The MS program in Manufacturing Systems Engineering is designed to train and educate professionals for successful careers by providing them with skills in the areas of supply chain modeling and analysis, automation and computerized process control, planning and design of industrial process operations, advanced economic analysis and project management and implementation.

### Degree Requirements

Students with a B.S. degree in an engineering, information technology, operations management or related technical degree may apply for admission. Other students may be admitted and required to complete the bridge program. Bridge courses do not count toward degree requirements. Bridge courses range between 3 to 9 credits and are selected by the advisor when the student is admitted.

A minimum of 30 credits beyond a baccalaureate degree is required. Students select an area of specialization and individually design their programs in consultation with the graduate advisor. A master’s project/Thesis is optional and faculty advisor approval must be obtained by students before they are permitted to register for Master’s Project/Thesis IE 700/701.

### M.S. in Manufacturing Systems Engineering (courses only)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Core Courses</strong></td>
<td>12</td>
</tr>
<tr>
<td>IE 659</td>
<td>Supply Chain Engineering</td>
<td></td>
</tr>
<tr>
<td>MNE 601</td>
<td>Computerized Manufacturing Systems</td>
<td></td>
</tr>
<tr>
<td>MNE 602</td>
<td>Flexible and Computer Integrated Manufacturing</td>
<td></td>
</tr>
<tr>
<td>MNE 654</td>
<td>Design for Manufacturability</td>
<td></td>
</tr>
</tbody>
</table>

|        | **Areas of Specialization**                    | 9       |

Select one of the following:

- **Quality Engineering**
  - IE 672 Industrial Quality Control
  - IE 673 Total Quality Management
  - IE 618 Engineering Cost and Production Economics

- **Manufacturing Analytics**
  - IE 604 Advanced Engineering Statistics
  - IE 621 Systems Analysis and Simulation
  - EM 602 Management Science

- **Process Automation**
  - ME 635 Computer-Aided Design
  - ME 625 Introduction to Robotics
  - IE 621 Systems Analysis and Simulation

- **Supply Chain Operations**
  - EM 640 Distribution Logistics
  - IE 618 Engineering Cost and Production Economics
  - IS 665 Data Analytics for Info System (Electives)

- **Electives**

  Select three of the following courses:

  A total of 9 elective credits are required, these should be selected from the list below. Electives may also be taken outside the listed courses if they match program objectives, these electives will require department approval.

  - IE 604 Advanced Engineering Statistics
  - IE 621 Systems Analysis and Simulation
  - IE 618 Engineering Cost and Production Economics
  - IE 655 Concurrent Engineering
  - IE 672 Industrial Quality Control
  - IE 673 Total Quality Management
  - EM 602 Management Science
  - EM 640 Distribution Logistics
  - ME 635 Computer-Aided Design
### M.S. in Manufacturing Systems Engineering (Master's thesis)

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Core Courses</strong></td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>IE 659</td>
<td>Supply Chain Engineering</td>
<td></td>
</tr>
<tr>
<td>MNE 601</td>
<td>Computerized Manufacturing Systems</td>
<td></td>
</tr>
<tr>
<td>MNE 602</td>
<td>Flexible and Computer Integrated Manufacturing</td>
<td></td>
</tr>
<tr>
<td>MNE 654</td>
<td>Design for Manufacturability</td>
<td></td>
</tr>
<tr>
<td>IE 701C</td>
<td>Master's Thesis</td>
<td></td>
</tr>
</tbody>
</table>

### Areas of Specialization

Students may choose to specialize in any one of the following areas for 9 credits. Completion of all three courses in a specialization will qualify the student for a specialization certificate to be issued by the department. This will be awarded in conjunction with successful completion of the MS degree.

**Quality Engineering**
- IE 672: Industrial Quality Control
- IE 673: Total Quality Management
- IE 618: Engineering Cost and Production Economics

**Manufacturing Analytics**
- IE 604: Advanced Engineering Statistics
- IE 621: Systems Analysis and Simulation
- EM 602: Management Science

**Process Automation**
- ME 635: Computer-Aided Design
- ME 625: Introduction to Robotics
- IE 621: Systems Analysis and Simulation

**Supply Chain Operations**
- EM 640: Distribution Logistics
- IE 618: Engineering Cost and Production Economics
- IS 665: Data Analytics for Info System

### Electives

Select one of the following courses. A total of 3 elective credits are required, these should be selected from the list below. Electives may also be taken outside the listed courses if they match program objectives, these electives will require department approval.

- IE 604: Advanced Engineering Statistics
- IE 621: Systems Analysis and Simulation
- IE 618: Engineering Cost and Production Economics
- IE 655: Concurrent Engineering
- IE 672: Industrial Quality Control
- IE 673: Total Quality Management
- EM 602: Management Science
- EM 636: Project Management
- EM 640: Distribution Logistics
- ME 635: Computer-Aided Design
- ME 625: Introduction to Robotics
- IS 665: Data Analytics for Info System

**Total Credits**

30