

# COMPUTER ENGINEERING BACHELOR OF SCIENCE

## Leading to a Bachelor of Science Degree in Computer Engineering

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

Computer engineering builds on the fundamentals of the electrical engineering and computer science fields. Computer engineers are involved in many hardware and software aspects of computing, from the design of digital circuits to computer networks. They design, build, analyze, and evaluate computer systems. Students in this program take courses in logic design, computer organization and architecture, embedded computer systems, operating systems, computer networks, digital signal processing, software engineering, database systems, circuits, electronics, and engineering design. The curriculum incorporates both theory and practice in a learning environment that emphasizes hands-on experience and teamwork. Our graduates are well prepared for pursuing both an advanced degree and a professional career.

## Program Educational Objectives

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

- Lifelong learning—Pursue professional development to meet and adapt to the emerging and evolving technology.
- Successful careers—Embark on a successful career in the field of computer engineering or related fields.
- Professionalism—Graduates will contribute to their fields or professions.

## Student Outcomes

Students from the computer 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: 126

This is a four-year program, starting in the fall semester of the student's first year and planned to end in the summer semester of the student's fourth year.

## Special Requirement for Graduation

In addition to the general graduation requirements of the University, specific graduation requirements from the Computer Engineering (BSCO) program with a Bachelor of Science degree include maintaining a minimum cumulative grade point average of 2.0 for all technical courses. The courses used to determine the cumulative grade point average for all BSCO technical courses are courses with ELEC and ENGR prefixes. If another Wentworth course is substituted for one of these listed courses, the substitute course will be calculated into this cumulative grade point average for all technical courses.

Course	Title	Credits
<b>Freshman Year</b>		
<b>Fall Semester</b>		
ENGR1100	INTRODUCTION TO ENGINEERING EXPERIENCE	2
ENGR1204	ENGINEERING LABORATORY-BSEE/BSCO	2
MATH1750	ENGINEERING CALCULUS I	4
MATH2300	DISCRETE MATHEMATICS	4
English Sequence*		4
<b>Credits</b>		<b>16</b>
<b>Spring Semester</b>		
ENGR1300	FIRST-YEAR ENGINEERING DESIGN	2
ENGR1404	APPLIED ENGINEERING ANALYSIS-BSEE/BSCO	2
MATH1850	ENGINEERING CALCULUS II	4
PHYS1250	ENGINEERING PHYSICS I	4
English Sequence*		4
<b>Credits</b>		<b>16</b>
<b>Sophomore Year</b>		
<b>Fall Semester</b>		
ELEC2250	NETWORK THEORY I	4
ELEC2275	DIGITAL LOGIC	4
MATH2500	DIFFERENTIAL EQUATIONS	4
PHYS1750	ENGINEERING PHYSICS II	4
<b>Credits</b>		<b>16</b>
<b>Spring Semester</b>		
ELEC2750	NETWORK THEORY II	4
ELEC2850	MICROCONTROLLERS USING C PROGRAMS	4
MATH2025	MULTIVARIABLE CALCULUS	4
HSS Elective*		4
<b>Credits</b>		<b>16</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>		
ELEC3150	OBJECT ORIENTED PROGRAMMING FOR ENGINEERS	4

Course	Title	Credits
ELEC3250	ANALOG CIRCUIT DESIGN	4
ELEC3725	COMPUTER ARCHITECTURE	3
Technical Elective		3
<b>Credits</b>		<b>14</b>
<b>Spring Semester</b>		
COOP3500	COOP EDUCATION 1	0
<b>Credits</b>		<b>0</b>
<b>Summer Semester</b>		
ELEC3200	ADVANCED DIGITAL CIRCUIT DESIGN	4
ELEC3225	APPLIED PROGRAMMING CONCEPTS	3
ELEC3550	COMPUTER NETWORKS FOR ENGINEERS	4
ELEC3600	SIGNALS AND SYSTEMS	4
Technical Elective		3
<b>Credits</b>		<b>18</b>
<b>Senior Year</b>		
<b>Fall Semester</b>		
COOP4500	COOP EDUCATION 2	0
<b>Credits</b>		<b>0</b>
<b>Spring Semester</b>		
ELEC4075	ENGINEERING OPERATING SYSTEMS	4
ENGR5000	ENGINEERING SENIOR DESIGN I	4
MATH2100	PROBABILITY & STATISTICS FOR ENGINEERS	4
HSS Elective*		4
<b>Credits</b>		<b>16</b>
<b>Summer Semester</b>		
ENGR5500	ENGINEERING SENIOR DESIGN II	4
MGMT3200	ENGINEERING ECONOMY	3
Technical Elective		3
HSS Elective*		4
<b>Credits</b>		<b>14</b>
<b>Total Credits</b>		<b>126</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.