MECHANICAL ENGINEERING (B.S.M.E.)

This program is accredited by the Engineering Accreditation Commission of ABET, http://www.abet.org.

Required course work includes the university requirements (see regulation J-3 (https://catalog.uidaho.edu/general-requirements-academic-procedures/j-general-requirements-baccalaureate-degrees/)), completion of the Fundamentals of Engineering (FE) examination and:

Code	Title	Hours
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
COMM 101	Fundamentals of Oral Communication	3
ENGR 123	First Year Engineering	2
ENGR 210	Engineering Statics	3
ENGR 212	Python Programming Essentials	3
ENGR 215	Elements of Materials Science	3
ENGR 220	Engineering Dynamics	3
ENGR 240	Introduction to Electrical Circuits	3
ENGR 335	Engineering Fluid Mechanics	3
ENGR 350	Engineering Mechanics of Materials	3
MATH 170	Calculus I	4
MATH 175	Calculus II	4
MATH 275	Calculus III	3
MATH 310	Ordinary Differential Equations	3
MATH 330	Linear Algebra	3
ME 223	Mechanical Design Analysis	3
ME 290	Computer Aided Design Methods	3
ME 313	Dynamic Modeling of Engineering Systems	3
ME 322	Mechanical Engineering Thermodynamics	3
ME 325	Machine Component Design I	3
ME 330	Experimental Methods for Engineers	3
ME 341	Intermediate Mechanics of Materials	3
ME 345	Heat Transfer	3
ME 416	FE Exam Review	1
ME 424	Mechanical Systems Design I	3
ME 426	Mechanical Systems Design II	3
ME 430	Senior Lab	3
ME 435	Thermal Energy Systems Design	3
PHIL 103	Introduction to Ethics	3
PHYS 211	Engineering Physics I	3
PHYS 211L	Laboratory Physics I	1
PHYS 212	Engineering Physics II	3
PHYS 212L	Laboratory Physics II	1
Select one from the following:		3-4
ECON 201	Principles of Macroeconomics	
ECON 202	Principles of Microeconomics	
ECON 272	Foundations of Economic Analysis	
Technical Elective requirements for Mechanical Engineering		
Select 15 credits from the following: [1]		15
BE 421	Image Processing and Computer Vision	
BE 462	Electric Power and Controls	
ENGR 360	Engineering Economy	
ENGR 428	Numerical Methods	
ENGR 466	PLC Programming for Automation	
ENTR 414	Entrepreneurship	
ENTR 415	New Venture Creation	
MATH 371	Mathematical Physics	
MATH 420	Complex Variables	
MATH 428	Numerical Methods	
MATH 432	Numerical Linear Algebra	
MATH 437	Mathematical Biology	
MATH 451	Probability Theory	
MATH 452	Mathematical Statistics	
MATH 453	Stochastic Models	
MATH 471	Introduction to Analysis I	
MATH 472	Introduction to Analysis II	
MATH 480	Partial Differential Equations	
ME 401	Engineering Team Projects	
ME 404	Special Topics	
ME 410	Principles of Lean Manufacturing	
ME 412	Gas Dynamics	
ME 413	Engineering Acoustics	
ME 414	HVAC Systems	
ME 415	Materials Selection and Design	
ME 417	Turbomachinery	
ME 420	Fluid Dynamics	
ME 421	Advanced Computer Aided Design	
ME 433	Combustion Engine Systems	
ME 436	Sustainable Energy Sources and Systems	
ME 438	Sustainability and Green Design	
ME 450	Fundamentals of Computational Fluid Dynamics	
ME 451	Experimental Methods in Fluid Dynamics	
ME 454	Assistive Technologies for Physical Impairment	
ME 455	Biomechanics: Genome to Phenome	
ME 458	Finite Element Applications in Engineering	
ME 459	Robotic Systems Engineering I	
ME 461	Fatigue and Fracture Mechanics	
ME 464	Robotics: Kinematics, Dynamics, and Control	
ME 466	Compliant Mechanism Design	
ME 472	Mechanical Vibrations	
ME 480	Introduction to Programming for Engineers	
ME 481	Control Systems	
ME 490	Solid Modeling, Simulation and Manufacturing Capstone	
ME 495	Mechanics in Design and Manufacturing	
ME 513	Engineering Acoustics	
ME 517	Turbomachinery	
ME 520	Fluid Dynamics	
ME 524	Sustainable Food-Energy-Water Systems	
ME 527	Thermodynamics	
ME 529	Combustion and Aeropropulsion	
ME 538	Sustainability and Green Design	

ME 539	Advanced Mechanics of Materials
ME 540	Continuum Mechanics
ME 541	Mechanical Engineering Analysis
ME 544	Conduction Heat Transfer
ME 546	Convective Heat Transfer
ME 547	Thermal Radiation Processes
ME 549	Finite Element Analysis
ME 550	Advanced Computational Fluid Dynamics
ME 551	Experimental Methods in Fluid Dynamics
ME 554	Assistive Technologies for Physical Impairment
ME 555	Biomechanics: Genome to Phenome
ME 558	Finite Element Applications
ME 559	Robotic Systems Engineering I
ME 564	Robotics: Kinematics, Dynamics, and Control
ME 566	Compliant Mechanism Design
ME 569	Heat Exchanger Design
ME 571	Building Performance Simulation for Integrated Design
ME 583	Reliability of Engineering Systems
NE 438	Fundamentals of Nuclear Materials
NE 450	Principles of Nuclear Engineering
NE 530	Two-Phase Flow
OM 378	Project Management
OM 439	Systems and Simulation
OM 456	Enterprise Quality Management
PHYS 305	Modern Physics
PHYS 351	Introductory Quantum Mechanics I
PHYS 411	Advanced Physics Lab
PHYS 428	Numerical Methods
PHYS 443	Optics
PHYS 464	Solid State Physics
PHYS 465	Nuclear and Particle Physics
PHYS 484	Astrophysics of Stars and Planets
STAT 301	Probability and Statistics
STAT 431	Statistical Analysis
Any Approved 400/500 Level Course in another Engineering Discipline	
A maximum of 3 credits of the following may be selected:	
ME 307	Group Mentoring I
ME 308	Group Mentoring II
ME 401	Engineering Team Projects
ME 407	Group Mentoring III
Total Hours	**113-114**

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Fifteen credits of technical electives are required from the list. The breakdown of credits will be as follows: six credits must be an ME upper division course, three credits must be an upper division Math, Statistics or Physics course, the remaining six credits may be any course listed.

Courses to total 128 credits for this degree, not counting ENGL 101 , MATH 143 , and other courses that might be required to remove deficiencies.

To advance to upper-division courses, a student majoring in mechanical engineering must earn certification: the student may accumulate no more than three grades of D or F in the mathematics, science or engineering courses used to satisfy certification requirements. Included in this number are courses transferred from other institutions, multiple repeats of a single course, and single repeats in multiple courses.

In addition, students must also earn at least five grades of B or better in these mathematics, science, or engineering courses:

Code	Title	Hours
CHEM 111	General Chemistry I	3
COMM 101	Fundamentals of Oral Communication	3
ENGL 102	Writing and Rhetoric II	3
ENGR 123	First Year Engineering	2
ENGR 210	Engineering Statics	3
ENGR 212	Python Programming Essentials	3
ENGR 215	Elements of Materials Science	3
ENGR 220	Engineering Dynamics	3
ENGR 240	Introduction to Electrical Circuits	3
ENGR 350	Engineering Mechanics of Materials	3
MATH 170	Calculus I	4
MATH 175	Calculus II	4
MATH 275	Calculus III	3
MATH 310	Ordinary Differential Equations	3
ME 223	Mechanical Design Analysis	3
ME 290	Computer Aided Design Methods	3
PHYS 211	Engineering Physics I	3
PHYS 212	Engineering Physics II	3

A grade of P (Pass) in any of these courses is considered as a C grade in satisfying this certification requirement.

To graduate in this program, a student may accumulate no more than five grades of D or F in the mathematics, science, or engineering courses used to satisfy graduation requirements. Included in this number are multiple repeats of a single course or single repeats in multiple courses and courses transferred from other institutions.

Four-Year Plan

Fall Term 1		**Hours**
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
COMM 101	Fundamentals of Oral Communication	3
ENGL 101	Writing and Rhetoric I	3
MATH 170	Calculus I	4
ENGR 123	First Year Engineering	2
	Hours	**16**
Spring Term 1		
ENGL 102	Writing and Rhetoric II	3
ENGR 210	Engineering Statics	3
MATH 175	Calculus II	4
ENGR 212	Python Programming Essentials	3
PHYS 211	Engineering Physics I	3
PHYS 211L	Laboratory Physics I	1
	Hours	**17**
Fall Term 2		
ENGR 350	Engineering Mechanics of Materials	3
ENGR 215	Elements of Materials Science	3

MATH 310	Ordinary Differential Equations	3
ME 223	Mechanical Design Analysis	3
PHYS 212	Engineering Physics II	3
PHYS 212L	Laboratory Physics II	1
	Hours	**16**
Spring Term 2		
ENGR 240	Introduction to Electrical Circuits	3
MATH 275	Calculus III	3
ME 290	Computer Aided Design Methods	3
ENGR 220	Engineering Dynamics	3
ME 322	Mechanical Engineering Thermodynamics	3
International Course		3
	Hours	**18**
Fall Term 3		
ENGR 335	Engineering Fluid Mechanics	3
MATH 330	Linear Algebra	3
ME 313	Dynamic Modeling of Engineering Systems	3
ME 341	Intermediate Mechanics of Materials	3
STAT/PHYS/MATH Technical, Major Elective Course		3
ECON 201 OR ECON 202 OR ECON 272		3
	Hours	**18**
Spring Term 3		
ME 325	Machine Component Design I	3
ME 330	Experimental Methods for Engineers	3
ME 345	Heat Transfer	3
PHIL 103	Introduction to Ethics	3
UPDV ME Technical, Major Elective Course		3
Technical, Major Elective Course		3
	Hours	**18**
Fall Term 4		
ME 416	FE Exam Review	1
ME 424	Mechanical Systems Design I	3
ME 430	Senior Lab	3
ME 435	Thermal Energy Systems Design	3
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**13**
Spring Term 4		
ME 426	Mechanical Systems Design II	3
UPDV ME Technical, Major Elective Course		3
Technical, Major Elective Course		3
Social and Behavioral Ways of Knowing Course		3
American Diversity Course		3
	Hours	**15**
	Total Hours	**131**

Five-Year Plan

Fall Term 1		**Hours**
ENGL 101	Writing and Rhetoric I	3
MATH 143	College Algebra	3
MATH 144	Precalculus II: Trigonometry	1
COMM 101	Fundamentals of Oral Communication	3
ENGR 123	First Year Engineering	2
	Hours	**12**
Spring Term 1		
CHEM 111	General Chemistry I	3
CHEM 111L	General Chemistry I Laboratory	1
ENGL 102	Writing and Rhetoric II	3
MATH 170	Calculus I	4
American Diversity Course		3
	Hours	**14**
Fall Term 2		
ENGR 210	Engineering Statics	3
MATH 175	Calculus II	4
ENGR 212	Python Programming Essentials	3
PHYS 211	Engineering Physics I	3
PHYS 211L	Laboratory Physics I	1
	Hours	**14**
Spring Term 2		
MATH 275	Calculus III	3
ENGR 215	Elements of Materials Science	3
ME 223	Mechanical Design Analysis	3
PHIL 103	Introduction to Ethics	3
Social and Behavioral Ways of Knowing Course		3
	Hours	**15**
Fall Term 3		
ENGR 350	Engineering Mechanics of Materials	3
ENGR 220	Engineering Dynamics	3
MATH 310	Ordinary Differential Equations	3
PHYS 212	Engineering Physics II	3
PHYS 212L	Laboratory Physics II	1
Humanistic and Artistic Ways of Knowing Course		3
	Hours	**16**
Spring Term 3		
ME 290	Computer Aided Design Methods	3
ME 322	Mechanical Engineering Thermodynamics	3
Social and Behavioral Ways of Knowing Course		3
ENGR 240	Introduction to Electrical Circuits	3
ECON 201 OR ECON 202 OR ECON 272		
	Hours	**12**
Fall Term 4		
ENGR 335	Engineering Fluid Mechanics	3
MATH 330	Linear Algebra	3
ME 341	Intermediate Mechanics of Materials	3
ME 313	Dynamic Modeling of Engineering Systems	3
	Hours	**12**
Spring Term 4		
ME 325	Machine Component Design I	3
ME 330	Experimental Methods for Engineers	3
ME 345	Heat Transfer	3
Technical, Major Elective Course		3
UPDV ME Technical, Major Elective Course		3
	Hours	**15**
Fall Term 5		
ME 416	FE Exam Review	1
ME 424	Mechanical Systems Design I	3
ME 430	Senior Lab	3
ME 435	Thermal Energy Systems Design	3
UPDV ME Technical, Major Elective Course		3
	Hours	**13**
Spring Term 5		
ME 426	Mechanical Systems Design II	3
MATH/STAT/PHYS TECHNICAL, Major Elective Course		3
Technical, Major Elective Course		3
International Course		3
	Hours	**12**
	Total Hours	**135**

The degree map is a guide for the timely completion of your curricular requirements. Your academic advisor or department may be contacted for assistance in interpreting this map. This map is not reflective of your academic history or transcript and it is not official notification of

completion of degree or certificate requirements. Please contact the Registrar's Office regarding your official degree/certificate completion status.

1. Students will develop an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Students will develop 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. Students will develop an ability to communicate effectively with a range of audiences.
4. Students will develop 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.
5. Students will develop 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.
6. Students will develop an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.
7. Students will develop an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.