Master’s Student Orientation

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Associate Head for Graduate Affairs
Primary Reference

- Graduate Student Handbook
  ✓ Read it carefully
  ✓ Refer to it
  ✓ Available online

Describes the three programs
1. ME IE
2. MS ENSM
3. MS IE
## Overview

### Three Programs
- Master of Engineering in Industrial Engineering (ME IE)
- Master of Science in Engineering Systems Management (ENSM)
- Master of Science in Industrial Engineering (MS IE)

### Options
- Only Coursework
- Project or Only Coursework
- Thesis, Project, or Only Coursework
## Program Orientations

<table>
<thead>
<tr>
<th>ME IE</th>
<th>ENSM</th>
<th>MS IE</th>
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<tbody>
<tr>
<td>• Designed to train students to be industry professionals</td>
<td>Serves the dual purposes of A. training industry professionals B. preparing students to enter ISEN Ph.D. program in the areas of systems engineering, human factors, and manufacturing</td>
<td>• Designed to train students for ISEN Ph.D. programs in the areas of operations research, system informatics, manufacturing, and human factors</td>
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<tr>
<td>• Suitable for students who want to enter industry or are already in industry</td>
<td>• Courses are quantitative and math intensive</td>
<td>• MS IE students also go to industry after graduation</td>
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<td>• Courses in the program are application oriented</td>
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You can change your program among the three master’s program options once you are in the program, subject to the approval of the Director of Graduate Programs.
## Expected Duration of Study

<table>
<thead>
<tr>
<th>ME IE</th>
<th>ENSM</th>
<th>MS IE</th>
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</table>
| • Requires 30 credit hours (equivalently, 10 courses)  
• Typically takes **18 months** (or 3 regular semesters)  
• ME-IE can be *potentially* completed in **12 months**, which requires taking courses during summer (possibly through Distance Learning) | • Requires 36 credit hours (equivalently, 12 courses)  
• Typically requires **2 years** (or 4 regular semesters) | • **MS IE Thesis** option requires 32 credit hours (*roughly* 11 courses)  
• Requires writing a thesis  
• Generally takes **2 years**  
• **MS IE Non-thesis** option requires 36 credit hours (equivalently, 12 courses)  
• Typically requires **2 years** (or 4 regular semesters) |
| • ENSM and MS-IE Non Thesis option can be *potentially* completed in **18 months**, which requires taking courses during summer (possibly through Distance Learning) |
Master of Engineering in Industrial Engineering (ME IE) 30 credit hours

Course requirements in three blocks

Block A: FOUR courses covering breadth of industrial engineering
1. ISEN 601, 605 or 615 (logistics & inventory control)
2. ISEN 614 or 616 (quality engineering/design of experiments)
3. ISEN 630 or 631 (human factors)
4. ISEN 667 (engineering economy)

Block B: THREE courses covering common modeling techniques and tools
1. ISEN 613, 609 or 619 (data analytics models & tools)
2. ISEN 620 (optimization models and tools)
3. ISEN 625 (simulation models and tools)

Block C: THREE elective courses
• Can be either ISEN courses or non-ISEN courses
Master of Science in Engineering Systems Management (ENSM)  
36 credit hours

Course requirements in three blocks

Block A: FOUR courses covering systems engineering
1. ISEN 613, 609 or 619 (data analytics)
2. ISEN 625 (simulation)
3. ISEN 640 (system thinking)
4. ISEN 641 (system engineering tools)

Block B: FOUR courses offering engineering management
1. ISEN 608 (project management)
2. ISEN 663 (engineering management)
3. ISEN 667 (engineering economy)
4. ISEN 669 (engineering decision tools)

Block C: FOUR elective courses to form a concentration area
• Almost any graduate courses
• Either ISEN courses or non-ISEN courses
ENSM Enrichment Options

Effectively using the four courses in Block C

**Certificate in Business** (offered by the Mays Business School)
- ACCT 640 (accounting)
- FINC 635 (finance)
- MGMT 655 (management)
- MKTG 621 (marketing)

**Certificate in Applied Statistics** (offered by TAMU STAT Department)

**Certificate in Quality Engineering for Regulated Medical Technologies** (administered by TAMU BMEN Department)

**Certificate in Non Profit Management** (offered by the Bush School)
MS IE (Thesis option)

Requirements: 32 credit hours, defending a thesis
Research Option: choice of one of four areas

**AREAS**
1. Operations Research (OR)
2. Health and Human Systems Engineering (HHSE)
3. Manufacturing (MFG)
4. System Informatics (SI)

Courses **NOT** allowed in MS Thesis degree plan:
- CSCE 601, STAT 601, STAT 651
- ISEN 620 **IF** ISEN 622 **AND** ISEN 623 are included
- STAT 630 **IF** STAT 610 **OR** STAT 611 is included
- ISEN 692

**Important Requirement:**
- Student is **required** to have a meeting and **approval** from his/her thesis advisor **before** filing a MS Thesis degree plan
MS IE (Thesis option)

OPERATIONS RESEARCH

1. Required Courses
   - ISEN 609 (or ISEN 602)
   - ISEN 622
   - ISEN 623
   - STAT 610 (or STAT 611)
   - 2 hours of ISEN 691 (minimum)

2. Written Thesis

3. Electives
   - Total of 18 hours
   - At most 9 hours can be outside of ISEN (in addition to STAT 610)
   - Maximum of 6 combined hours of ISEN 691 and/or ISEN 681
   - ISEN 681 is optional, maximum allowed is 2 hours

Courses not allowed
- ISEN 620
MS IE (Thesis option)

HEALTH AND HUMAN SYSTEMS ENG.

1. Required Courses
   - ISEN 630
   - ISEN 631
   - ISEN 635 (or ISEN 689 - Biomechanics)
   - ISEN 616 (or PSYC 607)
   - 3 hours of ISEN 691 (minimum)

2. Electives
   - Total of 18 hours
   - At most 9 hours can be outside of ISEN (in addition to PSYC 607)
   - Maximum of 6 combined hours of ISEN 691 and/or ISEN 681
   - ISEN 681 is optional, maximum allowed is 2 hours

3. Written Thesis
1. Required Courses
   • ISEN 615
   • ISEN 616
   • ISEN 689 (Principles of Manufacturing Processes)
   • ISEN 689 (Measurements and Data Analytics for Manufacturing)
   • 2 hours of ISEN 691 (minimum)

2. Electives
   • Total of 18 hours
   • At most 9 hours can be outside of ISEN
   • Maximum of 6 combined hours of ISEN 691 and/or ISEN 681
   • ISEN 681 is optional, maximum allowed is 2 hours

3. Written Thesis
1. Required Courses
   • Pick 4 courses from the list below
     • ISEN 609
     • ISEN 613
     • ISEN 616
     • ISEN 622
     • ISEN 623
     • ISEN 625
     • STAT 610
     • STAT 611
     • 2 hours of ISEN 691 (minimum)

2. Electives
   • Total of 18 hours
   • At most 9 hours can be outside of ISEN
   • Maximum of 6 combined hours of ISEN 691 and/or ISEN 681
   • ISEN 681 is optional, maximum allowed is 2 hours

3. Written Thesis
MS IE (Non Thesis option)

Requirements: 36 credit hours, coursework or project
Project Option: choice of one of four areas

AREAS
1. Operations Research (OR)
2. Health and Human Systems Engineering (HHSE)
3. Manufacturing (MFG)
4. System Informatics (SI)

Courses NOT allowed in MS Non Thesis degree plan:
- CSCE 601, STAT 601, STAT 651
- ISEN 620 IF ISEN 622 AND ISEN 623 are included
- STAT 630 IF STAT 610 OR STAT 611 is included
- ISEN 681
- ISEN 691
# MS IE (Non Thesis option)

## OPERATIONS RESEARCH

<table>
<thead>
<tr>
<th>1. Required Courses</th>
<th>2. Electives</th>
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<tbody>
<tr>
<td>• ISEN 609 (or ISEN 602)</td>
<td>• Total of 24 hours</td>
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<tr>
<td>• ISEN 622</td>
<td>• <strong>At most</strong> 9 hours can be outside of ISEN (in</td>
</tr>
<tr>
<td>• ISEN 623</td>
<td>addition to STAT 610)</td>
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<tr>
<td>• STAT 610 (or STAT 611)</td>
<td>• <strong>At most</strong> 3 hours of ISEN 692</td>
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</tbody>
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<table>
<thead>
<tr>
<th>3. Courses not allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>• ISEN 620</td>
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HEALTH AND HUMAN SYSTEMS ENG.

1. Required Courses
   • ISEN 630
   • ISEN 631
   • ISEN 635 (or ISEN 689 - Biomechanics)
   • ISEN 616 (or PSYC 607)

2. Electives
   • Total of 24 hours
   • At most 9 hours can be outside of ISEN (in addition to PSYC 607)
   • At most 3 hours of ISEN 692
1. Required Courses
   • ISEN 615
   • ISEN 616
   • ISEN 689 (Principles of Manufacturing Processes)
   • ISEN 689 (Measurements and Data Analytics for Manufacturing)

2. Electives
   • Total of 24 hours
   • At most 12 hours can be outside of ISEN
   • At most 3 hours of ISEN 692
# MS IE (Non Thesis option)

## SYSTEM INFORMATICS

<table>
<thead>
<tr>
<th>1. Required Courses</th>
<th>2. Electives</th>
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<tbody>
<tr>
<td>• Pick 4 courses from the list below</td>
<td>• Total of 24 hours</td>
</tr>
<tr>
<td>• ISEN 609</td>
<td>• At most 12 hours can be outside of ISEN</td>
</tr>
<tr>
<td>• ISEN 613</td>
<td>• At most 6 hours outside of ISEN if STAT 610 and STAT 611 are included</td>
</tr>
<tr>
<td>• ISEN 616</td>
<td>• At most 9 hours outside of ISEN if STAT 610 or STAT 611 is included</td>
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