

The MS Program in Exercise and Health Sciences

Department of Exercise and Health Sciences University of Massachusetts Boston

Overview

The Master of Science program offers advanced study in exercise and health sciences (EHS). The program offers two concentrations: (1) Applied Exercise Physiology (AEP) and (2) Physical Activity and Health Promotion (PAHP).

Depending on the concentration chosen, students fulfill program requirements by: (1) completing a research thesis or (2) designing and completing a practicum project.

Our program provides students with the unique opportunity to study issues regarding exercise science and physical activity related health promotion in a diverse urban and multicultural environment. The program's goals will enhance the career growth potential of our students, whether they choose to apply their knowledge and skills for pursuit of an advanced degree, a research-related career, or a professional position in the health field (e.g., exercise physiologist, worksite wellness director).

A wide range of courses and faculty research areas complement the core courses' focus on applied exercise physiology, advanced health fitness and nutrition assessment and advanced physical activity and health. Students are encouraged early in the program to choose a faculty mentor with whom they wish to study. Faculty research interests include cardiovascular, neurovascular and muscular exercise physiology, physical activity epidemiology, physical activity for persons with disabilities, physical activity and health promotion in clinical and community settings, and obesity treatment and prevention.

Our Program Prepares Students

To pursue careers in research or to become practitioners and leaders in areas that include (but are not limited to):

- Exercise Physiologist
- Fitness Director
- Health Promotion Practitioner
- Research Coordinator/Project Director
- Research Scientist
- Worksite Wellness Director

Curriculum Requirements

The program is designed to take 2 years of full-time study, and students are required to complete 33 graduate credits (30 core credits and 3 elective credits for the Thesis option; 27 core credits and 6 elective credits for the Non-Thesis option).

The 33-credit hour master's degree program encompasses courses that are shown in the sample curriculum.

Sample Courses and Curriculum

The following shows a sample semester progression for our program.

First Semester (9 credits)

- EHS 630 Advanced Health, Fitness, and Nutrition Assessment (3 cr)
- EHS 685 Applied Exercise Physiology (3 cr)
- NURSNG 760 Introduction to Biostatistics (3 cr)

By the end of the first semester, each student should identify a major faculty advisor who will chair the student's thesis committee or practicum advisor with whom they will conduct their research or practicum. The major faculty advisor will help the student identify an area of focus, advise the student on relevant coursework for their elective credits, and guide and mentor the student in their selected option.

Second Semester (9 credits)

- EHS 625 Quantitative Research Methods (3 cr) (for Thesis) OR EHS 650 Obesity and Weight Management (3 cr) (for Non-Thesis)
- EHS 655 Advanced Physical Activity and Health (3 cr)
- EHS 680 Clinical Exercise Physiology (3 cr) (for AEP) OR EHS 670 Designing Exercise and Health Promotion Interventions (3 cr) (for PAHP)

Third Semester (9 credits)

- EHS 682 Exercise Metabolism (3 cr) (for AEP) OR EHS 656 Advanced Nutrition and Health (3 cr) (for PAHP)
- EHS 690 Proposal Development (3 cr) (for Thesis) or EHS 635 Program and Project Management (3 cr) (for Non-Thesis)
- EHS elective (3 cr)

During their third semester, each student's faculty advisor will help identify at least two additional faculty to comprise the student's thesis committee. The committee, once approved by the Graduate Program Director and the Dean of Graduate Studies, guides the student in completing their thesis as well as in the oral defense of their thesis.

Fourth Semester (6 credits)

- EHS 699 Thesis (6 cr) (for Thesis)
- EHS 698 Practicum (3 cr) (for Non-Thesis)

Completing the Thesis Option

The student who elects this option intends to pursue further academic or scientific study in the field. The student will identify a thesis topic in consultation with their major faculty advisor and thesis committee,

consisting of the major advisor and two other faculty members selected for their expertise relative to the student's topic. The thesis option requires the student to demonstrate their ability to carry out a research project in two stages. The thesis proposal stage involves a literature review, writing objectives and aims, study design, and a written and oral presentation of the proposed research (3rd semester).

The second stage of the thesis involves conducting the research, analyzing the results, writing the thesis, and passing an oral defense (4th semester). The final thesis product will be in a manuscript-ready format eligible for submission to a peer-reviewed journal. The student's major faculty advisor will coordinate the student's oral defense of the thesis.

Completing the Non-Thesis Option

The student who elects this option wishes to strengthen their scientific knowledge and management/leadership skills in the workplace. This option provides students with an opportunity to acquire and apply the experiential skills necessary to prepare students for entry into the health field (e.g., exercise physiologist, work site wellness director). The practicum is designed to support students' translation of knowledge acquired in EHS courses to hands-on, skilled based practice. One of the main objectives is to complete a work product such as, but not limited to, participation in the development and/or implementation of a site based evaluation, or development and presentation of evidence-based training materials.

In close consultation with the course instructor and site advisor, the student is placed in an EHS Department approved site to complete a minimum of 100 hours of experience (4th semester). The student's faculty advisor will coordinate the student's oral presentation of the capstone project (4th semester).

The MS Program in Exercise and Health Sciences

Faculty and Area of Expertise

Faculty in the Department of Exercise and Health Sciences are nationally recognized for their cutting-edge work in areas such as Exercise Physiology, Motor Control, Behavioral Science, and Public Health.

Tracy Baynard, PhD, Syracuse University: cardiovascular exercise physiology in special populations.

Rachel Drew, PhD University of Birmingham: nervous system control of cardiovascular function during exercise in populations with elevated cardiovascular risk.

Bo Fernhall, PhD, Arizona State University: Cardiovascular exercise physiology, influence of inflammation and exercise on heart rate, blood pressure and blood flow control in special populations.

Phil Gona, PhD Boston University: statistical methods for epidemiology, cardiovascular and infectious diseases epidemiology, time-to-event analysis, meta-analysis, global health.

Azizah J. Jor'dan, PhD, University of Minnesota: balance control in aging and age-related disease, neurophysiology during dual-task walking and standing; non-invasive interventions (e.g., brain stimulation, exercise) to improve brain function and/or balance control.

Melissa Linden, PhD, University of Missouri-Columbia: understanding how lifestyle, including diet modification and exercise, alter metabolism and mitigate obesity and obesity-related diseases and how exercise and pharmaceuticals interact and affect exercise capacity, type 2 diabetes, and non-alcoholic fatty liver disease.

Ana Cristina Lindsay, DrPH, Harvard School of Public Health: child health and nutrition, childhood obesity prevention, community-based research, program evaluation, minority health, global health with a focus on Latin America.

Laurie Milliken, PhD, University of Arizona: body composition assessment, obesity prevention, obesity treatment.

Heidi Stanish, PhD, Oregon State University: physical activity promotion for individuals with disabilities.

Phil Troped, PhD, University of South Carolina: physical activity and public health, environmental determinants of physical activity, use of accelerometers and GPS devices in determinants and intervention studies.

Richard Viskochil, PhD, University of Massachusetts Amherst: exercise training, sedentary behavior, and diabetes risk/prevention in cancer patients and survivors.

Jessica Whiteley, PhD, Virginia Polytechnic Institute and State University: clinical health psychology, health promotion interventions

Julie Wright, PhD, University of Rhode Island: computer-assisted self-care interventions, childhood obesity prevention and treatment.

Huimin Yan, PhD, University of Illinois at Urbana Champaign: The interaction of diet and exercise on cardiovascular function in health,

disease, and disability throughout the human lifespan.

Tongjian You, PhD University of North Carolina Greensboro: metabolic and physical dysfunctions associated with obesity and aging, lifestyle interventions using physical exercise, mind-body exercise and new technology.

Kai Zou, PhD, University of Illinois at Urbana-Champaign: Molecular and cellular mechanisms regulating skeletal muscle metabolism with obesity, Type 2 Diabetes and exercise.

Facilities

Our faculty have access to laboratory facilities that provide support in dedicated laboratory spaces including:

- Exercise and Health Sciences Teaching Lab
- Cardiovascular Exercise Physiology Lab
- Integrative Human Physiology Lab
- Integrative Muscle Physiology Lab
- Neurophysiology of Balance in Aging Lab
- Neurovascular Exercise Physiology Lab

The EHS Teaching Lab is an approximately 1200 square-foot space that is fully equipped with exercise physiology and fitness assessment equipment that is used for teaching and research projects.

The Cardiovascular Exercise Physiology Lab is in an approximately 200 square-foot enclosed room. It includes state-of-the-art equipment that assesses various aspects of cardiovascular function.

Integrative Human Physiology Lab (IHPL; ~400 ft²) assesses physiological function and integrated control mechanisms in humans, using various stressors, such as exercise or lower body negative pressure, with state-of-the-art equipment.

The Integrative Muscle Physiology Lab is a 500- square-foot lab well-equipped with basic and advanced laboratory equipment necessary to conduct biochemical and molecular analyses of human and animal tissue.

The Neurophysiology of Balance in Aging Lab is approximately 400 square-foot enclosed room. The lab includes wireless equipment that can monitor, assess, and/or elicit changes in brain hemodynamics, balance, and gait.

The Neurovascular Exercise Physiology Lab is in an approximately 200 square-foot enclosed room and equipped with state-of-the-art equipment to noninvasively measure beat-to-beat kidney blood flow, blood pressure, and heart rate.

Admission Requirements

MS applicants must have a bachelor's degree in exercise science, nutrition, or a related field from a nationally accredited college or university or its international equivalent. The admission committee will admit applicants with degrees in other disciplines at their discretion.

The Graduate Program Director will review coursework from other graduate programs on a case-by-case basis to determine transferability of credits up to a maximum of

6 credits.

Preference will be given to applicants whose transcripts show attainment of a minimum overall GPA of 3.0 and completion of the following courses (also with a minimum GPA of 3.0), taken within the past seven years: one year of anatomy and physiology with lab, exercise physiology with lab, chemistry with lab, fitness assessment, and statistics.

Students may be required to address missing coursework as a condition of acceptance.

The Application Process

Applicants are strongly encouraged to apply by the priority deadline of February 1. Applications will be accepted through June 1, and must be submitted through GradCAS, the Centralized Application Service (CAS™) for graduate programs.

A completed application includes:

- Completed application form and required fee.
- Official transcripts for all undergraduate and/or graduate programs attended.
- English Language Proficiency Test Scores (e.g., TOEFL, IELTS), if applicable.
- Two letters of recommendation from persons with whom the applicant has had extensive contact.

Applicants must also submit a typed two-part Statement of Interest and Intent:

- Part One: The applicant's reasons for wishing to pursue graduate study (at least 300 words)
- Part Two: The applicant's specific interests and kind of work he or she will pursue in the field. The applicant should indicate which option (Thesis or Non-Thesis) they may select to complete the program.

To request application materials or for more information, please visit <https://admissions.umb.edu/graduate-students/apply>.

For Questions:

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