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

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

Note: Pre-advising is required to register in any ME course.

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	2
ENGL 317	Technical Writing	3
ENGR 210	Engineering Statics	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
MSE 201	Elements of Materials Science	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 123	Introduction to Mechanical Design	3
ME 223	Mechanical Design Analysis	3
ME 301	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	
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 417	Turbomachinery	
ME 420	Fluid Dynamics	
ME 421	Advanced Computer Aided Design	
ME 422	Applied Thermodynamics	
ME 423	Human Factors and Ergonomics in Product 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 452	TechVentures: High Technology Entrepreneurship	
ME 458	Finite Element Applications in Engineering	
ME 461	Fatigue and Fracture Mechanics	
ME 464	Robotics: Kinematics, Dynamics, and Control	
ME 472	Mechanical Vibrations	
ME 481	Control Systems	
ME 490	Solid Modeling, Simulation and Manufacturing Capstone	
ME 525	Advanced Heat Transfer	
ME 529	Combustion and Air Pollution	
ME 539	Advanced Mechanics of Materials	
ME 540	Continuum Mechanics	
ME 541	Mechanical Engineering Analysis	
ME 544	Conduction Heat Transfer	
ME 547	Thermal Radiation Processes	
ME 548	Elasticity	
ME 549	Finite Element Analysis	
ME 550	Advanced Computation Fluid Dynamics	

ME 571	Building Performance Simulation for Integrated Design
MSE 412	Mechanical Behavior of Materials
MSE 415	Materials Selection and Design
MSE 417	Instrumental Analysis
MSE 423	Corrosion
MSE 438	Fundamentals of Nuclear Materials
NE 437	Radiation Effects on Materials
NE 438	Fundamentals of Nuclear Materials
NE 450	Principles of Nuclear Engineering
OM 378	Project Management
OM 439	Systems and Simulation
OM 456	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	Materials Physics and Engineering
PHYS 465	Nuclear and Particle Physics
PHYS 484	Astrophysics
STAT 301	Probability and Statistics
STAT 431	Statistical Analysis
Any Approved 400/500 Level Course in another Engineering Discipline	
A maximum of 6 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

[1] 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	2
ENGL 102	Writing and Rhetoric II	3
ENGR 210	Engineering Statics	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 123	Introduction to Mechanical Design	3
ME 223	Mechanical Design Analysis	3
ME 301	Computer Aided Design Methods	3
MSE 201	Elements of Materials Science	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.

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.