# Industrial Engineering (MR)

## Master of Industrial Engineering Degree Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISE 601</td>
<td>Seminar</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

### Breadth Requirement Courses

- See "Breadth Requirement Courses" listed below

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISE 515</td>
<td>Manufacturing Process Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 714</td>
<td>Product Manufacturing Engineering for the Medical Device Industry</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 716</td>
<td>Automated Systems Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 519</td>
<td>Database Applications in Industrial and Systems Engineering</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Technical Elective Courses

- “Technical Elective Courses” will be determined in conjunction with the academic committee

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISE 552</td>
<td>Design and Control of Production and Service Systems</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 723</td>
<td>Production Planning, Scheduling and Inventory Control</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 726</td>
<td>Theory of Activity Networks</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 748</td>
<td>Quality Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 754</td>
<td>Logistics Engineering</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Additional Technical Elective Courses

- “Additional Technical Elective Courses” are approved in conjunction with the academic committee

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
<th>Counts towards</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISE 501</td>
<td>Introduction to Operations Research</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>OR 504</td>
<td>Introduction to Mathematical Programming</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 505</td>
<td>Linear Programming</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 560</td>
<td>Stochastic Models in Industrial Engineering</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 562</td>
<td>Simulation Modeling</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ISE 709</td>
<td>Dynamic Programming</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

### Total Hours

- 31

## Breadth Requirement Courses

Select a minimum of one course from at least four of the following breadth requirement groups:

### 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

### 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
Accelerated Bachelor's/Master's Degree Requirements

The Accelerated Bachelor's/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
Chan S. Nam
Binil Starly
Julie Swann
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
Irem Sengul Orgut
Sara Shashaani
Xu Xu

Practice/Research/Teaching Professors

Steven D. Jackson
Semra Senem Ahiska King
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
Clarence Smith Jr.
James Reed Wilson
Richard Wysk
Robert E. Young