Human Movement and Rehabilitation Sciences, MS (Boston)

A strong global need exists for interdisciplinary, innovative, and translational research and practice directed toward improving quality of life and participation of all people in our communities. To meet this need, we offer a novel Master of Science in Human Movement and Rehabilitation Sciences. Human movement and rehabilitation sciences encompasses a broad range of topics including sports performance, functional assessments, occupational biomechanics and ergonomics, motor control and learning, neuroscience, musculoskeletal disorders, orthopedics, aging, assistive technology, injury prevention and rehabilitation, communication sciences, speech, and early development.

The objective of this program is to prepare graduates to assist in advancing basic, translational, and applied research, as well as practice in human movement and rehabilitation sciences. 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 skills and tools, and specialization within specific areas and concentrations in AI applications and exercise science.

The Master of Science in Human Movement and Rehabilitation Sciences program is housed in the Department of Physical Therapy, Movement, and Rehabilitation Sciences, offering excellent collaborative teaching and research programs across the departments and school of the Bouvé College of Health Sciences, the Khoury College of Computer Sciences, the College of Engineering, and the College of Science. The 12-month program requires 32 semester hours of required and elective courses, including 4 semester hours devoted to the capstone project.

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

Program Requirements

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
Seminar		
PT 7030	Interdisciplinary Seminar in Rehabilitation Science	1
Rehabilitation Science and Human Movement		
Complete one of the following:		4
PT 5170 and PT 5171	Motor Control and Lab for PT 5170	
PT 5321	Applications of Biomechanics in Human Function and Movement	
Complete the following:		
PT 6230	Capstone Project: Human Movement and Rehabilitation Sciences	4
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

Concentration or Electives Option

A concentration is not required. Students may complete the electives option in lieu of a concentration.

- AI Applications (p. 1)
- Exercise Science (p. 2)
- Electives Option (p. 2)

Program Credit/GPA Requirements

Minimum 32 total semester hours required
Minimum 3.000 GPA required

CONCENTRATION IN AI APPLICATIONS

Code	Title	Hours
Complete a total of 12 semester hours for this concentration.		
HLTH 5800	AI Across the Health Sciences	4
Complete 8 semester hours from the following:		8
ARTG 6460	Human-Centered AI	

CS 5047	Exploring AI Trends and Tools
PHIL 5110	Responsible AI

CONCENTRATION IN EXERCISE SCIENCE

Code	Title	Hours
Complete 12 semester hours from the following:		12
EXSC 5200	Cardiopulmonary Physiology	
EXSC 5210	Physical Activity and Exercise: Prescription, Measurement, and Testing	
EXSC 5220	Advanced Exercise Physiology	
EXSC 5230	Physical Activity and Exercise: Effects on Musculoskeletal Health and Disease	
EXSC 5240	Clinical Nutrition Applications in Health and Disease	
EXSC 6202	Electrocardiography, Clinical Assessment, and Prescription	
EXSC 6400	Applied Research Methods	

ELECTIVES OPTION

Code	Title	Hours
Some courses may require prerequisite coursework.		
Complete 12 semester hours from following (students must petition to take electives outside the approved list):		12
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 5200	Cardiopulmonary Physiology	
EXSC 5210	Physical Activity and Exercise: Prescription, Measurement, and Testing	
EXSC 5220	Advanced Exercise Physiology	
EXSC 5230	Physical Activity and Exercise: Effects on Musculoskeletal Health and Disease	
EXSC 5240	Clinical Nutrition Applications in Health and Disease	
EXSC 6202	Electrocardiography, Clinical Assessment, and Prescription	
HLTH 5410	Introduction to Statistics in Health and Behavioral Science	
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 6202	Intermediate Epidemiology	
PHTH 6210	Applied Regression Analysis	
PHTH 6440	Advanced Methods in Biostatistics	
PT 5138	Neuroscience	
PT 5150	Motor Control, Development, and Learning	
PT 5209	Neurological Rehabilitation 1	
PT 5410	Functional Human Neuroanatomy	
PT 6221	Neurological Rehabilitation 2	