

MECHANICAL ENGINEERING BACHELOR OF SCIENCE

Leading to a Bachelor of Science Degree in Mechanical Engineering

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

The Mechanical Engineering (BSME) program is a four-year engineering program with an integrated project- and laboratory-based experience that provides a unique approach to applied learning. Grounded in a solid foundation of mathematics, science, and the humanities and social sciences, this program incorporates all the essential elements of a mechanical engineering curriculum. The program additionally integrates practical engineering design into courses throughout its study, extensive use of computers to solve engineering problems (including developing detailed manufacturing documentation), and a faculty commitment to maintaining a curriculum that parallels industrial changes.

BSME students spend a great deal of time working in our state-of-the-art laboratories, using computers and test equipment to verify and develop engineering principles in diverse areas such as statics, thermodynamics, material science, data acquisition, structural analysis, and machine design.

Mechanical Engineering students complete two semesters of cooperative industrial work experience in fields related to mechanical engineering, giving Wentworth students an advantage over their peers at graduation. Graduates may continue their studies at the graduate level or pursue an industrial career. Wentworth BSME graduates are practical engineers with expertise in mechanical engineering and who are in high demand and well-prepared to meet the professional challenges of a constantly changing and increasingly global workforce.

Program Educational Objectives

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

- Contribute significantly in the design and development of complex systems within the field of engineering.
- Work effectively as members of multidisciplinary teams that analyze data critically, synthesize information, and implement ethical solutions for the betterment of society.
- Prepare and presenting technical information professionally to various audiences.
- Further their education either through directed or independent studies to advance them personally and professionally.

Student Outcomes

Students from the mechanical 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: 128

Mechanical Engineering 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 Mechanical Engineering (BSME) 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 BSME technical courses are courses with ELEC and MECH 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
Freshman Year		
Fall Semester		
ENGR1100	INTRODUCTION TO ENGINEERING EXPERIENCE	2
ENGR1207	ENGINEERING LABORATORY-BSME	2
MATH1750	ENGINEERING CALCULUS I	4
PHYS1250	ENGINEERING PHYSICS I	4
English Sequence		4
Credits		16
Spring Semester		
ENGR1300	FIRST-YEAR ENGINEERING DESIGN	2
ENGR1407	APPLIED ENGINEERING ANALYSIS-BSME	2
MATH1850	ENGINEERING CALCULUS II	4
PHYS1750	ENGINEERING PHYSICS II	4
English Sequence		4
Credits		16
Sophomore Year		
Fall Semester		
MECH2000	ENGINEERING STATICS	4
MECH2300	ENGINEERING GRAPHICS	3
ELEC2799	CIRCUIT THEORY AND APPLICATION	3
MATH2025	MULTIVARIABLE CALCULUS	4
Credits		14

Course	Title	Credits
Spring Semester		
MECH2250	ENGINEERING THERMODYNAMICS I	4
MECH2500	MECHANICS OF MATERIALS	4
CHEM1100	GENERAL CHEMISTRY I	4
MATH2500	DIFFERENTIAL EQUATIONS	4
Credits		16
Summer Semester		
COOP3000	PRE CO-OP WORK TERM (OPTIONAL)	0
Credits		0
Junior Year		
Fall Semester		
MECH2750	ENGINEERING THERMODYNAMICS II	4
MECH3000	DESIGN OF MACHINE ELEMENTS	4
MECH3100	ENGINEERING FLUID MECHANICS	4
Technical Elective		3
HSS Elective*		4
Credits		19
Spring Semester		
COOP3500	COOP EDUCATION 1	0
Credits		0
Summer Semester		
MECH3600	MATERIALS SCIENCE	4
MECH3850	ENGINEERING DYNAMICS	4
MECH3900	ENGINEERING HEAT TRANSFER	4
MATH2100	PROBABILITY & STATISTICS FOR ENGINEERS	4
Credits		16
Senior Year		
Fall Semester		
COOP4500	COOP EDUCATION 2	0
Credits		0
Spring Semester		
MECH4000	MECHANICAL VIBRATION	3
MECH4200	SIMULATION BASED DESIGN	4
MECH5000	MECHANICAL ENGINEERING CAPSTONE ANALYSIS	3
Technical Elective		3
HSS Elective*		4
Credits		17
Summer Semester		
MECH5500	MECHANICAL ENGINEERING CAPSTONE PROJECT	4
Technical Elective		3
HSS Elective*		4
General Elective		3
Credits		14
Total Credits		128

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.

Of the three required Humanities and Social Science electives one of the Humanities electives must be in the area of Ethics and one of the Social Science electives must be in the area of Economics

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

General and Technical Electives are selected in consultation with a Faculty Advisor

ENGL/HSS Note