production units, herd health concepts, and issues of food safety from pre-harvest through processing and distribution.

VSCS 6620 Research Plan, Design and Analysis with Recitation

3.0 cr.

(Spring) Introductory biostatistics course required for MPH students.

VSCS 7330 Advance Vet Epidemiology Research

4.0 cr.

(Spring) Prereq: ERHS 5320; VSCS 6620 Provides in-depth knowledge in epidemiological research as it specifically applies to health of animal populations.

VSCS 7950 Independent Study – Epidemiology

1.0-5.0 cr.

(Spring, Summer, Fall) Specialized study in epidemiology under supervision of faculty.

VSCS 7960 Group Study: Medicine

1.0-18.0 cr.

(Spring, Summer, Fall) Group study, please contact the department for topics in a given semester.

COLORADO SCHOOL OF PUBLIC HEALTH - UNIVERSITY OF NORTHERN COLORADO

COMMUNITY HEALTH

CHBH 5050 Health Communications and the Media

3.0 cr.

Offered intermittently. Focuses on the design, production, evaluation and acquisition of appropriate media and materials for health education/promotion programs.

CHBH 5080 UNC Special Topics

3.0 cr.

Offered intermittently. This course will be a forum to discuss important topics related to community and behavioral health. Such topic areas can include: preparation for field work in culturally diverse communities, historical trauma and health and others. Topics offered will change by semester, see specific schedule.

CHBH 5090 Behavior Change Theories

3.0 cr.

(Fall) Review theories of behavior and behavior change as they relate to current health issues. Health behavior change models will be examined and applied.

CHBH 5250 Contemporary Issues in School Health

3.0 cr.

(Fall) This course examines the relationship between child/adolescent health and their school experience. The course will be organized around the eight components of the Coordinated School Health Program Model. Current issues and approaches to school health will also be presented

CHBH 5300 Strategies for Community Health Promotion

3.0 cr.

(Spring) This course examines the effectiveness of a wide range of community strategies used in health promotion/disease prevention programs.

CHBH 5320 Physical Activity and Public Health

3.0 cr.

Offered intermittently. An examination of physical activity and the public health implications of physical inactivity. Emphasis will be placed on epidemiologic evidence of physical activity benefits and chronic disease prevention.

CHBH 5330 Physical Activity Interventions in the Community

3.0 cr.

(Spring) This course is designed to acquaint graduate students with theory-based interventions to increase participation in physical activity. The course will cover a variety of evidence-based approaches to physical activity promotion targeting various sub-populations and settings within the community.

CHBH 5350 Effective Community Health Engagement

3.0 cr.

(Fall) Prereq: CHBH 5300 or consent of instructor.

This course will enable students to develop skills necessary to effectively work with and within a variety of communities to promote public health. Topics include historical impacts, effective theories and strategies, appropriate tools to consider and others.

CHBH 5500 Environmental Health

3.0 cr.

(Spring) Investigate and discuss the relationships of environmental health problems to human health and welfare. Include sources of these problems, their recognition and control and current research studies.

CHBH 5750 Public Health Issues in Reproductive Health

3.0 cr.

(Summer) This course will examine reproductive health issues that impact society and public health. Topics include pregnancy, childbirth, teen pregnancy, sexually transmitted infections, birth control, infertility, abstinence only educational programs and comprehensive sexuality education.

CHBH 6100 Program Planning and Evaluation

3.0 cr.

(Fall) Prereq: CHBH 5090 or consent of instructor.

Theories and practices of program planning and evaluation including needs assessment, planning approaches, selection of strategies, data collection and analysis, evaluation design, program implementation and utilization of evaluation data.

CHBH 6120 Statistical Applications in Public Health

3.0 cr.

(Spring) Applied statistical methods for students in public health. Developing statistical literacy and an ability to perform basic statistics, data summarizations and hypothesis testing using statistical software will be emphasized.

CHBH 6150 Methods in Public Health Research and Evaluation

3.0 cr.

(Fall) Prereq: CHBH 6120 or consent of instructor. Cannot apply both this course and CBHS 6612 towards the MPH degree.

Public health research methods, qualitative/quantitative research designs, data collection/analysis and program evaluation. Students will conduct an evaluation project with a local public health agency.

CHBH 6200 UNC Epidemiology

3.0 cr.

(Fall) Epidemiological principles analyzed with an emphasis on selected topical issues, infectious and chronic/degenerative diseases, research design and analysis. Practical applications of statistical and epidemiological methods.

CHBH 6220 Directed Studies

1.0—4.0 cr.

(Spring, Summer, Fall) Restriction: Instructor consent required.

Individualized investigation under the direct supervision of a faculty member. Minimum of 37.5 clock hours required per credit hour. Repeatable. Maximum concurrent enrollment is two times.

CHBH 6350 Policy, Advocacy, Leadership & Management in Community Health

3.0 cr.

(Fall) Prereq: PUBH 6600 or consent of instructor.

Health policy, advocacy, leadership and management is a multidisciplinary field of public health practice that is concerned with the delivery, quality and costs of public health services.

CHBH 6860 Master of Public Health Capstone Project

2.0 cr.

(Spring, Summer, Fall) Prereq: CHBH 6930 or concurrent; Restrictions: Consent of instructor

Independent project in which student demonstrates public health competencies. Includes public presentation of project.

CHBH 6930 Master of Public Health Practicum

2.0 cr.

(Spring, Summer, Fall) Prereq: CHBH 6100 and consent of instructor.

Theory and skills applied in a public health setting. Students must complete a minimum of 150 practicum field hours incorporating core competencies.

CHBH 6990 Thesis

1.0 –6.0 cr.

(Spring, Summer, Fall) Optional supervised research project for Master of Public Health candidates in Health Education. Content to be jointly determined by student and sponsoring professor.

GERONTOLOGY

GERO 5550 Grant Development and Administration

3.0 cr.

(Spring) Overview of proposal planning and grant development process. Application of skills in identifying funding options, program planning, proposal writing, budgeting and establishing controls for grant administration.

GERO 5600 Community Resources for the Elderly

3.0 cr.

(Fall) Community-based learning required. Review needs of older persons in the community and evaluate the continuum of long-term care resources available, service gaps, program models, and funding mechanisms.

GERO 6250 Psychosocial Aspects of Aging

3.0 cr.

(Spring) Later life issues are explored using an ecological approach that highlights the benefits and consequences of aging for the individual, family, and society.

GERO 6350 Social Policies of Aging

3.0 cr.

(Spring) This course covers social policy and policy making at federal, state, and local levels. The history and development of key social policies that affect older Americans are reviewed, as are developments in regard to policies benefiting the elderly population.

GERO 6400 Health Aspects of Aging

3.0 cr.

(Fall) Restriction: Credit will not be given for both CBHS 6626 and GERO 6400. CBHS 6626 cannot substitute for GERO 6400.

This course examines contemporary physical and mental health concerns of older adults. Course activities examine health and aging, and develop skills in presenting information to older adults, caretakers, academic peers and professionals who work with older adults.

HUMAN REHABILITATIVE SERVICES

HRSS 6100 Interpretation and Evaluation of Behavioral Research

3.0 cr.

(Spring) Understanding of applications of appropriate statistical techniques and necessary skills for interpretation and evaluation of research in human services. Emphasizes basic concepts, design and utilization of behavioral research.

STATISTICS AND RESEARCH METHODS

SRMS 6000 Introduction to Graduate Research

3.0 cr.

(Spring, Summer, Fall) Principles of research, design and analysis. Read and critique published research. Required of all first year graduate students except in those departments with substitutes. Taught every semester.