

# ASSOCIATE IN ENGINEERING SCIENCE (A.E.S.) – DEGREE AND PRE-MAJOR

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The Engineering curriculum is designed to prepare students to continue studies toward the baccalaureate degree in engineering in four-year colleges and universities. Since this curriculum places emphasis on mathematics and its applications in the sciences, students should possess skills in this area.

Completion of this curriculum and compliance with other graduation requirements will enable the student to earn an Oakton A.E.S. degree and to continue working toward a wide choice of specialized fields of engineering, including mechanical, civil, electrical, computer, industrial, and aerospace engineering.

Students should note that four-year colleges and universities vary in specific course and transfer requirements. Therefore, it is important that in selecting Oakton courses students consult the Engineering department chair or the Office of Advising, Transitions, and Student Success, as well as the catalog and/or admissions advisors at the senior institution to which transfer is intended. **General education courses should be selected from the list of IAI General Education Courses.**

## Associate in Engineering Science Degree

64 Semester Credit Hours; Curriculum: 0850

**Note:** Refer to IAI General Education Courses page for guidelines on General Education course selection.

Code	Title	Hours
<b>General Education Requirements:</b>		
<i>Area A — Communications</i>		
EGL 101	Composition I	3
EGL 102	Composition II	3
<i>Area B — Mathematics</i>		
MAT 250	Calculus I	5
MAT 251	Calculus II	4
<i>Area C — Science</i>		
PHY 221	General Physics I	5
PHY 222	General Physics II	5
<i>Area D — Social and Behavioral Sciences</i>		
Two courses (two courses from the same discipline are recommended)		6
<i>Area E — Humanities/Fine Arts</i>		
One course from a humanities or fine arts discipline		3
<i>Area F — Global Studies</i> <sup>1</sup>		
One course that satisfies Global Studies requirement		0-3
<i>Area G — U.S. Diversity Studies</i> <sup>2</sup>		
One course that satisfies U.S. Diversity Studies requirement		0-3
<b>Total Hours</b>		<b>34</b>

Code	Title	Hours
<b>Major Requirements</b>		
CHM 121	General College Chemistry I	4
MAT 252	Calculus III	4
MAT 262	Ordinary Differential Equations	3
Select one of the following:		3
CSC 155	C++ Computer Science I	
CSC 156	Java Computer Science I	
CSC 157	Python Computer Science I	
CSC 170 & CSC 171	Introduction to Numerical Methods and C++ Programming for Engineers	
CSC 170 & CSC 173	Introduction to Numerical Methods and Java Programming for Engineers	
CSC 170 & CSC 174	Introduction to Numerical Methods and Python Programming for Engineers	
Additional courses dependent on transfer requirements and major concentration: <sup>3</sup>		16
CHM 122, CSC 144/MAT 144, CSC 240, CSC 241, CSC 242, CSC 255, ENG 120, ENG 211, ENG 212, ENG 217, ENG 220, ENG 250, MAT 260, PHY 223 or other approved courses		
<b>Total Hours</b>		<b>30</b>

- <sup>1</sup> Students may take a Global Studies course that satisfies both Area F and another Area requirement.
- <sup>2</sup> Students may take a U.S. Diversity Studies course that satisfies both Area G and another Area requirement.
- <sup>3</sup> Consult the department chair and/or academic advisor before selecting these courses. Baccalaureate Engineering programs vary greatly regarding which courses are needed and accepted for transfer.

## Engineering Pre-major

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The following pre-major is recommended for students who are considering completing a Bachelor's degree in Engineering after transferring to a four-year institution. It is designed for students who have not decided upon a specific four-year college or university. Once a transfer school is selected, students are strongly encouraged to consult the Office of Advising, Transitions, and Student Success and the transfer institution's catalog to select courses that will meet both Oakton and transfer institution requirements.

For more information on course selection or program-specific advising, contact the department chair. Part time students should also consult the Office of Advising, Transition, and Student Success for part-time pre-major recommendations. **General Education courses should be selected from the list of IAI General Education Courses.**

First Year		Hours
Semester One		
EGL 101	Composition I	3
MAT 250	Calculus I	5
CHM 121	General College Chemistry I	4
Select one Social and Behavioral Sciences course <sup>1</sup>		3
<b>Hours</b>		<b>15</b>
Semester Two		
EGL 102	Composition II	3
MAT 251	Calculus II	4

PHY 221	General Physics I	5
Select one of the following:		3
CSC 155	C++ Computer Science I	
CSC 156	Java Computer Science I	
CSC 157	Python Computer Science I	
CSC 170 & CSC 171	Introduction to Numerical Methods and C++ Programming for Engineers	
CSC 170 & CSC 173	Introduction to Numerical Methods and Java Programming for Engineers	
CSC 170 & CSC 174	Introduction to Numerical Methods and Python Programming for Engineers	
Select one Social and Behavioral Sciences course <sup>1</sup>		3
<b>Hours</b>		<b>18</b>
<b>Second Year</b>		
<b>Semester One</b>		
MAT 252	Calculus III	4
PHY 222	General Physics II	5
Select two of the following: <sup>2</sup>		6
ENG 120	Engineering Graphics	
ENG 211	Analytical Mechanics (Statics)	
ENG 250	Introduction to Digital Systems <sup>3</sup>	
CSC/MAT 144	Discrete Mathematics	
CSC 240	C++ Data Structures	
CSC 241	Java Data Structures	
CSC 242	Python Data Structures	
<b>Hours</b>		<b>15</b>
<b>Semester Two</b>		
MAT 262	Ordinary Differential Equations	3
Select a minimum of ten credit hours from the following: <sup>2</sup>		10
CHM 122	General College Chemistry II	
CSC/MAT 144	Discrete Mathematics	
CSC 255	Objects and Algorithms	
ENG 211	Analytical Mechanics (Statics)	
ENG 212	Analytical Mechanics (Dynamics)	
ENG 217	Strength of Materials	
ENG 220	Engineering Circuit Analysis <sup>4</sup>	
ENG 250	Introduction to Digital Systems <sup>3</sup>	
MAT 260	Linear Algebra	
PHY 223	Modern Physics <sup>4</sup>	
Select one Humanities/Fine Arts course <sup>1</sup>		3
<b>Hours</b>		<b>16</b>
<b>Total Hours</b>		<b>64</b>

<sup>1</sup> When choosing Social and Behavioral Studies and Humanities/Fine Arts courses, please select at least one course that also satisfies Global Studies requirement and one course that also satisfies the U.S. Diversity Studies requirement.

<sup>2</sup> Consult the department chair and/or advisor before selecting these courses. Baccalaureate Engineering programs vary greatly regarding which courses are needed and accepted for transfer.

<sup>3</sup> Course typically offered in Fall.

<sup>4</sup> Course typically offered in Spring.

**Note:** Pre-major is a recommended sequence and selection of courses. See Associate in Engineering Science (A.E.S) page for degree requirements.