

BACHELOR OF SCIENCE IN INDUSTRIAL ENGINEERING

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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.

The BS in Industrial Engineering program requires a minimum of 120 credits for degree completion.

Within the policies of the School of Computing & 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.

Please see footnotes for additional information.

Code	Title	Credits
University Curriculum (http://catalog.qu.edu/academics/university-curriculum/)		48
Math and Science Requirement (must meet 30 credits)		
MA 151	Calculus I	
MA 285	Applied Statistics	
7-8 credits of IE approved UC science ¹		
Approved Math and Science Electives ²		15-16
Foundational Courses for Industrial Engineering		6-7
Take one of the following CSC courses		
CSC 105	Computing: Multidisciplinary Approach	
CSC 106	Introduction to Programming for Engineers	
CSC 110 & 110L	Programming and Problem Solving and Programming and Problem Solving Lab	
ENR 110	The World of an Engineer ³	
ENR 395	Professional Development Seminar	
IER 490	Engineering Professional Experience	
Engineering topics for Industrial Engineering		
ENR 210	Engineering Economics and Project Management	3
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 491	Capstone Project I	3
IER 498	Capstone Project II	3
Industrial Engineering Electives		
IER Technical Electives ⁴		9
CER, IER, MER, SER Technical Electives ⁵		3
Open Electives		6
Total Credits		120-122

¹ IE approved UC science include: BIO 101 & 101L, BIO 102 & 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 Any IE approved UC science not already taken and BIO 211, BIO 211L, MA 153, MA 154, MA 205, MA 229, MA 251, MA 265, MA 301, MA 365, other Math or Science course with prior approval of program director

³ Students that transfer into the IE program after their first year may substitute another engineering-based introductory course with program director approval.

⁴ All IER courses that are not required for an IE degree.

⁵ One additional IER technical elective or any 200-level or higher ENR, CER, MER, SER courses that are not required for an IE degree.

Course plans are subject to change. Course availability, potential transfer credits, and course prerequisite completion may influence the final course schedule for each program.

Course	Title	Credits
First Year		
Fall Semester		
ENR 110	The World of an Engineer (UC Personal Inquiry 2)	3
EN 101	Introduction to Academic Reading and Writing (UC First Year Writing)	3
MA 140	Pre-Calculus (UC Personal Inquiry 2)	3
FYS 101	First-Year Seminar (UC Foundations Inquiry)	3
University Curriculum course		3
Credits		15
Spring Semester		
EN 102	Academic Writing and Research (UC Writing 2)	3
CSC 105	Computing: Multidisciplinary Approach	3
MA 151	Calculus I (UC Personal Inquiry 2)	4
University Curriculum course		3

University Curriculum course	3
Credits	16
Second Year	
Fall Semester	
IER 240 Physical Human Factors and the Workplace (MER 245)	1
IER 265 Cognitive Human Factors and the Workplace (MER 265)	2
MA 285 Applied Statistics (UC Math)	3
UC Natural Science with Lab ¹	4
University Curriculum course	3
University Curriculum course	3
Credits	16
Spring Semester	
ENR 210 Engineering Economics and Project Management	3
IER 310 Operations Research I (MER 315)	3
Math/Science Elective ²	3
UC Natural Science with Lab ¹	4
University Curriculum course	3
Credits	16
Third Year	
Fall Semester	
IER 220 Production Systems (MER 225)	3
IER 230 Lean Systems Engineering (MER 235)	3
IER Technical Elective	3
Math/Science Elective	4
ENR 395 Professional Development Seminar	1
Credits	14
Spring Semester	
IER 280 Data Analytics I	3
IER Technical Elective	3
Math/Science Elective	4
Open Elective	4
Credits	14
Fourth Year	
Fall Semester	
IER 375 Statistical Process Control	3
IER 401 Introduction to Engineering Management	3
IER 490 Engineering Professional Experience	1
IER 491 Capstone Project I	3
IER Technical Elective	3
Credits	13
Spring Semester	
IER 402 Engineering Quality Management & Decision Making	3
IER 498 Capstone Project II	3
ENR Technical Elective	3
Math/Science Elective	4
Open Elective	3
Credits	16
Total Credits	120

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² Math & Science Electives: IE approved UC science course above, and BIO 211, BIO 211L, MA 153, MA 154, MA 205, MA 229, MA 251, MA 265, MA 301, other Math or Science course with prior approval of program director

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 & Engineering

The requirements for admission into the undergraduate School of Computing & 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
First Year		
Fall Semester		
English I		3
Calculus I		4
Introduction to Engineering		3
History Elective		3
Elective		3
Credits		16
Spring Semester		
English II		3
Calculus II		4
Programming		3
Calculus-based Physics I		3
Chemistry		3
Credits		16
Second Year		
Fall Semester		
Calculus III - Multivariable		4
Introduction to Ethics		3
Calculus-based Physics II		3
Elective		3

Elective	3
Credits	16
Spring Semester	
Differential Equations	3
Engineering Statics	3
Math Elective	3
Elective	3
Elective	3
Credits	15
Total Credits	63