INDUSTRIAL ENGINEERING - 5-YEAR BACHELOR OF SCIENCE AND MASTER OF SCIENCE IN FINANCE

Industrial and systems engineering has a long-standing history and unique place among engineering majors as the academic discipline responsible for the economic viability of productive systems across industries. Industrial engineers are keenly aware of the goals and objectives of the enterprise. Additionally, industrial engineers receive a core curriculum in the rigorous underpinnings requisite for the quantification of uncertainty and the mitigation of financial risk to the enterprise. This 3+2 degree ensures that the successful graduate from the Mays Business School, department of finance, has a solid background in both the stochastic processes used to characterize and model the uncertainty coupled with the financial acumen requisite to ensure the economic viability of the enterprise. Students of the industrial and systems engineering program will take advantage of a series of internships and practicums that expose the undergraduate to various facets of financial stability and instability in industry. This program will produce a select and skilled group of industrial leaders that will take their place in the industrial world ensuring the viability of productive organizations around the globe.

Program Requirements

The freshman year is identical for degrees in aerospace engineering, architectural engineering, civil engineering, computer engineering, computer science, electrical engineering, electronic systems engineering technology, environmental engineering, industrial distribution, industrial engineering, interdisciplinary engineering, manufacturing and mechanical engineering technology, mechanical engineering, multidisciplinary engineering technology, nuclear engineering, ocean engineering, and petroleum engineering (Note: not all programs listed are offered in Qatar). The freshman year is slightly different for chemical engineering, biomedical engineering and materials science and engineering degrees in that students take CHEM 119 or CHEM 107/CHEM 117 and CHEM 120. Students pursuing degrees in biological and agricultural engineering should refer to the specific curriculum for this major. It is recognized that many students will change the sequence and number of courses taken in any semester. Deviations from the prescribed course sequence, however, should be made with care to ensure that prerequisites for all courses are met.

<table>
<thead>
<tr>
<th>First Year</th>
<th>Fall</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 107 General Chemistry for Engineering Students</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CHEM 117 General Chemistry for Engineering Students Laboratory</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>ENGL 103 Introduction to Rhetoric and Composition</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>or ENGL 104 or Composition and Rhetoric</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>ENGR 102 Engineering Lab I - Computation</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MATH 151 Engineering Mathematics I</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

| University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) | 3   |

<table>
<thead>
<tr>
<th>Spring</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 216/PHYS 216 Experimental Physics and Engineering Lab II - Mechanics</td>
<td>2</td>
</tr>
<tr>
<td>MATH 152 Engineering Mathematics II</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 206 Newtonian Mechanics for Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td>University Core Curriculum (<a href="http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/">http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/</a>)</td>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Select one of the following:</th>
<th>3-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 120 Fundamentals of Chemistry II</td>
<td>1.4</td>
</tr>
</tbody>
</table>

| University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) | 3   |

<table>
<thead>
<tr>
<th>Second Year</th>
<th>Fall</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 217/PHYS 217 Experimental Physics and Engineering Lab III - Electricity and Magnetism</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>MATH 251 Engineering Mathematics III</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

1. A grade of C or better is required.
2. Entering students will be given a math placement exam. Test results will be used in selecting the appropriate starting course which may be at a higher or lower level.
3. Of the 21 hours shown as University Core Curriculum electives, 3 must be from creative arts (see AREN curriculum for more information), 3 from social and behavioral sciences (see IDIS curriculum for more information), 3 from language, philosophy and culture (see CVEN, EVEN and PETE curriculum for more information), 6 from American history and 6 from government/political science. The required 3 hours of international and cultural diversity and 3 hours of cultural discourse may be met by courses satisfying the creative arts, social and behavioral sciences, language, philosophy and culture, and American history requirements if they are also on the approved list of international and cultural diversity (http://catalog.tamu.edu/undergraduate/general-information/degree-information/international-cultural-diversity-requirements/) courses and cultural discourse (http://catalog.tamu.edu/undergraduate/general-information/degree-information/cultural-discourse-requirements/) courses.
4. BMEN, CHEN and MSEN require 8 hours of fundamentals of chemistry which are satisfied with CHEM 119 or CHEM 107/CHEM 117 and CHEM 120. Students with an interest in BMEN, CHEN and MSEN can take CHEM 120 second semester freshman year. CHEM 120 will substitute for CHEM 107/CHEM 117.
5. For BS-PETE, allocate 3 hours to core communications course (ENGL 210, COMM 203, COMM 205, or COMM 243) and/or 3 hours to UCC elective. For BS-MEEN, allocate 3 hours to core communications course (ENGL 203, ENGL 210, or COMM 205) and/or 3 hours to UCC elective.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Name</th>
<th>Semester Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMET 181 or ISEN 281</td>
<td>Manufacturing and Assembly Processes I or Essentials of Modern Manufacturing Methods for Engineering Design</td>
<td>3</td>
</tr>
<tr>
<td>PHYS 207</td>
<td>Electricity and Magnetism for Engineering and Science</td>
<td>3</td>
</tr>
<tr>
<td>STAT 211</td>
<td>Principles of Statistics</td>
<td>3</td>
</tr>
<tr>
<td>Select one of the following:</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>CSCE 110</td>
<td>Programming I</td>
<td></td>
</tr>
<tr>
<td>CSCE 111</td>
<td>Introduction to Computer Science Concepts and Programming</td>
<td></td>
</tr>
<tr>
<td>CSCE 206</td>
<td>Structured Programming in C</td>
<td></td>
</tr>
</tbody>
</table>

### Semester Credit Hours: 18

**Spring**
- ACCT 640: Accounting Concepts and Procedures | 3
- ECON 202: Principles of Economics | 3
- ISEN 210: Fundamentals of Industrial Engineering Design | 4
- ISEN 230: Informatics for Industrial Engineers | 3
- MATH 304: Linear Algebra | 3
- MEEN 221: Statics and Particle Dynamics | 3

### Semester Credit Hours: 19

**Summer**
- FINC 601: Financial Analysis Practicum | 3
- FINC 602: Corporate Finance | 3

### Semester Credit Hours: 6

**Third Year**

**Fall**
- ACCT 327: Financial Reporting | 3
- FINC 601: Financial Analysis Practicum | 1
- ISEN 310: Uncertainty Modeling for Industrial Engineering | 3
- ISEN 320: Operations Research | 3
- ISEN 330: Human Systems Interaction | 3
- MATH 308: Differential Equations | 3

### Semester Credit Hours: 16

**Spring**
- ISEN 340: Operations Research II | 3
- ISEN 350: Quality Engineering | 3
- ISEN 355: System Simulation | 3
- ISEN 370: Production Systems Engineering | 3
- Select one of the following: | 3
  - COMM 203: Public Speaking
  - COMM 205: Communication for Technical Professions
  - ENGL 203: Writing about Literature
  - ENGL 210: Technical and Professional Writing

### Semester Credit Hours: 15

**Fourth Year**

**Fall**
- FINC 601: Financial Analysis Practicum | 1
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) | 3

### Total Semester Credit Hours: 124

**Technical electives**: 9

### Total Semester Credit Hours: 13

**Spring**
- ACCT 328: Financial Reporting II | 3
- ISEN 460: Capstone Senior Design | 3
- MEEN 222/ MSEN 222: Materials Science | 3
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) | 3
- High Impact Experience | 0
- ISEN 399: Professional Development | 12

**Fifth Year**

**Fall**
- FINC 601: Financial Analysis Practicum | 1
- FINC 603: Investments | 3
- MGMT 680: Business and Corporate Strategy | 3
- Select one of the following: | 3
  - BAEN 320: Engineering Thermodynamics
  - ECEN 215: Principles of Electrical Engineering
  - MEEN 315: Principles of Thermodynamics
- University Core Curriculum (http://catalog.tamu.edu/undergraduate/general-information/university-core-curriculum/) | 3

### Semester Credit Hours: 13

**Spring**
- ACCT 647/ FINC 647: Financial Statement Analysis | 3
- FINC 605: Valuation and Financial Modeling | 3
- Graduate Technical Electives | 6

### Semester Credit Hours: 12

### Total Semester Credit Hours: 124

6. MSF prerequisite course that counts towards ISEN degree.
7. Course that will double count.
8. A total of 9 hours of technical electives is required. The choice of courses to be taken must be made in consultation with the student’s advisor and/or the Industrial Engineering Advising Office.
9. All students are required to complete a high-impact experience in order to graduate. The list of possible high-impact experiences is available in the INEN advising office.
10. The MS Finance degree requires students to take 6 hours of electives in support of their career goals.

The Bachelor of Science degree in Industrial Engineering requires a grade of C or better for required industrial engineering (ISEN) courses.

The program includes a total of 164 hours which up to 9 hours may be applied toward both the Bachelor of Science in Industrial Engineering and the Master of Science in Finance.

**Total Program Hours 164**