

# BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

Program Contact: J (emre.tokgoz@quinnipiac.edu) Justin Kile (justin.kile@quinnipiac.edu) 203-582-3372

Industrial engineers are employed throughout various industries, including manufacturing, healthcare and service, to determine the most effective and efficient ways to utilize resources. Industrial engineers are concerned with increasing productivity through the effective management of people, processes and technology. Through exposure to the University Curriculum, foundational coursework in science, mathematics, major field courses and extracurricular activities, students graduating with a BS in Industrial Engineering achieve intellectual proficiencies in critical thinking and reasoning, scientific literacy, quantitative reasoning, information fluency and creative thinking and visual literacy. They also achieve interpersonal proficiencies in written and oral communication, responsible citizenship, diversity awareness and sensitivity and social intelligence.

## BS in Industrial Engineering Curriculum

The program requires 120 credits. Students must complete the following requirements:

Within the policies of the School of Computing and Engineering, the Industrial Engineering program enforces credit limits during the academic terms. Exceeding 18 credits in the Fall or Spring semesters, 4 credits in the January term, or 10 credits in each Summer term requires the approval of the dean's office.

Code	Title	Credits
<b>University Curriculum</b>		
<b>Foundations of Inquiry:</b>		
FYS 101	First-Year Seminar	3
EN 101	Introduction to Academic Reading and Writing	3
EN 102	Academic Writing and Research	3
<b>Quantitative Literacy:</b>		
MA 285	Applied Statistics	3
<b>Disciplinary Inquiry:</b>		
Take 4 credits of IE approved UC Natural Science <sup>1</sup>		4
Humanities		3
Social Science		3
Fine Arts		3
<b>Personal Inquiry:</b>		
Part 1:		
Take 4 additional credits of IE approved UC Natural Science <sup>1</sup>		4
Humanities, Social Science, Fine Arts (2 classes; must be from two different areas)		6
Part 2:		
ENR 110	The World of an Engineer <sup>2</sup>	3
MA 151	Calculus I	4
Complete one of the following		3-4
Take additional IE approved UC Natural Science course <sup>1</sup>		

or		
Any UC approved course		
<b>Integrative Capstone:</b>		
University Capstone		3
In addition to the University Curriculum, students majoring in Industrial Engineering must complete the following requirements:		
<b>Foundational Courses for Industrial Engineering</b>		
Take one of the following CSC courses		3-4
CSC 105	Computing: Multidisciplinary Approach	
or		
CSC 106	Introduction to Programming for Engineers	
or		
CSC 110 & 110L	Programming and Problem Solving and Programming and Problem Solving Lab	
ENR 210	Engineering Economics and Project Management	3
Select 11 to 15 credits of approved Math and Science Electives <sup>3,4</sup>		11-15
<b>Common Engineering Curriculum</b>		
ENR 395	Professional Development Seminar	1
<b>Industrial Engineering Courses</b>		
IER 220	Production Systems (MER 225)	3
IER 230	Lean Systems Engineering (MER 235)	3
IER 240	Physical Human Factors and the Workplace (MER 245)	1
IER 265	Cognitive Human Factors and the Workplace (MER 265)	2
IER 280	Data Analytics I	3
IER 310	Operations Research I (MER 315)	3
IER 375	Statistical Process Control	3
IER 401	Introduction to Engineering Management	3
IER 402	Engineering Quality Management & Decision Making	3
IER 490	Engineering Professional Experience	1
IER 491	Capstone Project I	3
IER 498	Capstone Project II	3
<b>Industrial Engineering Electives</b>		
IER Technical Electives <sup>5</sup>		9
CER, IER, MER, SER Technical Electives <sup>6</sup>		3
Open Electives		7-11

<sup>1</sup> IE approved UC science include: BIO101 & 101L, BIO102 & 102L, BIO 208 & 208L, BMS 200, CHE 110 & 110L, CHE 111 & 111L, PHY 121, PHY 122, other UC Natural Science course with prior approval of program director

2

Students that transfer into the IE program after their first year may substitute another engineering-based introductory course with program director approval.

3

Students need a total of 30 credits of Approved Math and Science Electives. These include MA 151, MA 285, IE approved UC science, and Math & Science Electives.

4

Math & Science Electives: IE approved UC science course above, and BIO211, BIO211L, MA153, MA154, MA205, MA229, MA251, MA265, MA301, MA365, other Math or Science course with prior approval of program director

5

All IER courses that are not required for an IE degree.

6

One additional IER technical elective or any 200-level or higher ENR, CER, MER, SER courses that are not required for an IE degree.

## Student Outcomes

Attainment of the following outcomes prepares graduates to enter the professional practice of engineering:

1. an ability to identify, formulate and solve complex engineering problems by applying principles of engineering, science and mathematics.
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety and welfare, as well as global, cultural, social, environmental and economic factors.
3. an ability to communicate effectively with a range of audiences.
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental and societal contexts.
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks and meet objectives.
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

## Program Educational Objectives

Within four to seven years of graduation, Quinnipiac University industrial engineering program alumni are expected to:

1. Attain sustained employment in professional positions of increasing responsibility and impact.
2. Successfully pursue professional training, engineering certification, advanced professional degrees or graduate studies.
3. Demonstrate professional and intellectual growth as managers and leaders in their profession, society and communities.

## Admission Requirements: School of Computing and Engineering

The requirements for admission into the undergraduate School of Computing and Engineering programs are the same as those for admission to Quinnipiac University.

Admission to the university is competitive, and applicants are expected to present a strong college prep program in high school. Prospective first-year students are strongly encouraged to file an application as early in the senior year as possible, and arrange to have first quarter grades sent from their high school counselor as soon as they are available.

For detailed admission requirements, including required documents, please visit the **Admissions** page of this catalog.

## Seamless Transfer Agreement with Gateway Community College (GCC), Housatonic Community College (HCC) and Norwalk Community College (NCC)

Under this Transfer Agreement, GCC, HCC and NCC graduates will be guaranteed admission into a bachelor's degree program with third year (junior) status at Quinnipiac University on the condition that they:

- Graduate with an associate in arts, an associate in science in business, College of Technology engineering science and computer science, nursing or an allied health degree with a minimum cumulative GPA of 3.00 (this may be higher in specific programs).
- Satisfy all other Quinnipiac University transfer admission requirements and requirements for intended major.

Quinnipiac University agrees to accept the general education embedded in these associate degree programs in accordance with Quinnipiac preferred choices for general education as meeting all the requirements of its undergraduate general education except for the Integrative Capstone Experience and where courses are encumbered by the major (e.g., General Chemistry for the Disciplinary Inquiry Natural Science requirement for a Biochemistry major).

## Suggested Transfer Curriculum for BS in Industrial Engineering

A minimum of 60 credits is required for transfer into the BS in Industrial Engineering program. Below is a sample plan of study for the first two years.

Course	Title	Credits
<b>First Year</b>		
<b>Fall Semester</b>		
English I		3
Calculus I		4
Introduction to Engineering		3
History Elective		3
Elective		3
<b>Credits</b>		<b>16</b>
<b>Spring Semester</b>		
English II		3
Calculus II		4
Programming		3

Calculus-based Physics I	3
Chemistry	3
<b>Credits</b>	<b>16</b>
<b>Second Year</b>	
<b>Fall Semester</b>	
Calculus III - Multivariable	4
Introduction to Ethics	3
Calculus-based Physics II	3
Elective	3
Elective	3
<b>Credits</b>	<b>16</b>
<b>Spring Semester</b>	
Differential Equations	3
Engineering Statics	3
Math Elective	3
Elective	3
Elective	3
<b>Credits</b>	<b>15</b>
<b>Total Credits</b>	<b>63</b>