

Human Movement and Rehabilitation Sciences, PhD

The Department of Physical Therapy, Movement, and Rehabilitation Sciences offers a PhD program in human movement and rehabilitation sciences. The PhD program seeks to prepare graduates to conduct independent (original) basic, translational, and applied research with the goal of creating new knowledge about neuromotor mechanisms and methods of restoring and maximizing human functional capacity and well-being across the life span. The program emphasizes core competencies in motor control and motor learning, movement measurement and analysis, knowledge translation theory, and the use of traditional and emerging technologies. The program is based on the integration of core skills and concepts across the multiple disciplines that are associated with human movement and rehabilitation sciences, coupled with the acquisition of research methodology, analyses, and skills, as well as specialization within specific areas of human movement and rehabilitation research.

The program showcases the unique faculty and research laboratories in human movement and rehabilitation sciences, as well as highly ranked programs in Bouvé College of Health Sciences, the College of Science, and the College of Engineering. Northeastern is dedicated to advancing the field of human movement and rehabilitation sciences and translating research from bench to clinic. Students benefit from our new research laboratories utilizing state-of-the-art movement and rehabilitation methods including virtual reality, ultrasound, neuroscience, neurophysiology, robotics, and movement measurement technologies.

Advanced Entry

Based on a student's background in their preceding master's or clinical doctorate degree, core coursework and total hours for the advanced entry program may vary. The graduate program director will consider all the program requirements and applicants' previous experience when advising students on a plan of study. All students, whether entering from traditional or advanced PhD pathways, will complete the milestones as documented in the curriculum.

Please visit Bouvé College Learning Outcomes (<https://bouve.northeastern.edu/learning-outcomes/>) for the specific student learning outcomes for this program.

Program Requirements

- Concentrations and course offerings may vary by campus and/or by program modality. Please consult with your advisor or admissions coach for the course availability each term at your campus or within your program modality.
- Certain options within the program may be *required* at certain campuses or for certain program modalities. Please consult with your advisor or admissions coach for requirements at your campus or for your program modality.

Milestones

All students, whether entering from traditional or advanced PhD pathways, will complete the following milestones:

- Annual review
- Qualifying exam
- Dissertation committee
- Dissertation proposal
- Dissertation defense

Core Requirements

Code	Title	Hours
Seminar		
Students must enroll in the following course every semester until start of the dissertation phase of the program (the course is repeatable two times for 1 semester hour and four times for 0 semester hours):		2
PT 7030	Interdisciplinary Seminar in Rehabilitation Science	
Rehabilitation Science and Human Movement		
PT 7001	Core Concepts in Rehabilitation Science and Research	3
PT 7005	Experimental Design and Applied Statistics	4
PT 7020	Technologies in Movement and Rehabilitation Science	4

Electives

Code	Title	Hours
Complete 19 semester hours from the list below chosen in consultation with a faculty advisor.		19
Some courses may require prerequisite coursework.		

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BIOE 5235	Biomedical Imaging
BIOE 5800	Systems, Signals, and Controls for Bioengineers
BIOE 5810	Design of Biomedical Instrumentation
BIOL 5601	Multidisciplinary Approaches in Motor Control
CAEP 6326	Behavioral Concepts and Principles
EXSC 5210	Physical Activity and Exercise: Prescription, Measurement, and Testing
HLTH 5450	Healthcare Research
IE 5630	Biosensor and Human Behavior Measurement
IE 6500	Human Performance
IE 7315	Human Factors Engineering
ME 5250	Robot Mechanics and Control
ME 5659	Control Systems Engineering
ME 5665	Musculoskeletal Biomechanics
ME 7247	Advanced Control Engineering
PHTH 5202	Introduction to Epidemiology
PHTH 5210	Biostatistics in Public Health
PHTH 6202	Intermediate Epidemiology
PHTH 6210	Applied Regression Analysis
PHTH 6440	Advanced Methods in Biostatistics
PT 5133	Kinesiology
PT 5138	Neuroscience
PT 5150	Motor Control, Development, and Learning
PT 5209	Neurological Rehabilitation 1
PT 5321	Applications of Biomechanics in Human Function and Movement
PT 6221	Neurological Rehabilitation 2
PT 7010	Measurement and Analysis of Human Movement and Bioinstrumentation

Dissertation

Code	Title	Hours
PT 9990	Dissertation Term 1	
PT 9991	Dissertation Term 2	

Program Credit/GPA Requirements

32 total semester hours required

Minimum 3.000 GPA required

Advanced Entry Program Requirements

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Milestones

Annual review

Qualifying exam

Dissertation committee

Dissertation proposal

Dissertation defense

Core Requirements

Based on a student's background in their preceding master's degree, core coursework and total hours for the advanced entry program may vary. The graduate program director will consider the following program requirements when advising students on a plan of study.

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Seminar		
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Rehabilitation Science and Human Movement		
PT 7001	Core Concepts in Rehabilitation Science and Research	3
PT 7005	Experimental Design and Applied Statistics	4
PT 7020	Technologies in Movement and Rehabilitation Science	4

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PT 7010	Measurement and Analysis of Human Movement and Bioinstrumentation	

Dissertation

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GPA Requirement

A minimum 3.000 GPA required