Industrial Engineering (MR)

Master of Industrial Engineering Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Required Course</td>
<td></td>
</tr>
<tr>
<td>ISE 601</td>
<td>Seminar</td>
<td>4</td>
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<tr>
<td></td>
<td>Select one 700-level ISE course approved in conjunction with the academic committee</td>
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<tr>
<td></td>
<td>Breadth Requirement Courses</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>See “Breadth Requirement Courses” listed below</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Technical Elective Courses</td>
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<td></td>
<td>“Technical Elective Courses” will be determined in conjunction with the academic committee</td>
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<tr>
<td></td>
<td>Additional Technical Elective Courses</td>
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<td></td>
<td>“Additional Technical Elective Courses” are approved in conjunction with the academic committee</td>
<td></td>
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<td></td>
<td>Total Hours</td>
<td>34</td>
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</tbody>
</table>

Breadth Requirement Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Select a minimum of one course from at least four of the following groups:</td>
<td>12</td>
</tr>
</tbody>
</table>

**Group A: Economic & Decision Analysis**
- ISE 510 Applied Engineering Economy
- ISE 711 Capital Investment Economic Analysis
- ISE 712 Bayesian Decision Analysis For Engineers and Managers
- ISE 731 Multi-Attribute Decision Analysis

**Group B: Human Factors and Ergonomics Category**
- ISE 540 Human Factors In Systems Design
- ISE 541 Occupational Safety Engrg
- ISE 544 Occupational Biomechanics
- ISE 744 Human Information Processing
- ISE 745 Human Performance Modeling

**Group C: Manufacturing Systems Category**
- ISE 515 Manufacturing Process Engineering
- ISE 714 Product Manufacturing Engineering for the Medical Device Industry
- ISE 716 Automated Systems Engineering
- ISE 519 Database Applications in Industrial and Systems Engineering

**Group D: Production Systems Category**
- ISE 552 Design and Control of Production and Service Systems
- ISE 723 Production Planning, Scheduling and Inventory Control
- ISE 726 Theory of Activity Networks
- ISE 748 Quality Engineering
- ISE 754 Logistics Engineering

**Group E: Systems Analytics and Optimization Category**
- ISE 501 Introduction to Operations Research
- OR 504 Introduction to Mathematical Programming
- ISE 505 Linear Programming
- ISE 560 Stochastic Models in Industrial Engineering
- ISE 562 Simulation Modeling
- ISE 709 Dynamic Programming
- ISE 760 Applied Stochastic Models in Industrial Engineering
- ISE 761 Queues and Stochastic Service Systems
- ISE 762 Computer Simulation Techniques

Select one course from the following: 3
- Group F: Computer Science, Mathematics, and Statistics
  - CSC 513 Electronic Commerce Technology
  - CSC 520 Artificial Intelligence I
  - CSC 570 Computer Networks
  - CSC 742 Database Management Systems
  - MA 520 Linear Algebra
  - MA 580 Numerical Analysis I
  - ST 516 Experimental Statistics For Engineers II
  - ST 711 Design Of Experiments

Total Hours 15

Accelerated Bachelor's/Master's Degree Requirements

The Accelerated Bachelors/Master's (ABM) degree program allows exceptional undergraduate students at NC State an opportunity to complete the requirements for both the Bachelor's and Master's degrees at an accelerated pace. These undergraduate students may double count up to 12 credits and obtain a non-thesis Master's degree in the same field within 12 months of completing the Bachelor's degree, or obtain a thesis-based Master's degree in the same field within 18 months of completing the Bachelor's degree.

This degree program also provides an opportunity for the Directors of Graduate Programs (DGPs) at NC State to recruit rising juniors in their major to their graduate programs. However, permission to pursue an ABM degree program does not guarantee admission to the Graduate School. Admission is contingent on meeting eligibility requirements at the time of entering the graduate program.

Faculty

**Full Professors**
- Paul Cohen
- Shu-Cherng Fang
- Yahya Fathi
- Ola Lars Anders Harrysson
- Julie Simmons Ivy
- Russell E. King
- Yuan-Shin Lee
Maria Esther Mayorga       Clarence Smith Jr.
Chan S. Nam              James Reed Wilson
Binil Starly             Richard Wysk
Julie Swann              Robert E. Young
Reha Uzsoy

Associate professors
Jingyan Dong
Michael G. Kay
Yunan Liu
Osman Yalin Ozaltin
Rohan Ajit Shirwaiker
Hong Wan

Assistant Professors
Karen Boru Chen
Xiaolei Fang
Leila Hajibabai Dizaji
Sara Shashaani
Xu Xu

Practice/Research/Teaching Professors
Steven D. Jackson
Brandon Mark McConnell
Kanton Tyrone Reynolds
Javad Taheri
Harvey A. West II

Emeritus Faculty
Mahmoud A. Ayoub
Richard Harold Bernhard
Charles Thomas Culbreth Jr.
Thom Joel Hodgson
Henry Nuttle
Richard G. Pearson
Stephen Dean Roberts
Ezat Sanli