

# ENGINEERING BACHELOR OF SCIENCE

## Leading to a 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 can 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, or Mechanical, 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: 45 credits
- Mathematics and Basic Science: 32 credits
- General Education: 20 credits
- Electives: 16 credits
- Business / Management: 18 credits

## Program Educational Objectives

Graduates of the engineering program will (within a few years of graduation):

- Pursue a life of curiosity and passion to explore the diverse applications of engineering

- Apply Engineering fundamentals with confidence and humility to develop innovative and effective solutions in a professional and ethical manner
- Pursue professional development to meet and adapt to emerging and evolving engineering challenges

## Student Outcomes

Students from the engineering program will attain (by the time of graduation):

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.

Total credits for degree: 127-130

Wentworth's Bachelor of Science in Engineering (BSEN) is a 4-year innovative interdisciplinary degree for students who prefer 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 five possible engineering areas (1) Biomedical, (2) Civil, (3) Computer, (4) Electrical, (5) Mechanical; and directed studies/minor(s) areas.

## Minor Option

Students may select a minor from a variety of Academic Units 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.

## Electives

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
<b>Freshman Year</b>		
<b>Fall Semester</b>		
ENGR1100	INTRODUCTION TO ENGINEERING EXPERIENCE	2
ENGR1206	ENGINEERING LABORATORY-BSEN	2
MATH1750	ENGINEERING CALCULUS I	4
PHYS1250	ENGINEERING PHYSICS I	4
English Sequence*		4
<b>Credits</b>		<b>16</b>
<b>Spring Semester</b>		
ENGR1300	FIRST-YEAR ENGINEERING DESIGN	2
ENGR1406	APPLIED ENGINEERING ANALYSIS-BSEN	2
MATH1850	ENGINEERING CALCULUS II	4
PHYS1750	ENGINEERING PHYSICS II	4
English Sequence*		4
<b>Credits</b>		<b>16</b>
<b>Sophomore Year</b>		
<b>Fall Semester</b>		
MATH2025	MULTIVARIABLE CALCULUS	4
Engineering Concentration (EC) 1		3
Computer Science (COMP) Elective 1		4
Elective 1		4
<b>Credits</b>		<b>15</b>
<b>Spring Semester</b>		
MATH2500	DIFFERENTIAL EQUATIONS	4
Engineering Concentration (EC) 2		4
Engineering Concentration (EC) 3		4
Elective 2		3
<b>Credits</b>		<b>15</b>
<b>Summer Semester</b>		
COOP3000	PRE CO-OP WORK TERM (OPTIONAL)	0
<b>Credits</b>		<b>0</b>
<b>Junior Year</b>		
<b>Fall Semester</b>		
Engineering Concentration (EC) 4		4
Engineering Concentration (EC) 5		4
Management Elective (MGMT) 1		3
HSS Elective*		4
Elective 3		3
<b>Credits</b>		<b>18</b>
<b>Spring Semester</b>		
COOP3500	COOP EDUCATION 1	0
<b>Credits</b>		<b>0</b>
<b>Summer Semester</b>		
ENGR3500	ENGINEERING JUNIOR DESIGN	4
Engineering Concentration (EC) 6		4
Management Elective (MGMT) 2		3
HSS Elective*		4
<b>Credits</b>		<b>15</b>

Course	Title	Credits
<b>Senior Year</b>		
<b>Fall Semester</b>		
COOP4500	COOP EDUCATION 2	0
<b>Credits</b>		<b>0</b>
<b>Spring Semester</b>		
Capstone 1		3
Engineering Concentration (EC) 7		4
Engineering Concentration (EC) 8		4
MA/SC Math or Science Elective 1		4
Elective 4		3
<b>Credits</b>		<b>18</b>
<b>Summer Semester</b>		
Capstone 2		3
Engineering Concentration (EC) 9		3
MA/SC Math or Science Elective 2		4
HSS Elective*		4
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>127</b>

**ENGL/HSS Note**

Students are required to complete:

- At least one course in Humanities: CSAS, HSSI, HIST, HUMN, LITR and PHIL
- At least one course in the Social Sciences: CSAS, HSSI, COMM, ECON, ENVM, POLS, PSYC and SOCL
- The remaining course 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 20 credits total, including English, humanities, and social science credit, is required to complete the humanities and social sciences graduation requirement.

Math Placement (<https://catalog.wit.edu/academic-policies-procedures/ug/math-placement/>) may alter the course schedule above.

**BSEN Program Timeline**

Action	Year	Term	Next Step
Registration Access Codes	Freshman	FALL/SPRING	Meet with (RACs access code, 'Alternate PIN') Advisor/Student Success Advisor
Concentration Declaration	Freshman	FALL for BMED Concentration/ all other concentrations SPRING	Meet with Faculty Advisor or Student Success Advisor
Minor Declaration	Freshman	FALL for BMED minor/ all other minors SPRING	Meet with Faculty Advisor or Student Success Advisor