

Mechanical Engineering, B.S.

Mechanical engineering, which has evolved over the years as new technologies have emerged, is one of the broadest engineering disciplines. The Bachelor of Science in Mechanical Engineering prepares graduates to apply mathematical and scientific principles to the design, development, testing, and manufacturing of machines, robots, tools, biomedical devices, power generating equipment such as steam and gas turbines, wind turbines, solar systems, internal combustion engines, and heating, cooling, and refrigeration equipment.

Matriculation Requirements

1. To be admitted to the BSME program, a student must complete the foundation courses in Mathematics (MATH 1210, 1220, 2210, 2250); Physics (PHYS 2210, 2215, 2220, 2225); Chemistry (CHEM 1210, 1215); English (ENGL 1005 or ENGL 1010, 2010); and Engineering (EGDT 1071, ENGR 1000, 2010, 2030, 2140, 2160, 2450) with a minimum grade of C.
2. Students need a grade point average of 2.5 or above.
3. A student not meeting all of the admission requirements, may request in writing, a provisional admission status for a semester from the department. The provisional admission status must be approved by the mechanical engineering program coordinator.

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		127
General Education Requirements		38 Credits
ENGL 1010 or ENGL 1005	Introduction to Academic Writing CC Literacies and Composition Across Contexts CC	3
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1210	Calculus I QL	4
Complete one of the following:		3
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
PHIL 2050 or PHIL 205G	Ethics and Values IH Ethics and Values IH GI	3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE Fitness for Life TE	2
Distribution Courses:		
Biology		3
Fine Arts		3
Humanities (COMM 1020 Recommended)		3
Social/Behavioral Science (COMM 2110 Recommended)		3
PHYS 2210	Physics for Scientists and Engineers I PP	4
CHEM 1210	Principles of Chemistry I PP	4
Discipline Core Requirements		77 Credits
CHEM 1215	Principles of Chemistry I Laboratory	1
ENGR 1000	Introduction to Engineering WE	3
EGDT 1071	3 Dimensional Modeling--Solidworks	3
ENGR 2010	Engineering Statics	3
ENGR 2030	Engineering Dynamics	3
ENGR 2140	Mechanics of Materials	3

ENGR 2160	Introduction to Materials Science and Engineering	3
ENGR 2300	Engineering Thermodynamics	3
ENGR 2450	Computational Methods for Engineering Analysis	3
MATH 1220	Calculus II	4
MATH 2210	Calculus III	4
MATH 2250	Differential Equations and Linear Algebra	4
ME 2210	Manufacturing Processes for Engineers	3
ME 3010	System Dynamics I	3
ME 3050	Mechatronic Systems	3
ME 3140	Machine Design	3
ME 3310	Fluid Mechanics	3
ME 3320	Heat Transfer	3
ME 3335	Thermal/Fluid Experimentation WE	2
ME 3410	Applied Finite Element Analysis	3
ME 4010	System Dynamics II	3
ME 4015	Control and Vibration Experimentation	1
ME 4510	Mechanical Engineering Seminar	1
ME 4810	Mechanical Engineering Capstone I	3
ME 4820	Mechanical Engineering Capstone II	3
PHYS 2215	Physics for Scientists and Engineers I Lab	1
PHYS 2220	Physics for Scientists and Engineers II PP	4
PHYS 2225	Physics for Scientists and Engineers II Lab	1

Elective Requirements	12
	Credits

Choose 12 credits from the following. Up to six credit-hours may be taken from Technical Elective list. At least six credit-hours must be ME Elective Courses at the 4000 level. 12

ME Elective Courses

ME 3130	Kinematics (3)
ME 3160	Intermediate Materials (3)
ME 3170	Introduction to Plastics and Composites (3)
ME 3300	Applied Thermodynamics (3)
ME 4180	Compliant Mechanisms (3)
ME 4310	Computational Fluid Dynamics (3)
ME 4380	Design of Thermal/Fluid Systems (3)
ME 4390	Heating Ventilating and Air Conditioning Design (3)
ME 4420	Finite Element Methods (3)
ME 4430	Computer Aided Design and Manufacturing - Theory and Application (undefined)
ME 4440	Materials Selection in Design (undefined)
ME 4550	Global Engineering (3)
ME 4610	Road Vehicle Dynamics (3)
ME 490R	Advanced Current Topics in Mechanical Engineering (3)

Technical Elective Courses

ME 381R	Mechanical Engineering Internship (1-3)
CIVE 2130	Engineering Economics and Statistics (3)
CIVE 3010	Introduction to Transportation Engineering (3)
ECE 3710	Applied Probability and Statistics for Engineers and Scientists (3)
TECH 3400	Project Management WE (3)
TECH 3850	Quality Management in Technology (3)

Students may also take upper level physics, chemistry, mathematics, biology, computer engineering, electrical engineering, and civil engineering classes as technical electives in consultation with their faculty advisors and approval of the department offering the course.

Graduation Requirements

1. Completion of a minimum of 127 semester credits, with a minimum of 40 mechanical engineering upper-division credits.
2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.
3. Residency hours - minimum of 30 credit hours through course attendance at UVU. Ten of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved ME courses.
4. All transfer credits must be approved in writing by UVU and the mechanical engineering program coordinator.
5. No more than 80 semester hours and no more than 20 hours in ME courses of transfer credit.
6. No more than 6 semester hours may be earned through independent study.
7. Successful completion of at least one Global/Intercultural course.
8. Successful completion of at least two Writing Enriched (WE) courses.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

First Year

Semester 1		Credit Hours
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC or Literacies and Composition Across Contexts CC	3
MATH 1210	Calculus I QL	4
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1215	Principles of Chemistry I Laboratory	1
ENGR 1000	Introduction to Engineering WE	3
Credit Hours		15

Semester 2		Credit Hours
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1220	Calculus II	4
PHYS 2210	Physics for Scientists and Engineers I PP	4
PHYS 2215	Physics for Scientists and Engineers I Lab	1
EGDT 1071	3 Dimensional Modeling--Solidworks	3
Credit Hours		15

Second Year

Semester 3		Credit Hours
Humanities (COMM 1020 Recommended)		3
MATH 2250	Differential Equations and Linear Algebra	4
PHYS 2220	Physics for Scientists and Engineers II PP	4
PHYS 2225	Physics for Scientists and Engineers II Lab	1
ENGR 2010	Engineering Statics	3
ENGR 2160	Introduction to Materials Science and Engineering	3
Credit Hours		18

Semester 4		Credit Hours
MATH 2210	Calculus III	4
ENGR 2030	Engineering Dynamics	3
ENGR 2140	Mechanics of Materials	3
ENGR 2450	Computational Methods for Engineering Analysis	3
ME 2210	Manufacturing Processes for Engineers	3
HLTH 1100	Personal Health and Wellness TE	2
Credit Hours		18

Third Year

Semester 5		Credit Hours
Biology Distribution		3
ENGR 2300	Engineering Thermodynamics	3
ME 3310	Fluid Mechanics	3
ME 3140	Machine Design	3
ME 3050	Mechatronic Systems	3
Credit Hours		15

Semester 6		Credit Hours
ME 3320	Heat Transfer	3
ME 3335	Thermal/Fluid Experimentation WE	2
ME 3010	System Dynamics I	3

ME 3410	Applied Finite Element Analysis	3
ME 4510	Mechanical Engineering Seminar	1
ME Elective		3
Credit Hours		15
Fourth Year		
Semester 7		
Fine Arts Distribution		3
Social/Behavioral Science (COMM 2110 Recommended)		3
ME 4010	System Dynamics II	3
ME 4015	Control and Vibration Experimentation	1
ME 4810	Mechanical Engineering Capstone I	3
ME Elective		3
Credit Hours		16
Semester 8		
American Institutions		3
PHIL 2050 or PHIL 205G	Ethics and Values IH or Ethics and Values IH GI	3
ME 4820	Mechanical Engineering Capstone II	3
ME Elective		6
Credit Hours		15
Total Credit Hours		127

Program Learning Outcomes

1. Apply principles of engineering, science, and mathematics to solve complex engineering problems.
2. Design engineering solutions to meet specified needs, with consideration of public health, safety, and welfare.
3. Evaluate ethical and professional responsibilities in engineering situations to make informed decisions that consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
4. Formulate effective methods for collecting and analyzing data to draw engineering conclusions.
5. Communicate effectively using a variety of media with a range of audiences, including in a team environment.