BACHELOR OF SCIENCE (B.S.) MAJOR IN INDUSTRIAL ENGINEERING

Minimum required: 129 semester credit hours

Admission Requirements
1. The Bachelor of Science (B.S.) degree with a major in Industrial Engineering requires admission to the university.
2. In order to declare Industrial Engineering as a major, students must meet one of the following prerequisites:
   a. ACT Math score of 24 or higher,
   b. SAT Math score of 550 or higher, or
   c. credit for one of the following math courses with a grade of “C” or higher:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1315</td>
<td>College Algebra</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1317</td>
<td>Plane Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1319</td>
<td>Mathematics for Business and Economics I</td>
<td>3</td>
</tr>
<tr>
<td>MATH 1329</td>
<td>Mathematics for Business and Economics II</td>
<td>3</td>
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</tbody>
</table>

General Requirements
1. The general education core curriculum courses are listed in the degree plan below along with the statewide component code number. See the General Education Core Curriculum (http://mycatalog.txstate.edu/undergraduate/general-education-core-curriculum/) section of this catalog for the Texas State requirements and options in the core curriculum, including Honors courses.
2. Students must complete a minimum of 36 advanced hours (3000 or 4000 level courses).
3. Nine semester credit hours must be writing intensive (WI).
4. Students entering Texas State with fewer than 16 credit hours completed after high school graduation will be required to take US 1100. All others will be exempt from taking this course.
5. If two years of the same language are taken in high school, then no additional language hours will be required for the degree. In the absence of such high school language, two semesters of the same modern language must be taken at the college level.
6. The Industrial Engineering major includes all the courses required for an Applied Mathematics minor.

Course Requirements

**Freshman**

<table>
<thead>
<tr>
<th>First Semester Hours</th>
<th>Second Semester Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 1335 (Life and Physical Sciences Component Code 030 [TCCN CHEM 1309 or 1409])</td>
<td>3 PHYS 1430 (Life and Physical Sciences Component Code 030 [TCCN PHYS 2425])</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1135 (TCCN CHEM 1109 [taken with TCCN CHEM 1309])</td>
<td>1 ENGR 2300</td>
<td>3</td>
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</table>

**Sophomore**

<table>
<thead>
<tr>
<th>First Semester Hours</th>
<th>Second Semester Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYS 2425 (Component Area Option Code 090/094 [TCCN PHYS 1430])</td>
<td>4 CS 1342</td>
<td>3</td>
</tr>
<tr>
<td>MATH 3377</td>
<td>3 MATH 3323</td>
<td>3</td>
</tr>
<tr>
<td>MFGE 2332</td>
<td>3 ENGR 2301 (TCCN ENGR 2301)</td>
<td>3</td>
</tr>
<tr>
<td>POSI 2310 (Government/Political Science Component Code 070 [TCCN GOVT 2306])</td>
<td>3 ECO 2301 (Social and Behavioral Sciences Component Code 080 [TCCN ECON 1301])</td>
<td>3</td>
</tr>
<tr>
<td>American History Component Code 060</td>
<td>3 POSI 2320 (Government/Political Science Component Code 070 [TCCN GOVT 2306])</td>
<td>3</td>
</tr>
<tr>
<td>Creative Arts Component Code 050 [HUMA 1315]</td>
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<td>3</td>
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**Junior**

<table>
<thead>
<tr>
<th>First Semester Hours</th>
<th>Second Semester Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 3311</td>
<td>3 MATH 2393 (TCCN MATH 2315)</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 3315</td>
<td>3 IE 3330</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 3373</td>
<td>3 IE 3340</td>
<td>3</td>
</tr>
<tr>
<td>IE 3320</td>
<td>3 IE 3360</td>
<td>3</td>
</tr>
<tr>
<td>PHIL 1305 or 1320 (Language, Philosophy, and Culture Component Code 040 [TCCN PHIL 1301 or PHIL 2306])</td>
<td>3 IE Elective</td>
<td>3</td>
</tr>
</tbody>
</table>

**Senior**

<table>
<thead>
<tr>
<th>First Semester Hours</th>
<th>Second Semester Hours</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 4310</td>
<td>3 IE 4320</td>
<td>3</td>
</tr>
<tr>
<td>IE 4355</td>
<td>3 IE 4350</td>
<td>3</td>
</tr>
<tr>
<td>IE 4392</td>
<td>3 IE 4393</td>
<td>3</td>
</tr>
<tr>
<td>IE 4370</td>
<td>3 MFGE 4396</td>
<td>3</td>
</tr>
<tr>
<td>Math/Science Elective for Applied Math Minor or IE Elective</td>
<td>3 IE Elective</td>
<td>3</td>
</tr>
<tr>
<td>IE Elective</td>
<td>3</td>
<td></td>
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</tbody>
</table>

Total Hours: 129
A minimum of nine (9) hours of advanced Industrial Engineering electives chosen from the list below are required.

A minimum of three (3) hours of approved Math/Science electives are required for IE student with applied math minor.

**Advanced Industrial Engineering Electives**

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE 3326</td>
<td>Numerical and Scientific Data Analysis Using Python</td>
<td>3</td>
</tr>
<tr>
<td>EE 4331</td>
<td>Introduction to Machine Learning for Engineering Applications</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 3190</td>
<td>Cooperative Education</td>
<td>1</td>
</tr>
<tr>
<td>ENGR 3290</td>
<td>Advanced Cooperative Education</td>
<td>2</td>
</tr>
<tr>
<td>ENGR 4390</td>
<td>Internship</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 4395</td>
<td>Independent Studies in Engineering</td>
<td>3</td>
</tr>
<tr>
<td>IE 3305</td>
<td>Introduction to Data Analysis</td>
<td>3</td>
</tr>
<tr>
<td>IE 4330</td>
<td>Reliability Engineering</td>
<td>3</td>
</tr>
<tr>
<td>IE 4335</td>
<td>Lean Six Sigma Methodologies</td>
<td>3</td>
</tr>
<tr>
<td>IE 4340</td>
<td>Optimization Techniques</td>
<td>3</td>
</tr>
<tr>
<td>IE 4360</td>
<td>Human Factors Design</td>
<td>3</td>
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<tr>
<td>IE 4381</td>
<td>Introduction to Systems Engineering</td>
<td>3</td>
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<tr>
<td>IE 4399D</td>
<td>Modern Heuristic Optimization Techniques</td>
<td>3</td>
</tr>
<tr>
<td>IE 4399F</td>
<td>Introduction to Data-Intensive Analysis and Simulation</td>
<td>3</td>
</tr>
<tr>
<td>MFGE 4367</td>
<td>Polymer Properties and Processing</td>
<td>3</td>
</tr>
<tr>
<td>EE 4392</td>
<td>Microelectronics Manufacturing I</td>
<td>3</td>
</tr>
</tbody>
</table>