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 (GPA) of 3.00. 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 percent 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 (PS) 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.

Students pursuing coursework option may petition the MIE Graduate Affairs Committee to substitute up to a 4-semester-hour Independent Study (IE 7978) . An independent study must be approved by the academic advisor. The petition must clearly state the instructor; the reason for taking the course; a brief description of the goals; as well as the expected outcomes, deliverables, and grading scheme. Students in other options (i.e., thesis or project) are not eligible to take independent study. When taking thesis or project options, the independent study course cannot be taken.

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 8 semester hours of thesis. Students are strongly encouraged to complete their 8 semester hours of Thesis (IE 7990) over two consecutive semesters.

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 (http://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 (http://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 (http://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**

Complete all courses and requirements listed below unless otherwise indicated.

**Core Requirements**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 6200</td>
<td>Engineering Probability and Statistics</td>
<td>4</td>
</tr>
<tr>
<td>IE 6500</td>
<td>Human Performance</td>
<td>4</td>
</tr>
<tr>
<td>IE 7280</td>
<td>Statistical Methods in Engineering</td>
<td>4</td>
</tr>
<tr>
<td>IE 7315</td>
<td>Human Factors Engineering</td>
<td>4</td>
</tr>
</tbody>
</table>

**Options**

Complete one of the following options:

**COURSEWORK OPTION**

Complete 16 semester hours from the course list below. (p. 2)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete 16 semester hours from the course list below. (p. 2)</td>
<td>16</td>
<td></td>
</tr>
</tbody>
</table>

**PROJECT OPTION**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 7945</td>
<td>Master’s Project</td>
<td>4</td>
</tr>
<tr>
<td>Complete 12 semester hours from the course list below. (p. 2)</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**THESIS OPTION**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 7990</td>
<td>Thesis</td>
<td>8</td>
</tr>
<tr>
<td>Complete 8 semester hours from the course list below. (p. 2)</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

**Course List**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>College of Engineering</td>
<td>CIVE 7388 Special Topics in Civil Engineering (Urban Informatics and Processing)</td>
<td></td>
</tr>
</tbody>
</table>
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. (http://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