BS MECHANICAL ENGINEERING
2022-2026

This document displays only your course requirements at the time of publication of the catalog. You must use your Degree Progress Report to track all your graduation requirements.

Note: No Major, Support or Concentration courses may be selected as credit/no credit.

MAJOR COURSES		
ME 128	Introduction to Mechanical Engineering I [1]	1
ME 129	Introduction to Mechanical Engineering II [1]	1
ME 130	Introduction to Mechanical Engineering III [1]	1
ME 163	Freshmen Orientation to Mechanical Engr [1]	1
ME 211	Engineering Statics	3
ME 212	Engineering Dynamics	3
ME 234	Philosophy of Design	3
ME 236	Measurement and Engineering Data Analysis	3
ME 251	Intro to Detailed Design with Solid Modeling	2
ME 302	Thermodynamics I	3
ME 303	Thermodynamics II	3
ME 318	Mechanical Vibrations	4
ME 322	Introduction to System Dynamics	4
ME 328	Design for Strength and Stiffness	4
ME 329	Mechanical Systems Design	4
ME 341	Fluid Mechanics I	3
ME 343	Heat Transfer	4
ME 347	Fluid Mechanics II	4
ME 448	Thermal System Design	4
Concentration or General Curriculum in Mechanical Engineering		
(See list of Concs & Gen Curric in Mechanical Engr below)		25/27
Total Major Units		**80-82**

SUPPORT COURSES		
CE 204	Mechanics of Materials I [2]	3
CE 207	Mechanics of Materials II [2]	2
CHEM 124	Gen Chem for Physical Sci & Engr I (B1 & B3) [3]	4
CHEM 125	Gen Chem for Physical Science & Engr II	4
CSC 231 or CSC 234	Programming for Engineering Students C and Unix	2/3
EE 201	Electric Circuit Theory	3
EE 251	Electric Circuits Laboratory	1
EE 321	Electronics	3
EE 361	Electronics Laboratory	1
IME 142	Manufacturing Processes: Materials Joining	2
Select from the following: [4] IME 145 & IME 146 or IME 143	Subtractive Mfg Processes for Mech Designs I **and** Subtractive Mfg Proc for Mech Designs II Manufacturing Processes: Material Removal	2
MATE 210 & MATE 215	Materials Engineering **and** Materials Laboratory I	4
MATH 141	Calculus I (B4) [3]	4
MATH 142	Calculus II (B4) [3]	4
MATH 143	Calculus III (Area B Electives) [3]	4
MATH 241	Calculus IV	4
MATH 244	Linear Analysis I	4
MATH 344	Linear Analysis II (Upper-Division B) [3]	4
PHYS 141	General Physics IA (Area B Electives) [3]	4
PHYS 142	General Physics II	4
PHYS 143	General Physics III	4
Manufacturing Processes Elective		
Select from the following: IME 141 ITP 341 ME 161	Manufacturing Processes: Net Shape Packaging Polymers and Processing Intro to Composite Materials Manufacturing	1/4
Total Support Units		**68-72**

GENERAL EDUCATION		
Area A English Language Communication and Critical Thinking		
A1	Oral Communication	4
A2	Written Communication	4
A3	Critical Thinking	4
Area B Scientific Inquiry and Quantitative Reasoning		
B1	Physical Science (4 units in Support) [3]	0
B2	Life Science	4
B3	One lab taken with either a B1 or B2 course	
B4	Mathematics/Quantitative Reasoning (8 units in Support) [3]	0
Upper-Division B (4 units in Support) [3]		0
Area B Electives (8 units in Support) [3]		0
Area C Arts and Humanities		
Lower-division courses in Area C must come from three different subject prefixes.		
C1	Arts	4
C2	Humanities	4
Lower-Division C Elective - Select a course from either C1 or C2.		4
Upper-Division C		4
Area D Social Sciences		
D1	American Institutions (Title 5, Section 40404 Requirement)	4
Area D Elective - Select either a lower-division D2 or upper-division D course.		4
Area E Lifelong Learning and Self-Development		
Lower-Division E		4
Area F Ethnic Studies		
F	Ethnic Studies	4
Total GE Units		**48**
FREE ELECTIVES		**0**
TOTAL DEGREE UNITS		**196-202**

FOOTNOTES

[1] ME 228 , ME 263 and ME 264 are required in lieu of ME 128, ME 129, ME 130, and ME 163 for change of major and transfer students.

[2] May take CE 208 in place of CE 204 and CE 207.

[3] Required in Major or Support; also satisfies General Education (GE) requirement.

[4] IME 143 is required in lieu of IME 145 and IME 146 for change of major and transfer students.

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General Concentration		
ME 326	Intermediate Dynamics	4
ME 418 or ME 419	Implementation of Mechanical Controls Advanced Control Systems	4
ME 428	Senior Design Project I [1]	2
ME 429	Senior Design Project II [1]	2
ME 430	Senior Design Project III [1]	2
Technical Electives [2,3,4]		
Select from the following: Select 8-12 units from the following ME courses: ME 305 Introduction to Mechatronics ME 359 Fundamentals of HVAC Systems ME 361 Fundamentals of Fire Protection Engineering Any ME 400-level or ME 500-level class with the exception of required (major) and senior project courses.		11/12
Select 0 - 4 units from: Any upper-division or graduate level course in the College of Engineering with the exception of GE Upper-Division B, ENGR 301, senior project, thesis, special problems and co-op courses.		
Total Units		**25-26**

[1] ENGR 459, ENGR 460 and ENGR 461 (6), or ENGR 463, ENGR 464 and ENGR 465 (6) may substitute for ME 428, ME 429 and ME 430 (6).

[2] Consultation with advisor is recommended prior to selecting Technical Electives. Note that 300-level Technical Electives cannot be used for graduate credit in the blended BS + MS Mechanical Engineering program.

[3] ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may not count as ME Electives. Please contact instructor for additional information. A course substitution form may be required.

[4] ME 400 and ME 500 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required.

Energy Resources Concentration		
ME 415	Energy Conversion	4
ME 418 or ME 419	Implementation of Mechanical Controls Advanced Control Systems	4
ME 428	Senior Design Project I[1]	2
ME 429	Senior Design Project II[1]	2
ME 430	Senior Design Project III[1]	2
Select from the following[2]: EE 255 & EE 295 Energy Conversion Electromagnetics **and** Energy Conversion Electromagnetics Lab EE 420 Sustainable Electric Energy Conversion EE 423 Micro/Nano Fabrication MATE 430 Micro/Nano Fabrication ME 434 Enhanced Oil Recovery ME 435 Drilling Engineering ME 436 Petroleum Production Engineering ME 437 Nuclear Energy Power Generation ME 438 Nuclear Power Plant Design ME 439 Nuclear Power Plant Operations ME 443 Turbomachinery ME 444 Combustion Engine Design ME 450 Solar Thermal Power Systems ME 454 Benchmarking & Assess of Build Energy Perfor ME 488 Wind Energy Engineering ME 541 Advanced Thermodynamics		11/12
Total units		**25-26**

[1] ENGR 459, ENGR 460, and ENGR 461 (6) or ENGR 463, ENGR 464, and ENGR 465 (6) may substitute for ME 428, ME 429, and ME 430 (6).

[2] ME 400 and ME 500 are independent study classes and may be acceptable for technical elective credit. A course substitution form is required.

Mechatronics Concentration		
ME 305	Introduction to Mechatronics	4
ME 326	Intermediate Dynamics	4
ME 405	Mechatronics	4
ME 419	Advanced Control Systems	4
ME 428	Senior Design Project I [1]	2
ME 429	Senior Design Project II [1]	2
ME 430	Senior Design Project III [1]	2
Select from the following: [2,3]		3/4
IME 356	Manufacturing Automation	
IME 416	Automation of Industrial Systems	
ME 423	Robotics: Fundamentals and Applications	
ME 506	System Dynamics	
ME 507	Mechanical Control System Design	
Total Units		**25-26**

[1] ENGR 459, ENGR 460 and ENGR 461 (6) or ENGR 463, ENGR 464, and ENGR 465 (6) may substitute for ME 428, ME 429 and ME 430 (6).

[2] Elective based on interests of students.

[3] ME 400 and ME 500 are independent study classes and may be acceptable for technical elective credit. A course substitution form is required.

Heating, Ventilating, Air-Conditioning and Refrigerating Concentration (HVAC&R)		
ME 418 or ME 419	Implementation of Mechanical Controls Advanced Control Systems	4
ME 456	HVAC Air and Water Distribution System Design	4
ME 459	HVAC Senior Design Project I	3
ME 460	HVAC Senior Design Project II	2
Select from the following[1]: ME 359 Fundamentals of HVAC Systems ME 453 Trends and Opportunities in HVAC&R ME 454 Benchmarking & Assess of Build Energy Perfor ME 455 Introduction to Building Energy Modeling ME 457 Refrigeration Principles and Design ME 458 Building Heating and Cooling Loads		12
Total Units		**25**

[1] ME 400 and ME 500 are independent study classes and may be acceptable for technical elective credit. A course substitution form is required.

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Manufacturing Concentration		
IME 327	Test Design & Analysis in Manufacturing Engr	4
ME 418 or ME 419	Implementation of Mechanical Controls Advanced Control Systems	4
ME 428	Senior Design Project I [1]	2
ME 429	Senior Design Project II [1]	2
ME 430	Senior Design Project III [1]	2
Take all of the courses in one of the following emphasis areas:		8
Mechanical Manufacturing Emphasis Area		
IME 330	Fundamentals of Manufacturing Engineering	
IME 450	Manufacturing Process and Tool Engineering	
Electronics Manufacturing Emphasis Area		
IME/MATE 458	Microelectronics and Electronics Packaging	
MATE 430 & MATE 435	Micro/Nano Fabrication **and** Microfabrication Laboratory	
Design and Manufacturing Elective		
Select from the following[2]:		3/5
IME 330	Fundamentals of Manufacturing Engineering [3]	
IME 335	Computer-Aided Manufacturing I	
IME 356	Manufacturing Automation	
IME 416	Automation of Industrial Systems	
IME 418	Product-Process Design	
IME 428	Engineering Metrology	
IME 430	Quality Engineering	
IME 432	Additive Manufacturing	
IME 457	Advanced Electronic Manufacturing	
IME/MATE 458	Microelectronics and Electronics Packaging [3]	
IME 527	Design of Experiments	
IME 543	Applied Human Factors	
MATE 430 & MATE 435	Micro/Nano Fabrication **and** Microfabrication Laboratory [3]	
MATE 440 & MATE 445	Welding Metallurgy & Joining of Adv Materials **and** Joining of Advanced Materials Laboratory	
ME 305	Introduction to Mechatronics	
ME 412	Composite Materials Analysis and Design	
Total Units		**25-27**

[1] ENGR 459, ENGR 460 and ENGR 461 (6) or ENGR 463, ENGR 464, and ENGR 465 (6) may substitute for ME 428, ME 429 and ME 430 (6).

[2] ME 400 and ME 500 are independent study classes and may be acceptable for technical elective credit. A course substitution form is required.

[3] If a course is taken to meet an Emphasis Area requirement, it cannot be double-counted as a Design and Manufacturing Elective.