Website (https://bouve.northeastern.edu/health-sciences)

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The Department of Health Sciences at the Bouvé College of Health Sciences at Northeastern University provides a unique, transdisciplinary setting that incorporates academics, research, and practice and seeks to prepare students for a wide range of career paths. We offer engaging undergraduate academic programs that enable students to major or minor in health sciences, as well as several graduate degree programs, including the Master of Public Health with Concentration in Urban Health, the Master of Science in Exercise Science with Concentration in Physical Activity and Public Health, the Doctor of Philosophy in Population Health, and several dual-degree programs offered in conjunction with the School of Pharmacy, the School of Law, the Exercise Science Program, the Health Informatics Program, and the Physician Assistant Program.

Our diverse faculty has expertise in the fields of population health, health disparities, nutritional epidemiology, social epidemiology, exercise science, medical sociology, public policy, personal health technologies, neurodevelopmental disorders, and mental health, among many more. Students have the opportunity to work side by side with faculty in conducting cutting-edge research in these fields. We also have research staff highly skilled in providing unique, specialized dietary assessment services.

In line with Northeastern's commitment to interdisciplinary research and urban engagement, we teach and work closely with many other schools, centers, and departments in the university, including the Institute on Urban Health Research (IUHR), the Center for Community Health Education Research and Service (CCHERS), the Social Science Environmental Health Research Institute (SSEHRI), and the Center for Health Policy and Healthcare Research (CHPHR), as well as community agencies and neighborhood health centers in the local Boston area and beyond.

Programs

Doctor of Philosophy (PhD)

- Population Health (http://catalog.northeastern.edu/graduate/health-sciences/health-sciences/population-health-phd)

Master of Science (MS)

- Exercise Science with Concentration in Physical Activity and Public Health (http://catalog.northeastern.edu/graduate/health-sciences/exercise-science-concentration-physical-activity-public-health-ms)

Master of Public Health (MPH)

- Master of Public Health (http://catalog.northeastern.edu/graduate/health-sciences/health-sciences/public-health-mph)

Dual Degree

- Law and Urban Public Health, JD/MPH (http://catalog.northeastern.edu/graduate/health-sciences/interdisciplinary/law-urban-public-health-jdmp)

- Pharmacy and Public Health, PharmD/MPH (http://catalog.northeastern.edu/graduate/health-sciences/pharmacy/pharmd-mph)

- Physician Assistant Studies and Master in Public Health, MS/MPH (http://catalog.northeastern.edu/graduate/health-sciences/physician-assistant/msmph)


- Public Health and Health Informatics, MPH/MS (http://catalog.northeastern.edu/graduate/health-sciences/health-sciences/public-health-health-informatics-mphms)

Graduate Certificate

- Exercise Science for Clinicians (http://catalog.northeastern.edu/graduate/health-sciences/exercise-science-clinicians-graduate-certificate)

Courses

Health Sciences Courses

EXSC 5200. Cardiopulmonary Physiology. 3 Hours.
Offers students an opportunity to gain an understanding of physiological principles of the cardiopulmonary system. This advanced course covers (1) the structure and functional operation and regulation of the cardiopulmonary system; (2) disease-associated physiological changes and cardiopulmonary dysfunction; (3) exercise-induced acute responses and physiological adaptations of the system and their applications to chronic cardiopulmonary diseases. Encourages students to integrate their knowledge of exercise and physical activity with cardiopulmonary health and fitness, as well as cardiopulmonary disease prevention and treatment. Restricted to graduate students in exercise science and undergraduate students minoring in exercise science.

EXSC 5210. Physical Activity and Exercise: Prescription, Measurement, and Testing. 3 Hours.
Studies the general principles of physical activity and exercise prescription, measurement, and testing. Offers students an opportunity to learn the fundamental concepts and techniques to measure physical activity, exercise, and related testing procedures through a hands-on approach. Topics include the use of questionnaires and activity monitors to measure physical activity; measurement of body composition, fitness, muscular strength, and endurance; and clinical exercise testing. The fundamental concepts of exercise prescription and use of measurement techniques taught in this course are applicable to careers in physical therapy, exercise physiology, and as a physician assistant. Requires prior completion of EXSC 4500 or equivalent undergraduate course or permission of instructor.

EXSC 5220. Advanced Exercise Physiology. 3 Hours.
Covers the advanced study of concepts, principles, and research in the field of exercise physiology. Discusses advanced concepts in the muscular/neuromuscular, cardiovascular, ventilatory, endocrine, and metabolic responses to exercise and exercise training. Specific study of the physiological control mechanisms regulating these systems are also addressed during periods of rest, acute exercise, and following chronic exercise training.
EXSC 5230. Physical Activity and Exercise: Effects on Musculoskeletal Health and Disease. 3 Hours.
Seeks to provide a foundation for understanding the benefits of physical activity and exercise and the detrimental effects of physical inactivity and sedentary behavior on musculoskeletal health. Studies the function/dysfunction of the musculoskeletal systems resulting in common/ uncommon disorders and the prevalence, etiology, and benefits of physical activity/exercise. Students apply previously learned exercise physiology principles, such as exercise prescription and neural and motor control adaptations, to physical activity and exercise. Discusses key physiological mechanisms underlying common/uncommon musculoskeletal disorders. Examines the preventive and beneficial effects of physical activity and exercise endorsed by the American College of Sports Medicine. Restricted to graduate students in exercise science and to undergraduate students minoring in exercise science.

EXSC 5976. Directed Study. 1-4 Hours.
Offers independent course work under the direction of members of the department on chosen topics. Requires submission of a written proposal to the program adviser prior to the intended semester. May be repeated without limit.

EXSC 5978. Independent Study. 1-4 Hours.
Offers independent work under the direction of members of the department on a chosen topic. Course content depends on instructor. May be repeated without limit.

EXSC 6202. Electrocardiography, Clinical Assessment, and Prescription. 3 Hours.
Focuses on the identification and management of chronic diseases. Offers students an opportunity to learn skills to interpret EKGs. Topics include cardiac electrophysiology, lead systems, dysrhythmia recognition and treatment, axis, infarction, ischemia, hypertrophy, and the effects of cardiovascular drugs and exercise on the EKG. Through case studies, students interpret exercise test results, prescribe exercise, and evaluate exercise programs for clinical conditions such as cardiovascular disease, pulmonary conditions, and metabolic diseases.

EXSC 6300. Internship in Exercise Science. 3 Hours.
Offers students an opportunity to obtain practical experience and to synthesize, integrate, and apply skills and knowledge learned in the exercise science curriculum in a professional environment. Field experiences are an important part of graduate education programs in exercise science. The student is expected to complete a minimum of 300 hours of supervised experience in a research or practice setting. May be repeated once.

EXSC 6400. Applied Research Methods. 3 Hours.
Studies how to conduct scientific research in exercise science. Offers students an opportunity to propose a research project and design appropriate methodology to complete the project. Includes discussions on developing research hypotheses, comparing study designs, selecting appropriate statistical analyses, and managing data collection. Incorporates interpretation of published research to support the proposed research. Students present their own research plans through scientific writing.

EXSC 6962. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

EXSC 7990. Thesis 1. 3 Hours.
Provides initiation to scholarly investigation. Requires students to submit a written research proposal, which includes the first three chapters of the thesis (introduction, review of literature, and methods and procedures) for approval by a thesis committee and to present an oral proposal at a seminar. May be repeated once.

HSCI 5230. Clinical Nutrition Applications in Health and Disease. 3,4 Hours.
Prepares health professionals to effectively communicate principles of diet and nutrition to their clients and the public. Covers public health promotion strategies, techniques used to teach diet and nutrition, and behavioral theories used in diet and nutrition intervention. Emphasizes clinical applications for the treatment of weight disorders, diabetes, cardiovascular disease, eating disorders, and nutrition in the life cycle.

HSCI 6962. Elective. 1-4 Hours.
Offers elective credit for courses taken at other academic institutions. May be repeated without limit.

PHTH 5120. Race, Ethnicity, and Health in the United States. 3 Hours.
Explores the role of economic, social, and individual factors in explaining racial and ethnic health disparities and examines intervention approaches to eliminate them. Topics include genetic and social constructions of race and ethnicity, measuring race and ethnicity, and the differences in prevalence and patterns of disease across groups; cultural and structural factors that affect healthcare delivery, such as discrimination, racism, and health status; and public health approaches to prevention and improving healthcare delivery.

PHTH 5202. Introduction to Epidemiology. 3 Hours.
Introduces the principles, concepts, and methods of population-based epidemiologic research. Offers students an opportunity to understand and critically review epidemiologic studies. Lectures and discussions aim to serve as a foundation for training in epidemiology, quantitative methods, and population-based health research. The course is a required introductory course for students in the Master of Public Health program and is appropriate for students who are interested in epidemiologic research. Students not meeting course restrictions may seek permission of instructor.

PHTH 5210. Biostatistics in Public Health. 3 Hours.
Offers public health students an opportunity to obtain the fundamental concepts and methods of biostatistics as applied predominantly to public health problems and the skills to perform basic statistical calculations. Emphasizes interpretation and comprehension of concepts. Topics include descriptive statistics, vital statistics, sampling, estimation and significance testing, sample size and power, correlation and regression, spatial and temporal trends, small area analysis, and statistical issues in policy development. Draws examples of statistical methods from the public health practice. Introduces use of computer statistical packages. Requires permission of instructor for students outside designated programs.

PHTH 5212. Public Health Administration and Policy. 3 Hours.
Offers students an opportunity to obtain practical knowledge concerning the planning, organization, administration, management, evaluation, and policy analysis of health programs. Surveys what we know and think about public health administration and policy and what we do in practice. Introduces the main components of public health policy and administration using notable conceptual frameworks and case studies. Requires permission of instructor for students outside designated programs.

PHTH 5214. Environmental Health. 3 Hours.
Introduces the field of environmental health, which encompasses concerns related to physical, built, and social environments. Discusses the tools used to study environmental exposures and diseases. Examines environmental health hazards, the routes by which humans are exposed to hazards, various media in which they are found, and disease outcomes associated with exposures. Offers students an opportunity to become familiar with methods used to conduct environmental health research and with the federal and state agencies responsible for protecting environmental health.
PHTH 5222. Health Advocacy. 3 Hours.
Seeks to educate students about the role of advocacy in public health 
while providing tools and support to address current healthcare issues. 
Provides information and theory about advocacy, education, and 
community organizing in public health practice and skills geared toward 
direct application. Covers various techniques related to developing 
and conducting an advocacy project within a community setting. 
Offers students an opportunity to develop, communicate, and refine a 
community-based advocacy program. Requires permission of 
instructor for students outside designated programs.

PHTH 5224. Social Epidemiology. 3 Hours.
Focuses on social epidemiology, which is defined as the study of the 
distribution and determinants of health in populations as related to the 
social and economic determinants of health. Includes theories, patterns, 
and controversies, as well as programs and policies that can be applied 
to address health inequalities. Readings include articles that situate one 
dimension of social epidemiology with articles addressing the empirical 
patterns, address prevailing theories and controversies regarding the 
causes of the inequalities, as well as address interventions or policies 
that may be applied to address the inequalities. Requires permission of 
instructor for students outside designated programs.

PHTH 5226. Strategic Management and Leadership in Healthcare. 3 
Hours.
Focuses on management challenges facing healthcare organizations, 
particularly community-based agencies and their role in the public 
healthcare delivery system. Introduces strategic thinking and leadership 
approaches that must be considered for managing a successful 
healthcare organization. Selected topics include strategic planning; 
organizational development and the barriers to organizational change; 
relationship management with key internal and external constituencies; 
marketing, financial management, and contract negotiation; evolving 
principles of health insurance and the changing role of the consumer; 
and the key elements for effective organizational leadership in today's 
evolving healthcare marketplace. When appropriate, outside experts 
are used to supplement readings, case studies, and lecture and discuss 
practical real-world challenges in leading various healthcare initiatives. 
Requires permission of instructor for students outside designated programs.

PHTH 5228. Advances in Measuring Behavior. 3 Hours.
Examines current and emerging methods of measuring human behavior 
known to impact human health. Discusses some of the most common 
instruments used to measure everyday behaviors and considers how 
emerging technologies may change how these behaviors are measured 
in the future. Explores the measurement of behaviors such as activities 
of daily living, dietary decision making, patterns-of-eating behavior, 
physical activity, sedentary behavior/posture, screen time, activity in the 
community, social connectedness, stress and stressful events, affective 
state, medication adherence, use of alcohol and addictive substances, 
risky behaviors, and physiological states that can be measured using 
wearable devices in the field (e.g., heart rate and blood pressure). This is 
a survey and project-oriented course.

PHTH 5230. Global Health. 3 Hours.
Presents an overview of global health issues and focuses on less 
economically developed countries. Covers measures of disease burden; 
demography of disease and mortality; Millennium Development Goals 
(under the auspices of the United Nations); infectious diseases such 
as HIV/AIDS, tuberculosis, and malaria and their prevention; vaccine 
utilization and potential implications; chronic diseases; tobacco- 
associated disease; nutritional challenges; behavioral modification; 
mother and child health; health human resources; and ethical issues in 
global health. LAW 7630 and PHTH 5230 are cross-listed.

PHTH 5232. Evaluating Healthcare Quality. 3 Hours.
Focuses on the conceptual and methodological foundations for 
evaluating the quality of care of healthcare providers—both individual 
providers and healthcare organizations. Aimed at students pursuing 
careers in public health, public policy, healthcare management, and the 
various health professions in the growing field of quality evaluation 
and improvement. Also designed to give healthcare providers an 
appreciation for how they may be evaluated. Examines scientific 
issues in the measurement of quality of care as well as key quality 
evaluation methods. Also covers the use of risk adjustment and other 
methodologies for comparing the quality of healthcare providers. 
Focuses on mechanisms that assess quality, including licensure, 
accreditation, and board certification.

PHTH 5234. Economic Perspectives on Health Policy. 3 Hours.
Uses basic economic concepts to illuminate the many factors that 
shape health, healthcare, and the healthcare system in the United States. 
Examines the role of these concepts in explaining the challenges faced 
in achieving three core goals of the healthcare system: increasing 
access, limiting cost, and improving quality. Explores how policy makers, 
market participants, and others can remedy access, cost, and quality 
deficiencies. Illustrates how economic concepts can be applied to the 
study of health and health behaviors.

PHTH 5236. Public Health Nutrition. 3 Hours.
Covers public health nutrition issues among individuals, communities, 
and populations living in urban settings. Emphasizes issues about 
volatile populations, such as ethnic minorities, women, children, 
and the elderly. Topics include food and nutrition science; evaluation 
of specific nutrition programs; and the understanding of the role of 
public health services, policies and legislation, funding, marketing, 
and communication strategies for the development, evaluation, 
implementation, and dissemination of nutrition programs. Briefly reviews 
international public health nutrition issues such as world hunger and food 
insecurity.

PHTH 5300. Project Management in Public Health. 1 Hour.
Presents principles of project management as applied to public health 
organizations and their programs. Offers students an opportunity to learn 
the components of the project management life cycle, including human 
resource components, material resources, and related components.

PHTH 5310. Budget Principles in Public Health. 1 Hour.
Details the public health revenue and funding environment, identifies 
key budget development functions, and describes the importance of 
utilizing the budget process for sound management of the programs. 
Public health programs in public agencies and nonprofit organizations 
require managerial skills to assure that programs are implemented 
efficiently and effectively. Funding for public health frequently comes 
from governmental revenue sources—federal and state budgets or 
grants from government or foundations. It is critical that the funds are 
utilized well and appropriate to the objectives of the agency and program. 
Advancing the environment for public health through effective budgeting 
and promotion of program impact is important to support the continued 
funding for public health. The course takes students through these 
topics and offers them the opportunity to gain the practical experience of 
developing a budget for a public health program as the central activity.

PHTH 5320. Grant Writing in Public Health. 1 Hour.
Explores the grant funding landscape, identifies different types of funders, 
and identifies potential funders. Offers participants an 
opportunity to develop their skills in grant writing and in reviewing grants, 
to develop a grant proposal, and to understand the submission and peer 
review process.
PHTH 5440. Community-Based Participatory Research: Environmental Health. 3 Hours.
Aims to prepare students for community-based participatory research (CBPR) through historical, theoretical, and methodological materials. Through visits with experienced CBPR researchers, studies the need for, benefits of, and challenges to community-grounded research. Uses the lens of local environmental justice issues to emphasize the importance of CBPR to environmental health and justice work. Offers students an opportunity to engage in hands-on labs, to develop research tools to study their own community as students, to critically analyze CBPR cases, and to develop their own strategic plan to research a pressing environmental health and justice issue through CBPR. Introduces students to critical studies of science and technology.

PHTH 5540. Health Education and Program Planning. 3,4 Hours.
Focuses on underlying concepts of health education and explores current health education issues that require intervention. Covers program planning models and theories used in health education. Offers students an opportunity to develop a working knowledge of the planning process for health education through the analysis of case studies and by creating a program plan to address a health issue of their choice. Provides health science students with preparation for HSCI 4710, in which they may choose to implement and evaluate their program plan.

PHTH 6200. Principles and History of Urban Health. 3 Hours.
Focuses on the aspects of urban development and life that impact the health and well-being of city residents. Offers students an opportunity to learn about the impact of migration patterns, built environments, occupational stratification, and other cultural and community contextual factors that impact health status and healthcare access. Examines the level of overall health and healthcare found in urban populations, particularly the urban poor, and the disproportionate impact on racial and ethnic minorities in the United States and elsewhere. Considers public policy approaches for addressing the unique health issues of urban areas. Examines urban health issues both from a national and international perspective. Requires permission of instructor for students outside designated programs.

PHTH 6202. Intermediate Epidemiology. 3 Hours.
Offers an intermediate-level course covering key principles, concepts, and methods of population-based epidemiologic research. Topics include observational study designs, measures of disease occurrence and association, validity and bias, confounding, effect modification, multivariate analysis for stratification and adjustment, critical appraisal and meta-analysis, mediation analysis, missing data analysis, and concepts and methods for strengthening causal inference. Offers graduate students unique opportunities to engage in practical applications, including critical reviews of published epidemiologic journal articles, and to conduct hands-on analyses of empirical datasets using SAS statistical software. Designed to serve as a foundation for further advanced training in specialized branches of epidemiology, quantitative methods, and epidemiologic research.

PHTH 6204. Society, Behavior, and Health. 3 Hours.
Explores individual, interpersonal, and social influences on health. Offers students in public health an opportunity to learn the application of the social and behavioral sciences. Examines foundations of public health, including prevention and the prevention paradox, theories of disease causation, and public health ethics. In addition, multilevel influences on health are examined, including behavioral theories and social determinants of health. Throughout the semester, attention is paid to disparities in health. Finally, we examine strategies to reduce health disparities, such as education, interventions, and policy-level changes, and discuss their relative effectiveness. Requires permission of instructor for students outside designated programs.

PHTH 6208. Urban Community Health Assessment. 3 Hours.
Offers students an opportunity to develop a basic understanding of the complex public health issues confronting urban communities across the nation. Uses a community organization and development framework for public health practice. Seeks to provide skills, tools, and experiential learning opportunities that result in community assessments that may be used in public health planning, programming, and policy. Covers key principles and methods for conducting community health assessments utilizing a range of quantitative and qualitative methods, including community epidemiology, major data sets, surveillance data, behavioral risk and other population-based surveys, as well as other primary and secondary data sources. Includes collaborative and interactive exercises, including self- and group reflection, Internet and contemporary media exploration, and in-class discussions. Requires permission of instructor for students outside designated programs.

PHTH 6210. Applied Regression Analysis. 3 Hours.
Builds upon the fundamental concepts and methods of biostatistics with applications to health disciplines. Topics include hypothesis testing, analysis of variance, linear regression, multiple regression, and logistic regression. Examples and readings are drawn from the public health literature. The SAS statistical software package is introduced and used throughout the course.

PHTH 6320. Qualitative Methods in Health and Illness. 3 Hours.
Discusses qualitative inquiry in general and specifically in topics related to public health and experiences of self, health, illness, and the body. Qualitative research aims to achieve in-depth and contextual understanding of people, culture, and societies and usually employs texts, interviews, published materials, images, and focus group discussions as sources of data. The course integrates theoretical and methodological readings and discussions with designing and conducting a qualitative project. Offers students an opportunity to understand meanings of health, illness, and the body in a variety of "local worlds" and reflect on their importance for informing policy, public health, research, and practice. Requires prior completion of one undergraduate- or graduate-level course in research methods.

PHTH 6350. Social Survey Research Methods. 3 Hours.
Offers an overview of social survey research methodology. Social surveys are widely used in the health and social sciences and they are sources of many important discoveries. Covers how theory and research objectives drive key decisions about the survey design process—which include sampling, measurement, and modes of data collection—in a framework that minimizes error at each step. Uses materials developed by leading academic social survey researchers and organizations as models for how students can use existing surveys and design their own surveys to accomplish their research goals. There are many lively debates about best practices as researchers adapt to new technologies, falling response rates, ethical quandaries about engaging human subjects, and increasing research costs.

PHTH 6400. Principles of Population Health. 1. 3 Hours.
Seeks to provide students with historical background and methodological and critical-thinking tools needed to perform high-quality, interdisciplinary research in population health. Using a problem-solving and interdisciplinary framework, offers students an opportunity to gain the skills to develop research hypotheses, design research strategies, analyze data to test study hypotheses, and communicate their findings both orally and in writing. Also offers students an opportunity to gain experience in research methodology and application of basic methods for population health research, including epidemiological and biostatistical concepts. Finally, students demonstrate their mastery of these skills through problem sets and through written proposals that include communication of preliminary data.
and faculty advisors. 

are student-led and designed in consultation with community partners 

management, service delivery, or evaluation project. Capstone projects 

program planning, program implementation, policy development, 

practice experiences in a major research, program planning, program 

implementation, policy development, management, service delivery, 

or evaluation project. Student-led and designed in consultation with 

community partners and faculty advisors, seeks to support students in 

the implementation and completion of their projects. 

PHTH 6910. Public Health Capstone. 3 Hours. 

Offers students an opportunity for scholarly work on-site in a range 

diverse public health settings reflective of their particular urban 

health focus. Students have an opportunity to integrate their theory and 

practice experiences in a major research, program planning, program 

implementation, policy development, management, service delivery, 

or evaluation project. Constitutes the second of three public health capstone courses. Students 

work on-site in a range of diverse public health practice settings reflective 

of their particular urban health focus. Offers students an opportunity 

to integrate their theory and practice experiences in a major research, 

program planning, program implementation, policy development, 

management, service delivery, or evaluation project. Capstone projects 

are student-led and designed in consultation with community partners 

and faculty advisors.