

ENGINEERING BACHELOR OF SCIENCE

Leading to the Bachelor of Science Degree in Engineering

The Bachelor of Science in Engineering is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

The Bachelor of Science in Engineering (BSEN) degree program is a four-year innovative curriculum providing students the flexibility to customize their engineering degree. Students are able to integrate an engineering concentration course of study with directed studies or minor(s) of their choice to broaden their education for their professional and personal goals. Students work with the associate dean and/or a full-time faculty mentor to customize their education. Advice shall be provided for both their specialized area of engineering study (concentration) and an area of directed studies or minor(s). The BSEN program allows students to compliment an engineering curriculum with directed study courses/ minor(s) to expand their education beyond a single area of study.

Students in the BSEN program are required to select one area of engineering concentration at the end of their freshman year from the following concentrations: Biomedical, Civil, Computer, Electrical, Mechanical or Manufacturing, as well as a minor(s)/directed studies. Recommended plans of study are indicated below in the concentration curriculum sheets for the various engineering concentration tracks. Students are required to consult with their academic advisers to identify their concentration track and directed studies path. Students may plan to study abroad for one semester, ideally during the Fall semester of their junior year.

All concentrations of the BSEN curriculum include the following:

- A set of core engineering concentration courses
- A set of mathematics and science courses supporting the engineering discipline
- A set of general education courses providing the foundation to understand the role and responsibility of an engineer in society, and in a global environment
- A set of directed study courses/minor(s) courses providing a pathway for students' future goals. A set of interdisciplinary design courses allowing students to collaborate with one another on a variety of projects

BSEN curriculum total credit hours for all concentration tracks:

- Engineering Concentration courses: 52 credits
- Mathematics and Basic Science: 32 credits
- General Education: 28 credits
- Directed Studies and other electives: 16 credits
- Business / Management: 6 credits

BSEN Program Mission Statement

The mission of the BSEN engineering program is to prepare students to become practicing engineers who are entrepreneurs, innovative problem solvers, engineering managers, system engineers, engineers having multidisciplinary skills, and engineering design professionals.

Program Educational Objectives

The educational objectives of this program, which describe the expectations of our graduates a few years after graduation, are as follows:

- To pursue a life of curiosity and passion to explore the diverse applications of engineering
- To apply Engineering fundamentals with confidence and humility to develop innovative and effective solutions in a professional and ethical manner
- To pursue professional development to meet and adapt to emerging and evolving engineering challenges

Student Outcomes

Upon graduation, BSEN graduates demonstrate the following outcomes:

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.

Career Opportunities

The Bachelor of Science in Engineering (BSEN) is a co-operative education program providing students with one of the most important aspects of a Wentworth education. BSEN students must complete at least two non-consecutive semesters of full-time co-operative work experience in industry in fields related to their engineering concentration and directed study courses. Graduates may continue their studies at the graduate level or pursue an industrial career. Wentworth BSEN graduates are multidisciplinary engineers, and as such, are in high demand and well prepared to meet the professional challenges of a constantly changing and increasingly global workforce.

Total credits for degree: 134

Wentworth's Bachelor of Science in Engineering (BSEN) is a 4-year innovative interdisciplinary degree for students who wish to create a curriculum integrating their engineering and non-engineering interests in a structured manner. Study Abroad is also highly encouraged with various study abroad and co-op abroad options to select from.

BSEN students are required to select a concentration from six possible engineering areas (1) Biomedical, (2) Civil, (3) Computer, (4) Electrical,

(5) Mechanical, (6) Manufacturing; and directed studies/minor(s) areas (please check each department for minors offered).

Minor Option

Students may select a minor from a variety of departments through the the School of Architecture and Design, the School of Computing and Data Science, the School of Management, and School of Sciences and Humanities, fulfill their minor(s) requirements.

Directed Studies Option

Students may select courses that match their personal interests and broaden their career options. The combinations are varied and limited only by student interests and imagination. Our engineering students have focused on fields ranging from Sustainability, Life Cycle Analysis, Business Management, Computer Science, Applied Math and Sciences, Music, and Art.

Working closely with a faculty advisor and/or a full-time faculty member, students design an engineering education meeting individualized personal and professional goals.

Course	Title	Credits
Freshman Year		
Fall Semester		
ENGR1000	INTRODUCTION TO ENGINEERING	3
ENGR1600	FUNDAMENTALS OF CAD & CAM	1
MATH1750	ENGINEERING CALCULUS I	4
English Sequence		4
PHYS1250	ENGINEERING PHYSICS I	4
FYS1000	FIRST YEAR SEMINAR	0
	Credits	16
Spring Semester		
ENGR1500	INTRODUCTION TO ENGINEERING DESIGN	3
ENGR1600 or ENGR1800	FUNDAMENTALS OF CAD & CAM or PROGRAMMING WITH MATLAB	1
MATH1850	ENGINEERING CALCULUS II	4
PHYS1750	ENGINEERING PHYSICS II	4
English Sequence		4
	Credits	16
Sophomore Year		
Fall Semester		
MATH2025	MULTIVARIABLE CALCULUS	4
Directed Studies Elective		3
Directed Studies Elective		4
COMP Computer Science Elective		4
Engineering Course		3
	Credits	18
Spring Semester		
MATH2500	DIFFERENTIAL EQUATIONS	4
Directed Studies Elective		3
Engineering Concentration		3
Engineering Concentration		4
HSS Elective		4
	Credits	18

Course	Title	Credits
Summer Semester		
COOP3000	PRE CO-OP WORK TERM (OPTIONAL)	0
	Credits	0
Junior Year		
Fall Semester		
Directed Studies Elective		3
Engineering Concentration		4
Engineering Concentration		4
Management Elective		3
HSS Elective		4
	Credits	18
Spring Semester		
COOP3500	COOP EDUCATION 1	0
	Credits	0
Summer Semester		
ENGR3500	ENGINEERING JUNIOR DESIGN	4
Engineering Concentration		4
Management Elective		3
HSS Elective		4
	Credits	15
Senior Year		
Fall Semester		
COOP4500	COOP EDUCATION 2	0
	Credits	0
Spring Semester		
ENGR5000	ENGINEERING SENIOR DESIGN I	3
Directed Studies or General Elective		3
Engineering Concentration		4
Engineering Concentration		4
HSS Elective		4
	Credits	18
Summer Semester		
ENGR5500	ENGINEERING SENIOR DESIGN II	3
Engineering Concentration		4
Math/Science Elective		4
HSS Elective		4
	Credits	15
	Total Credits	134

ENGL/HSS Note

Full-time students are required to complete:

- At least one course in Humanities
- At least one course in the Social Sciences
- The remaining courses from either the Humanities or Social Sciences category.

Students with a three English course sequence may use the third English course to satisfy a Humanities requirement.

A minimum of 28 credits total, including English, humanities, and social science credit, is required to complete the humanities and social sciences graduation requirement.

BSEN Program Timeline

Action	Year	Term	Next Step
Registration Access Codes	Freshman and 1st Semester Sophomore Semester	FALL/SPRING	Meet with (RACs access code, 'Alternate PIN') Advisor/ Academic Success Advisor
Concentration Declaration	Freshman	FALL for BMED Concentration/ all other concentrations SPRING	Meet with Faculty Advisor or Academic Success Advisor
Minor Declaration	Freshman	FALL for BMED minor/ all other minors SPRING	Meet with Faculty Advisor or Academic Success Advisor
Study Abroad interest	Freshman/ Sophomore	Fall of Sophomore Year	Meet with an Associate Dean of the School of Engineering
Study Abroad semester	Junior	FALL	Prior discussions and paperwork with Associate Dean of the School of Engineering