REQUIREMENTS FOR THE BACHELOR OF SCIENCE IN
INDUSTRIAL AND SYSTEMS ENGINEERING/MASTER OF SCIENCE
GALLOGLY COLLEGE OF ENGINEERING
THE UNIVERSITY OF OKLAHOMA

GENERAL EDUCATION AND COLLEGE REQUIREMENTS
Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum.
Students must complete a minimum of 40 hours of General Education courses, chosen from
the approved list, including at least one upper-division Gen. Ed. course outside of the student’s
major. Courses graded P/NP will not apply.

A grade of C or better is required in each course in the curriculum, including all prerequisite
courses.

UNIVERSITY-WIDE GENERAL EDUCATION (MINIMUM 40 HOURS)
AND COLLEGE REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGL 1113</td>
<td>Principles of English Composition</td>
<td>3</td>
</tr>
<tr>
<td>ENGL 1213</td>
<td>Principles of English Composition</td>
<td>3</td>
</tr>
<tr>
<td>or EXPO 1213</td>
<td>Expository Writing</td>
<td>3</td>
</tr>
<tr>
<td>Language</td>
<td>0-10 hours in the same language</td>
<td></td>
</tr>
</tbody>
</table>

This requirement can be met by two years of the same language in high school:
Beginning Course (0-5 hours)
Beginning Course, continued (0-5 hours)

Mathematics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 1914</td>
<td>Differential and Integral Calculus I (Core I)</td>
<td>4</td>
</tr>
<tr>
<td>Core Area II: Natural Science (including one laboratory)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHTS 2514</td>
<td>General Physics for Engineering and Science Majors (Core II)</td>
<td>4</td>
</tr>
<tr>
<td>CHEM 1315</td>
<td>General Chemistry (Core II-Lab)</td>
<td>5</td>
</tr>
<tr>
<td>or CHEM 1335</td>
<td>General Chemistry I: Signature Course</td>
<td>5</td>
</tr>
</tbody>
</table>

Core Area III: Social Science

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSC 1113</td>
<td>American Federal Government</td>
<td>3</td>
</tr>
<tr>
<td>Choose one course</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Core Area IV: Arts & Humanities

Artistic Forms

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose one course</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Western Culture

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIST 1483</td>
<td>United States to 1865</td>
<td>3</td>
</tr>
<tr>
<td>or HIST 1493</td>
<td>United States, 1865 to the Present</td>
<td>3</td>
</tr>
<tr>
<td>Choose one course (excluding HIST 1483 and HIST 1493)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

World Culture

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose one course</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Core Area V: First-Year Experience

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose one course</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Total Credit Hours

40-50

FREE ELECTIVES
Electives to bring total applicable hours to the minimum total required for the degree including a
minimum of 40 upper-division hours.

Bachelor of Science in Industrial and Systems Engineering accredited by the Engineering
Accreditation Commission of ABET, https://www.abet.org, under the General Criteria and the
Industrial Engineering and Similarly Named Engineering Programs Program Criteria.

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific
graduation requirement, a grade of C or better is required in each course in the curriculum,
including all prerequisite courses.

MAJOR REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISE 2823</td>
<td>Enterprise Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ISE 2311</td>
<td>Computer Aided Design and Graphics Laboratory for Industrial Engineers</td>
<td>1</td>
</tr>
<tr>
<td>ISE 2303</td>
<td>Design and Manufacturing Process</td>
<td>3</td>
</tr>
<tr>
<td>ISE 3293</td>
<td>Applied Engineering Statistics</td>
<td>3</td>
</tr>
<tr>
<td>ISE 3304</td>
<td>Design and Manufacturing II</td>
<td>4</td>
</tr>
<tr>
<td>ISE 4113</td>
<td>Spreadsheet Dec Support Sys</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4553</td>
<td>Data-Driven Decision Making</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4623</td>
<td>Deterministic Systems Models</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4223</td>
<td>Fundamentals of Engineering Economy</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4563</td>
<td>Quality &amp; Reliability Engineering</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4633</td>
<td>Probabilistic Systems Models</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4804</td>
<td>Ergonomics in Systems Design</td>
<td>4</td>
</tr>
<tr>
<td>ISE 4333</td>
<td>Production Systems/Operations</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4663</td>
<td>Systems Analysis Using Simulation</td>
<td>3</td>
</tr>
<tr>
<td>ISE 5383</td>
<td>Systems Evaluation</td>
<td>3</td>
</tr>
<tr>
<td>ISE 5853</td>
<td>Data-Driven Decision Making II</td>
<td>3</td>
</tr>
<tr>
<td>ISE 4393</td>
<td>Capstone Design Project</td>
<td>3</td>
</tr>
<tr>
<td>ISE 5033</td>
<td>Systems Engineering</td>
<td>3</td>
</tr>
<tr>
<td>or ISE 5813</td>
<td>Advanced Human Factors and Ergonomics</td>
<td>3</td>
</tr>
<tr>
<td>Total Credit Hours</td>
<td>54</td>
<td></td>
</tr>
</tbody>
</table>

1These 9 credits are dual-counted, fulfilling requirements for both the undergraduate and graduate
Industrial and Systems Engineering degrees.

MAJOR SUPPORT REQUIREMENTS

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 2924</td>
<td>Differential and Integral Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 2934</td>
<td>Differential and Integral Calculus III</td>
<td>4</td>
</tr>
<tr>
<td>MATH 2513</td>
<td>Discrete Mathematical Structures</td>
<td>3</td>
</tr>
<tr>
<td>PHTS 2524</td>
<td>General Physics for Engineering and Science Majors</td>
<td>4</td>
</tr>
</tbody>
</table>

Additional College Requirements

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR 1411</td>
<td>Pathways to Engineering Thinking</td>
<td>1</td>
</tr>
<tr>
<td>C S 1323</td>
<td>Introduction to Computer Programming for Programmers</td>
<td>3</td>
</tr>
<tr>
<td>ENGR 2431</td>
<td>Electrical Circuits</td>
<td>1</td>
</tr>
<tr>
<td>ENGR 2461</td>
<td>Thermodynamics</td>
<td>1</td>
</tr>
<tr>
<td>ENGR 3441</td>
<td>Fluid Mechanics</td>
<td>1</td>
</tr>
<tr>
<td>CEES 2113</td>
<td>Statics</td>
<td>3</td>
</tr>
<tr>
<td>CEES 2153</td>
<td>Mechanics of Materials</td>
<td>3</td>
</tr>
<tr>
<td>C S 2334</td>
<td>Programming Structures and Abstractions</td>
<td>4</td>
</tr>
<tr>
<td>C S 2413</td>
<td>Data Structures</td>
<td>3</td>
</tr>
</tbody>
</table>

6 hours of C.S Electives chosen from an approved list

Total Credit Hours

41

1Engineering transfer students may take ENGR 3511 in place of ENGR 1411.

OU encourages students to complete at least 32 hours of applicable coursework each year to have the opportunity to graduate in 5 years.
Requirements for the Bachelor of Science in Industrial and Systems Engineering/Master of Science

To be chosen from the C S Elective list available in the ISE office, CEC 116. C S 3203 and C S 4513 are recommended electives.

### GRADUATE REQUIREMENTS

#### THESIS OPTION

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>Choose 15 hours from a list maintained by the academic unit and approved by the graduate college</td>
<td>15</td>
</tr>
<tr>
<td>Thesis</td>
<td>ISE 5980 Research for Master's Thesis</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

1. The thesis option requires 15 hours of electives, from a list maintained by the department and approved by the Graduate College. At least 6 hours must be in Industrial and Systems Engineering. Up to 9 hours may be non-ISE courses.

### NON-THESIS OPTION

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electives</td>
<td>Choose 21 hours from a list maintained by the academic unit and approved by the graduate college</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td><strong>Total Credit Hours</strong></td>
<td><strong>21</strong></td>
</tr>
</tbody>
</table>

1. The non-thesis option requires 21 hours of electives from a list maintained by the department and approved by the Graduate College. At least 12 hours must be in Industrial and Systems Engineering. Up to 9 hours may be non-ISE courses.

- **NOTE:** No more than 6 credit hours of 4000-level graduate courses may be applied to the degree. These courses must be outside ISE and approved for graduate credit. No 3000-level or lower courses may be applied to the degree.

**SUGGESTED SEMESTER PLAN OF STUDY**

Bachelor of Science in Industrial and Systems Engineering accredited by the Engineering Accreditation Commission of ABET, [https://www.abet.org/](https://www.abet.org/), under the General Criteria and the Industrial Engineering and Similarly Named Engineering Programs Program Criteria.

In order to progress in your curriculum in the Gallogly College of Engineering, and as a specific graduation requirement, a grade of C or better is required in each course in the curriculum, including all prerequisite courses.

Two college-level courses in a single world language are required; this may be satisfied by successful completion of 2 years in a single world language in high school. Students who must take language at the University will have an additional 6-10 hours of coursework.

Admission to the accelerated program is by application and requires a minimum OU GPA and combined GPA of 3.25. Students may enter the accelerated program based on the undergraduate degree pattern offered in the year they first enrolled in the Oklahoma State System of Higher Education or later.

Students are eligible for graduate status upon graduation with the Bachelor of Science in Industrial Engineering.

### Year | FIRST SEMESTER | Hours | SECOND SEMESTER | Hours
---|---|---|---|---
**FRESHMAN**
- ENGL 1113 Principles of English Composition (Core I) 3
- CHEM 1315 General Chemistry (Core II-Lab) 1
- MATH 1914 Differential and Integral Calculus I (Core I) 2
- ENGR 1411 Pathways to Engineering Thinking 3

**CREDIT HOURS** 16 | **CREDIT HOURS** 17

**SOPHOMORE**
- MATH 2934 Differential and Integral Calculus III 2
- CS 2334 Programming Structures and Abstractions
- CEES 2111 Statics
- PHYS 2524 General Physics for Engineering and Science Majors
- ISE 2823 Enterprise Engineering

**CREDIT HOURS** 18 | **CREDIT HOURS** 16

**JUNIOR**
- ISE 3304 Design and Manufacturing II
- ISE 4113 Spreadsheet Dec Support Sys
- ISE 4553 Data-Driven Decision Making I
- ISE 4623 Deterministic Systems Models
- CS 3203 Software Engineering
- PSC 1113 American Federal Government (Core III)

**CREDIT HOURS** 19 | **CREDIT HOURS** 18

**SENIOR**
- ISE 4333 Production Systems/Operations
- ISE 4663 Systems Analysis Using Simulation
- ISE 5383 Systems Evaluation 5
- ISE 5853 Data-Driven Decision Making II 5
- C5 4513 Database Management Systems (or other C S Elective) 6
- ENGR 2431 Electrical Circuits

**CREDIT HOURS** 16 | **CREDIT HOURS** 15

**FIFTH YEAR**
- ISE 5000-Level Graduate Elective 7
- Graduate Elective
- Graduate Elective
- Graduate Elective
- ISE 5980 Research for Master's Thesis

**CREDIT HOURS** 12 | **CREDIT HOURS** 9

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1. CHEM 1315 can be substituted with CHEM 1335 (Fall only).
2. MATH 1823, MATH 2423, MATH 2433, and MATH 2443 sequence can be substituted for MATH 1914, MATH 2924, and MATH 2934.
3. Engineering transfer students may take ENGR 3511 in place of ENGR 1411.
4. To be chosen from the University-Wide General Education Approved Course List. Three of these hours must be upper-division (3000-4000). See list in the Class Schedule.
5. These courses are dual-counted, fulfilling requirements for both the undergraduate and graduate Industrial and Systems Engineering degrees.
6. To be chosen from the C S Elective list available in the ISE office, CEC 116.
7. Must be approved by the Thesis Committee in accordance with current Master of Science requirements available in the ISE office, CEC 116.

Courses designated as Core I, II, III, IV, or V are part of the General Education curriculum. Students must complete a minimum of 40 hours of General Education courses, chosen from the approved list.