

HEALTH AND BEHAVIORAL SCIENCES

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Program in Health and Behavioral Sciences

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Overview

The mission of the health and behavioral sciences (HBSC) program is to apply social science theory and innovative research methods to critically address emerging issues in health. The program trains students to confront issues affecting the health of communities and populations by focusing on social determinants of health and diseases. These determinants can be more influential on population health than the health care system.

The program's overarching framework integrates social, cultural and biomedical perspectives to understand the underpinnings of health and the conditions essential for its creation and maintenance. Students and faculty conduct interdisciplinary research on topics including emerging diseases, maternal/child health, substance abuse, health disparities and global health. Graduates are innovative researchers, effective educators and leaders directly engaged in the practice of population health.

Population health is working to protect the environment, identifying sources of illness in population groups, controlling disease outbreaks, evaluating the economic impacts of changing demographics, developing interventions to promote healthy behavior, and producing health policy legislation. Population health draws from a broad array of disciplines, such as the social and behavioral sciences, sociology, anthropology, psychology, medicine, economics, statistics, epidemiology, law and biology, and each provides unique insights for the diverse set of activities involved in population health practice.

PhD Program in Health and Behavioral Sciences

The doctor of philosophy degree in health and behavioral sciences is rooted in the realization that our ability as a global society to overcome some of the most significant and intractable public health problems today rests on the willingness of biomedical and social science researchers to innovate across traditional disciplinary boundaries. Students are trained in theory from multiple disciplines and in both quantitative and qualitative research methods.

A master's degree is not provided by the health and behavioral sciences department.

A student's particular research focus constitutes a key part of his or her doctoral program. A range of possible foci exists, given the particular student's interest and faculty expertise.

Examples of HBSC research foci include:

- *Social determinants of health.* Such research interests include studies on the health-related influences of socioeconomic position, social and economic inequality, discrimination, social networks and support, social capital, work conditions and psychological states including stress.
- *Community health.* This area of research involves community health assessment; program design and evaluation; translation of evidence-based interventions to diverse populations and communities; participatory research and community mobilization; policy analysis and advocacy for health-related problems.
- *Biosocial ecology.* Within this area are studies of the interplay of biological (including physiological, genetic or others of the biomedical health sciences), social, cultural and environmental characteristics influencing maternal/infant health, exercise performance or susceptibility to disease.
- *Global health* topics include social, cultural and biomedical factors influencing transmission of disease and health disparities on an international (as well as national) scale.

Recent student research exemplifying such foci includes:

- perinatal stressors and fetal and child health in New Zealand
- gender differences in access to effective HIV care in sub-Saharan Africa
- the factors that shape whether minority owned businesses offer employee sponsored health insurance
- decision making around healthy food choices among school-aged children
- community representation in health organizations in Colorado
- race/ethnic and socioeconomic disparities in exercise, sleep, and nutrition behaviors among U.S. adults

Graduates of the HBSC program acquire skills that situate them for academic careers and leadership roles in population health. Depending upon a student's concentration, the successful graduate will gain expertise in research design and methods; social, cultural and biobehavioral determinants of health and disease; the structure and organization of health care systems; the contribution of individual, social and cultural factors for deciding health behaviors; and how guided change in health care systems may enhance quality, efficacy and access. The significance of these skills in addressing current complex health issues ensures that graduates will be in demand in a number of employment sectors ranging from community and public health organizations, to academic institutions, to nonprofit research organizations and to private health care settings.

Requirements for Admission

A master's or equivalent graduate degree, or substantial research experience, is recommended for admission to the PhD program. Students applying without prerequisites may be admitted, but will be required to complete appropriate courses before being permitted to complete the core curriculum.

In addition to the general admission requirements for graduate admission, the specific admission requirements for the PhD in health and behavioral sciences are as follows:

1. Knowledge from prior course work or vocational experience in *Epidemiology* (3 semester hours or the equivalent work experience).

The applicant should have an understanding of the basic concepts and methods of epidemiology, including measures of risk, mortality, the distribution of disease, the role of bias and confounders, and study design.

2. Demonstrated academic excellence as evidenced by strong undergraduate and graduate GPAs. Admission to the program is highly competitive.

The applicability of a student's prior course work will be decided by the program executive committee after reviewing the student's transcript and additional materials. If the student does not have the requisite educational background or GPA, the student may be admitted on a conditional or provisional basis and additional course work required in accordance with Graduate Education Policies and Procedures.

Prospective students should not be dissuaded from applying to the program if they do not meet all of the requirements for admission. In some cases, employment experience may be counted toward meeting a requirement. In other cases, students may be admitted conditionally upon their completion of a list of prerequisite courses that will be established at the time of admission. Students should be sure to address this issue in completing the graduate application by specifying the academic and vocational experience they possess that meets, in part or full, the admission requirements described above.

Master's Level Preparation for the Doctoral Program in Health and Behavioral Sciences

The program does not currently offer master's-level training in HBSC.

To Apply For Admission

At the Denver campus, all graduate applications are now submitted electronically. To begin the application process, go to the online admissions website. If you have any difficulties, call the administrative assistant at 303-315-7157. The program admits students only for the fall semester, which typically begins in mid- to late August. The deadline for the receipt of all application materials is **January 1** for admission the following August.

Applicants should invest considerable thought and effort in preparing their application. For instance, in the essay, applicants should provide information on:

1. their research interests and plans for graduate study;
2. how they see their research interests fitting into our program;
3. academic or professional research experiences including publications, theses, and research in progress;
4. academic and professional experiences in their proposed or related fields, including non-course education, teaching or other relevant employment, or other scholarly activities.

Applicants should also submit a brief writing sample that showcases their current skills in writing and analytical thinking. It is more important that the writing sample reflect their best work than that the topic match their planned area of study in our PhD program. Examples could include a class paper, a selection from a thesis, a lead or sole authored paper, an op-ed style essay, a policy brief, or other sample.

Applicants should provide a current resume or CV to support their application.

In addition to the required recommendation form, letters of recommendation are required from at least three individuals in a position to judge the applicant's ability to complete the program. Recommenders may be employers, colleagues or professors; however, the applicant should be sure that the letters address the quality of, and aptitude for academic work as well as personal characteristics and qualities.

The program does not require GRE scores, but applicants may submit their scores if they believe it will strengthen their application.

Financial Aid

There are five kinds of financial aid available: graduate student stipends/fellowships; tuition assistance; teaching assistantships; research assistantship positions funded by grants to specific program faculty; and the regular package of financial aid (primarily loans) available through the financial aid office.

Newly admitted, out-of-state, and students demonstrating outstanding scholastic achievement receive priority when assigning departmental sources of funding. Students interested in research assistantships should contact the individual faculty member with whom they wish to work regarding potential assistantship positions.

All other aid should be requested through the CU Denver Financial Aid Office (<https://www.ucdenver.edu/student-finances/financial-aid/>)

Advisors

Upon admission to the program, each student will be assigned a first-year advisor. The student or the faculty will then choose the faculty advisor who will guide the student through the core and elective course work. This faculty advisor may or may not be the student's dissertation advisor. The student selects his or her dissertation advisor and a minimum of three additional committee members who oversee the student's comprehensive examination and dissertation research.

Programs

- Health and Behavioral Sciences, PhD (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/health-behavioral-sciences/health-behavioral-sciences-phd/>)

Faculty

Professors:

Patrick Kreuger, PhD, University of Colorado
Ronica Rooks, PhD, University of Maryland College Park
Karen Spencer, PhD, Indiana University
David P. Tracer, PhD, University of Michigan
Sara Yeatman, PhD, University of Texas Austin

Associate Professors:

Jennifer Morozink Boylan, PhD, University of Wisconsin-Madison

Assistant Professors:

Emma Bunkley, PhD, University of Arizona
Hyeyoung Oh Nelson, PhD, University of California Los Angeles

Ivan Ramirez, PhD, Michigan State University

Faculty Affiliates:

Karen Hampanda, PhD, University of Colorado Denver

Professors Emerita:

Debbi Main, PhD, University of Colorado

Jean Scandlyn, PhD, Columbia University

Health and Behavioral Science (HBSC) Courses

HBSC 5999 - Topics in the Health and Behavioral Sciences (1-3 Credits)
An in-depth study of selected social science perspectives/theories and their applications to population health. Topics will vary from semester to semester, with a particular emphasis on current, salient population health problems. Prereq: Graduate standing or permission of instructor. Cross-listed with PBHL 4999. Max hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 6022 - Federal Data for Health Research & Policy (1-3 Credits)
Students will develop the knowledge and skills required to effectively use a variety of federal and statistical data sets for health research and policy analysis. Each week is devoted to one or two federal statistical datasets--data collection methods; why they are collected and what health issues they are designed to address; what population they represent and at what geographic scale. Most critically, students will be able to distinguish between questions that can be addressed with a public version of the data and questions that require restricted versions of the data that are protected by federal law and guidelines. Students will read, discuss and present research from various perspectives (Demography, Economics, Geography, Public Health, Sociology) using these data sources and apply their knowledge of data analysis from a variety of perspectives. Students will learn how to gain access to restricted data, how to protect individual anonymity with best practice disclosure avoidance techniques and will develop a research proposal for confidential research access. Note: Familiarity with SAS (preferable) or other statistical software such as SPSS or Stata and statistics or data analysis is recommended. Restriction: Restricted to degree-granting graduate programs. Cross-listed with ECON 6022, GEOG 5022, and SOCY 5022. Max hours: 3 Credits. Grading Basis: Letter Grade

Restriction: Restricted to degree-granting graduate programs

HBSC 6320 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with HBSC 7320, ANTH 6041. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 6500 - Women and War (3 Credits)

Appraise women's experiences and selected issues related to war-time service, including women's roles during war, gender-specific policies, military sexual trauma, reintegration, and effects of deployment on mental and physical health. Restriction: Restricted to Graduate and Graduate Non-Degree major. Term offered: summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Summer.

HBSC 6840 - Independent Study: HBSC (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Typically Offered: Fall, Spring, Summer.

HBSC 7001 - Colloquium Series in the Health and Behavioral Sciences (1 Credit)

Features presentations by core, affiliated and adjunct faculty; alumni; distinguished guest speakers; and students nearing completion of the dissertation. The goal is to expose students to cutting-edge applications of health-related social and biological science research and to introduce students to the research interests of core and affiliated HBS faculty, advanced students, and alumni who they might otherwise not have the opportunity to meet. Note: Required for ALL first and second year students but open to all graduate students and faculty. May be taken up to three times for credit. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Repeatable. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HBSC 7011 - Theoretical Perspectives (3 Credits)

Covers the following subject areas: philosophy and epistemology of the social and behavioral sciences as they are applied in public health and health care contexts; historical perspectives of Western biomedicine and public health; crosscultural perspectives on health systems; class, ethnic, and gender correlates of health and sickness; critical perspectives on Western health and health care models; and the structure and organization of health care systems. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7031 - Human Ecology and Environmental Adaptation (3 Credits)

Focuses on the interplay of biology, environment, culture, and behavior in the causes and exacerbation of disease. The course includes the following topics: health in environmental and evolutionary contexts; models of causation in biomedicine and other medical systems; individual, community, and population manifestations of health and disease; and biocultural interaction in disease process. Specific case studies drawn from contemporary health problems are used to illustrate in detail the nature of these processes. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7041 - Research Design and Methods in the Health and Behavioral Sciences I (3 Credits)

This course has four principal aims: (1) to provide students a working knowledge of research methodology as applied to field research efforts; (2) to enable students to apply research methodologies to areas of particular interest in the health and behavioral sciences; (3) to expose students to data manipulation techniques common to social science quantitative research; and (4) to teach basic research proposal development techniques. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Spring.

HBSC 7051 - Qualitative Research Design and Methods (3 Credits)

Much of the data collected in the social sciences is interview- and text-based. This course explores methods for collecting and analyzing these data and theoretical paradigms that underlie these methods. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HBSC 7061 - Quantitative Methods in the Health and Behavioral Sciences (3 Credits)

This course introduces students to multivariate regression methods - a set of statistical models that relate an outcome variable to a set of predictor variables. The course emphasizes understanding and applying regression models to address social science research questions. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Spring.

HBSC 7071 - Social and Behavioral Perspectives in Population Health (3 Credits)

Population health is an interdisciplinary or multidisciplinary field that focuses on the social and behavioral determinants of health. This course helps students to navigate the assumptions and perspectives of the various disciplines that do population health research. To achieve this, the course draws on literatures from diverse disciplines on topics including the social, economic, environmental, behavioral, political, and cultural factors that shape health, disease, and healthcare access and utilization. Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7111 - Applications of the Health and Behavioral Sciences (3 Credits)

The purpose of this course is to help students select and refine a dissertation research topic. Each student, through presentations and discussions of their work, will receive feedback from fellow students and the instructor, and will have an opportunity to improve written and oral presentation skills. Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher or permission of the instructor. Term offered: spring. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Admission to the Health and Behavioral Sciences program and HBSC 7041 with a B- or higher.

Typically Offered: Spring.

HBSC 7120 - Human Reproductive Technologies and the Law (3 Credits)

Examines the legal, ethical, and social issues that have come about with advances in assisted reproductive technologies (ART). Illustrates how lawyers, judges, bioethicists, legislators, and policy makers have addressed these issues. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7121 - Dissertation Proposal and Research (6-8 Credits)

Restriction: Restricted to Graduate Level Students admitted into the Health and Behavioral Sciences program. Department consent required. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 8.

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Additional Information: Report as Full Time.

HBSC 7161 - Quantitative Methods in Health&Behavioral Sciences II (3 Credits)

This course introduces students to advanced multivariate regression methods (e.g., generalized linear models, survival models, hierarchical models). This course emphasizes the application of advanced regression methods to test social and behavioral science theories related to health.

Prereq: Admission to the Health and Behavioral Sciences program or permission of the instructor. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to students admitted into the Health and Behavioral Sciences program (HBSC-PHD).

Typically Offered: Fall.

HBSC 7210 - Human Health and Environmental Pollution (3 Credits)

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ENVS 6210. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7235 - GIS Applications in the Health Sciences (3 Credits)

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Prereq: GEOG 4080 or GEOG 5080, public health background, or consent of instructor. Cross-listed with GEOG 4235, GEOG 5235. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 4080 or GEOG 5080

HBSC 7310 - Environmental Epidemiology (3 Credits)

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Restriction: Restricted to Graduate and Graduate Non-Degree majors. A basic statistics class is strongly recommended for optimal success. Cross-listed with ENVS 6230. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7320 - Human Genetics: Legal, Ethical and Social Issues (3 Credits)

Examines legal, ethical, and social issues that have come about with advances in human genetics. Topics include privacy, informed consent, discrimination, forensics, medical malpractice, and property rights. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with HBSC 6320, ANTH 6041. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7340 - Risk Assessment (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with ENVS 6200. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

HBSC 7360 - Toxicology (3 Credits)

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Restriction: Restricted to Graduate and Graduate Non-Degree majors. One year of college chemistry and one year of college biology are strongly recommended for optimal success. Cross-listed with ENVS 6220. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

HBSC 7400 - Topics in the Health and Behavioral Sciences (3 Credits)

A flexible seminar format for dealing with topics of special interest in the health and behavioral sciences. Topics to be considered vary from semester to semester. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: fall, spring, summer. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring, Summer.

HBSC 8990 - Doctoral Dissertation (1-10 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Admission to the Health and Behavioral Sciences program. Term offered: fall, spring, summer. Repeatable. Max hours: 30 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 30.

Additional Information: Report as Full Time.