

The MS Program in Exercise and Health Sciences

Department of Exercise and Health Sciences University of Massachusetts Boston

Overview

The Master of Science program in Exercise and Health Sciences (EHS) offers advanced study in two concentrations: **Applied Exercise Physiology (AEP)** and **Physical Activity and Health Promotion (PAHP)**. Depending on the concentration selected, students fulfill program requirements by either completing a research thesis or designing and completing a practicum project.

Our program provides students with a unique opportunity to explore exercise science and physical activity-related health promotion within a diverse, urban, and multicultural environment.

The newly modified curriculum offers

- **Tailored, concentration-based courses** that align closely with students' professional interests and career goals.
- **Extensive practical experiences** that provide strong preparation for diverse careers in the exercise and health sciences.

A broad range of coursework and faculty research areas enrich the program's core focus on applied exercise physiology and health promotion. Students are encouraged to select a faculty mentor early in the program to help guide their academic and professional development. Faculty research interests span cardiovascular, neurovascular, and muscular exercise physiology; physical activity epidemiology; physical activity for aged population, children, and cancer survivors; health promotion in clinical and community settings.

Our Program Prepares Students

To become practitioners, researchers, and leaders in exercise and health sciences areas that include (but are not limited to):

- Exercise Physiologist
- Health and Fitness Director
- Health Promotion Practitioner
- Clinical Research Coordinator/Project Director
- Research Associate/Laboratory Manager
- Advanced study in PhD or professional programs (e.g., physical therapy, medicine, public health)

Curriculum Requirements

Our program is designed to be completed in two years of full-time study. Students are required to complete **33** graduate credits, with options based on their chosen concentration. Course requirements differ based on whether students are pursuing AEP or PAHP concentration. Students are also expected to take three concentration-specific courses and elective courses along with a practicum or thesis.

Thesis Option:

- 30 core credits
- 3 elective credits

Non-Thesis Option:

- 27 core credits
- 6 elective credits

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

First Semester (9 credits)

- EHS 630 Advanced Fitness Assessment- (3cr)
- EHS 685 Advanced Exercise Physiology-(3cr)
- NU 760 Biostatistics-(3cr)

By the end of the first semester, each student is expected to identify a faculty advisor who will either chair their thesis committee or serve as their practicum advisor, depending on the student's chosen track. The faculty advisor will play a key role in helping the student define an area of academic or research focus, provide guidance on selecting appropriate elective coursework, and offer mentorship and support throughout the completion of the thesis or practicum.

Second Semester (9 credits)

- EHS 635-Program and Project(non-thesis) or
- EHS 625- Quantitative Research Methods (Thesis) -(3cr)
- Concentration course #1- (3cr)
- EHS Elective #1(thesis only takes one)- (3cr)

Third Semester (9 credits)

- Concentration course #2- (3cr)
- Concentration course #3- (3cr)
- EHS Elective*-(3cr)

During their third semester, each student will work with their faculty advisor to identify the courses they will take in their final semester. Students on the thesis track will also be required to identify at least two additional faculty members to serve on their thesis committee. Once the committee is approved by the Graduate Program Director and the Dean of Graduate Studies, it will provide ongoing support and guidance as the student completes their thesis and prepares for a successful oral defense.

Fourth Semester (6 credits)

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

Completing the Thesis Option

Students who elect the **thesis option** typically intend to pursue further academic or scientific study in the field. In consultation with their major faculty advisor, the student will identify a thesis topic and form a thesis committee composed of the advisor and two additional faculty members whose expertise aligns with the selected topic.

The thesis process occurs in two stages. During the third semester, the student will complete a thesis proposal, which includes conducting a literature review, formulating research objectives and aims, designing the study, and delivering both a written and oral presentation of the proposed research.

In the fourth semester, the student will carry out the study, analyze the results, and prepare a final thesis manuscript that is suitable for submission to a peer-reviewed journal. The process concludes with an oral defense, coordinated by the student's major faculty advisor, and evaluated by the full thesis committee.

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 partnership site to complete a minimum of 200 hours of experience (4th semester). The EHS practicum coordinator will coordinate the student's oral presentation of the practicum 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.

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.

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

Elisa Ogawa, PhD, University of Massachusetts Boston: Optimizing mobility, cognition, and functional independence in older adults through exercise and technology-driven interventions.

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

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

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.

Nan Zeng, PhD, University of Minnesota: Physical activity and health promotion with a focus on increasing activity levels among inactive populations, especially children, through evidence-based and technology-enhanced (eHealth/mHealth) interventions.

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 has 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, kinesiology, nutrition, or a related field from a nationally accredited college or university or its international equivalent. The admission committee will review and 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 15, and must be submitted through https://go.umb.edu/portal/gr_app

A completed application includes:

- Completed application form and required fee.
- Official transcripts for all undergraduate and/or graduate programs attended.
- Two letters of recommendation from persons with whom the applicant has had extensive contact.
- Applicants must also submit a 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.

- English Language Proficiency Test Scores (e.g., TOEFL, IELTS), if applicable.

To request application materials or for more information, please visit

https://go.umb.edu/portal/gr_app

For Questions:

For questions and more information, please email: GradEHS@umb.edu

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