Human Factors, MS

Website (https://mie.northeastern.edu/academics/graduate-studies/ms-hf/)

This program addresses the growing need for engineering professionals trained in advanced human factors who can utilize human factors theories, procedures, and empirically derived knowledge into understandable and actionable information for use in the design and evaluation of a wide variety of products and systems. The key sectors demanding human factors professionals include transportation, healthcare, robotics, manufacturing, computer, consumer products, social, and organizational and military issues. The core courses of the Master of Science in Human Factors program are built on the foundations of human factors and ergonomics, probabilities and statistics, etc. Topics from these foundation areas are integrated to create human factors for engineering applications. Students can select their elective or breadth courses from a wide range of fields. The program seeks to prepare students for a comprehensive set of human-factors-related professional positions.

General Degree Requirements

To be eligible for admission to any of the MS degree programs, a prospective student must hold a Bachelor of Science degree in engineering, science, mathematics, or an equivalent field. Students in all master's degree programs must complete a minimum of 32 semester hours of approved coursework (exclusive of any preparatory courses) with a minimum grade-point average of 3.000. Students can complete a master's degree by pursuing any of one of the three tracks: coursework option, project option, and thesis option. Specific degree requirements for each of these tracks can be found under the Program Requirements tab. Students may pursue any program either on a full-time or part-time basis; however, certain restrictions may apply.

Academic and Research Advisors

All nonthesis students are advised by the faculty advisor designated for their respective concentration or program. Students willing to pursue the thesis option must first find a research advisor within their first year of study. The research advisor will guide the students' thesis work, and thesis reader(s) may be assigned at the discretion of their research advisor. The research advisor must be a full-time or jointly appointed faculty. If the research advisor is outside the MIE department, before the thesis option can be approved, a faculty member with 51% or more appointments in the MIE department must be chosen as co-advisor, and a petition must be filed and approved by the co-advisor and the MIE Graduate Affairs Committee. Thesis option students are advised by the faculty advisor of their concentration before they select their research advisor(s). The research advisor and co-advisor must serve as thesis readers.

Plan of Study and Course Selection

It is recommended that all new students attend orientation sessions held by the MIE department and the Graduate School of Engineering to acquaint themselves with the coursework requirements and research activities of the department as well as with the general policies, procedures, and expectations.

In order to receive proper guidance with their coursework needs, all MS students are strongly encouraged to complete and submit a fully signed Plan of Study to the department before enrolling in second-semester courses. This form not only helps the students manage their coursework, but it also helps the department to plan for requested course offerings. The PS form may be modified at any time as the students progress in their degree programs.

Students may also petition to substitute a different course for a core course by demonstrating evidence of their having passed a similar approved IE or OR graduate course. In such situations, the students must first obtain approval from their academic advisor for the course(s) they are planning to substitute.

Students pursuing study or research under the guidance of a faculty member can choose project option by taking Master's Project (IE 7945). An MS project must be petitioned to the MIE Graduate Affairs Committee and approved by both the faculty member (instructor for Master's Project) and the student's academic advisor. The petition must clearly state the reason for taking the project course; a brief description of the goals; as well as the expected outcomes, deliverables, and grading scheme.

Options for MS Students (Coursework Only, Project, or Thesis)

Students accepted into any of the MS programs in the MIE department can choose one of the three options: coursework only, project, or thesis. Please see the Program Requirements tab on the top menu of this page for more information. MS students who want to pursue project or thesis options must find, within the first year of their study, a faculty member or a research advisor who will be willing to direct and supervise a mutually agreed research project or MS thesis. Moreover, students who receive financial support from the university in the form of a research, teaching, or tuition assistantship must complete the thesis option (16 semester hours).

Students who complete the thesis option must make a presentation of their thesis before approval by the department. The MS thesis presentation shall be publicly advertised at least one week in advance and all faculty members and students may attend and participate. If deemed appropriate by the research advisor, other faculty members may be invited to serve as thesis readers to provide technical opinions and judge the quality of the thesis and presentation.

Change of Program/Concentration

Students enrolled in any of the MIE department programs or concentrations may change their current program or concentration no sooner than the beginning of their second full-time semester of study. In order for the program or concentration change request to be considered by the MIE Graduate Affairs Committee, the student must not be in the first semester of their current program, must have a 3.300 GPA, and have completed at least 8 semester hours of required coursework in their sought program at Northeastern.

Graduate Certificate Options

Students enrolled in a graduate degree program in the College of Engineering have the opportunity to pursue an engineering graduate certificate in addition to or in combination with the MS degree. For more information please refer to Graduate Certificate Programs (https://catalog.northeastern.edu/graduate/engineering/graduate-certificate-programs/).

GORDON INSTITUTE OF ENGINEERING LEADERSHIP

Master's Degree in Human Factors with Graduate Certificate in Engineering Leadership

Students may complete a Master of Science in Human Factors in addition to earning a Graduate Certificate in Engineering Leadership (https://catalog.northeastern.edu/graduate/engineering/multidisciplinary/engineering-leadership-graduate-certificate/). Students must apply and be admitted to the Gordon Engineering Leadership Program in order to pursue this option. The program requires fulfillment of the 16-semester-hour curriculum required to earn the Graduate Certificate in Engineering Leadership, which includes an industry-based challenge project with multiple mentors. The integrated 32-semester-hour degree and certificate will require 16 hours of advisor-approved human factors technical courses.

ENGINEERING BUSINESS

Master's Degree in Human Factors with Graduate Certificate in Engineering Business

Students may complete a Master of Science in Human Factors in addition to earning a Graduate Certificate in Engineering Business (https://catalog.northeastern.edu/graduate/engineering/mechanical-industrial/engineering-business-graduate-certificate/). Students must apply and be admitted to the Galante Engineering Business Program (https://galante.sites.northeastern.edu/) in order to pursue this option. The integrated 32-semester-hour degree and certificate will require 16 semester hours of the human factors core courses and 16 semester hours from the outlined business-skill curriculum.

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.

Complete all courses and requirements listed below unless otherwise indicated.

Core Requirements

Code	Title	Hours
IE 6200	Engineering Probability and Statistics	4
IE 6500	Human Performance	4
IE 7280	Statistical Methods in Engineering	4
IE 7315	Human Factors Engineering	4

Options

Complete one of the following options:

COURSEWORK OPTION

Code	Title	Hours
Complete 16 semester hours from the course list below. (p. 3)		16

PROJECT OPTION

Code	Title	Hours
IE 7945	Master's Project	4
Complete 12 semester hours from the course list below. (p. 3)		12

THESIS OPTION [1]

Code	Title	Hours
IE 7945	Master's Project	4
IE 7990	Thesis	4
Complete 8 semester hours from the course list below. (p. 3)		8
In addition to completing the thesis course, students must successfully complete the thesis submission process, including securing committee and Graduate School of Engineering signatures and submission of an electronic copy of their MS thesis to ProQuest.		

Course List

Code	Title	Hours
Any course in the following list will fulfill the coursework option, provided the student satisfies prerequisites and program requirements. Students can take courses outside this list with prior approval from the faculty advisor.		
College of Engineering		
CIVE 7388	Special Topics in Civil Engineering (Urban Informatics and Processing)	
EMGT 5300	Engineering/Organizational Psychology	
EMGT 6305	Financial Management for Engineers	
EMGT 6600	Engineering Team Performance	
GE 5010	Customer-Driven Technical Innovation for Engineers	
GE 5020	Engineering Product Design Methodology	
GE 5030	Iterative Product Prototyping for Engineers	
GE 5100	Product Development for Engineers	
IE 5137	Computational Modeling in Industrial Engineering	
IE 5390	Structured Data Analytics for Industrial Engineering	
IE 5617	Lean Concepts and Applications	
IE 5630	Biosensor and Human Behavior Measurement	
IE 5640	Data Mining for Engineering Applications	
IE 6600	Computation and Visualization for Analytics	
The following courses are available to students who concurrently enroll in the Graduate Certificate in Engineering Leadership (https://catalog.northeastern.edu/graduate/engineering/multidisciplinary/engineering-leadership-graduate-certificate/)		
ENLR 5121	Engineering Leadership 1	
ENLR 5122	Engineering Leadership 2	
ENLR 5131	Scientific Foundations of Engineering 1	
ENLR 5132	Scientific Foundations of Engineering 2	
ENLR 7440	Engineering Leadership Challenge Project 1	
ENLR 7442	Engineering Leadership Challenge Project 2	
College of Social Sciences and Humanities		
ECON 7200	Topics in Applied Economics	
ECON 7251	International Finance	
College of Science		
PSYC 5180	Quantitative Methods 1	
PSYC 5181	Quantitative Methods 2	
PSYC 7300	Advanced Quantitative Analysis	
PSYC 7301	Research Methodologies Psychology	
Bouvé College of Health Sciences		
EXSC 5210	Physical Activity and Exercise: Prescription, Measurement, and Testing	
EXSC 5220	Advanced Exercise Physiology	
Khoury College of Computer Sciences		
CS 5340	Computer/Human Interaction	
CS 6350	Empirical Research Methods	
College of Arts, Media and Design		
ARTG 5150	Information Visualization Principles and Practices	
ARTG 5310	Visual Cognition	
ARTG 5330	Visualization Technologies 1: Fundamentals	
ARTG 5600	Experience Design Studio 1: Principles	

ARTG 5610	Design Systems
ARTG 5640	Prototyping for Experience Design
Design Research Methods	
ARTG 6310	Design for Behavior and Experience
GSND 6240	Exploratory Concept Design
GSND 6250	Spatial and Temporal Design
GSND 6330	Player Experience
GSND 6340	Biometrics for Design
D'Amore-McKim School of Business	
ENTR 6219	Financing Ventures from Early Stage to Exit

Program Credit/GPA Requirements

32 total semester hours required
Minimum 3.000 GPA required

[1] Thesis option is required for all students who receive financial support from Northeastern University in the form of a research, teaching, or tuition assistantship.