

BS MECHANICAL ENGINEERING

2021-2022

ote: No Major, Support or Concentration courses may be selected as credit/no crea	lit.	
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MAJOR COL	JRSES			
ME 128	Introduction to Mechanical Engineering I	1		
ME 129	Introduction to Mechanical Engineering II	1		
ME 130	Introduction to Mechanical Engineering III	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 Cor	ncs & Gen Curric in Mechanical Engr below)	25/27		
Total Major I	Jnits	80-82		
SUPPORT C	OURSES			
CE 204	Mechanics of Materials 1 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	Programming for Engineering Students	2/3		
or CSC 234	C and Unix			
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	e following: 4	2		
IME 145	Subtractive Mfg Processes for Mech Designs I			
& IME 146	and Subtractive Mfg Proc for Mech Designs II			
or IME 143	Manufacturing Processes: Material Removal			
MATE 210	Materials Engineering	4		
& MATE 215	and Materials Laboratory I			
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 132	General Physics II	4		
PHYS 133	General Physics III	4		
Manufacturing Processes Elective				
Select from the	e following:	1/4		
IME 141	Manufacturing Processes: Net Shape			
ITP 341	Packaging Polymers and Processing			
ME 161	Intro to Composite Materials Manufacturing	<u> </u>		
i i otal Suppol	rt UnitS	00-/2		

GENERAL EDUCATION					
Area A E	nglish Language Communication and Critical Thi	nking			
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	0			
	(8 units in Support) ³				
Upper-Divi	ision B (4 units in Support) ³	0			
Area B Ele	ctives (8 units in Support) ³	0			
Area C A	rts and Humanities				
Lower-divi	ision courses in Area C must come from three different				
subject pro	etixes.	1.			
	Arts	4			
C2	Humanities	4			
Lower-Divi	ision C Elective - Select a course from either C1 or C2.	4			
Upper-Divi	ision C	4			
Area D S	ocial Sciences				
D1	American Institutions (Title 5, Section 40404	4			
	Requirement)				
Area D Ele	ctive - Select either a lower-division D2 or upper-division	4			
D course.					
Area E L	ifelong Learning and Self-Development				
Lower-Divi	ision E	4			
Area F E	thnic Studies				
Lower-Division F					
Total GE	Units	48			
FREE EL	ECTIVES	0			
TOTAL D	DEGREE UNITS 19	6-202			

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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ME 232 Intermediate Dynamics 4 ME 438 Implementation of Mechanical Controls 4 or ME 419 Advanced Control Systems 4 ME 428 Senior Design Project I 2 ME 428 Senior Design Project II 2 ME 429 Senior Design Project II 2 ME 420 Senior Design Project II 2 ME 430 Senior Design Project II 2 ME 431 Senior Design Project II 2 ME 433 Senior Design Project	General Co	oncentration		Energy Res	ources Concentration	
MIE 4.18 Implementation of Mechanical Controls 4 MIE 4.18 Senior Design Project 1 2 MIE 4.28 Senior Design Project 11 2 MIE 4.29 Senior Design Project 11 2 MIE 4.20 Senior Design Project 11 2 MIE 4.21 Senior Design Project 11 2 MIE 4.21 Commersion Electromagnetics as and Energy Conversion Electromagnetics and Electrot the following: Elevare the Elevent and E	ME 326	Intermediate Dynamics	4	ME 415	Energy Conversion	4
or ME 419 Advanced Control Systems or ME 419 Advanced Control Systems or ME 419 ME 428 Senior Design Project II 2 ME 429 Senior Design Project II 2 ME 428 Senior Design Project III 2 ME 429 Senior Design Project II 2 ME 430 Senior Design Project III 2 ME 430 Senior Design Project II 2 Select Fach Efollowing: 11 E X5 Senior Design Project II 2 Select Fach Efollowing: 11 III 2 Select Fach Efollowing: 11 Select Fach Efollowing: IIII 2 Select Fach Efollowing: 11 Select Fach Efolowing: IIIII 2 Select Fach Efolowing: 11 Select Fach Efolowing: IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	ME 418	Implementation of Mechanical Controls	4	ME 418	Implementation of Mechanical Controls	4
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ME 430 Senior Design Project III 2 ME 430 Senior Design Project III 2 Select Torm the following: 11 Selec	ME 429	Senior Design Project II 1	2	ME 429	Senior Design Project II	2
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Select From the following: [11/2] Select 32: units from the following: [11/2]	Technical Eleo	ctives ^{2,3,4}		Select from th	e following:	11/12
Select 3.12 units from the following ME courses: # EE 295 and Energy Conversion Electromagnetics Lab EE 423 Micro/Nano Fabrication ME 305 Introduction to Mechatronics ME 402 Orthopedic Biomechanics ME 403 Access by Design: Intro to Rehab Engineering ME 404 Composite Materials analysis and Design ME 415 Energy Conversion ME 422 Composite Materials analysis and Design ME 423 Fording Engineering ME 424 Combustion Engineering ME 425 Introduction to Mechanical Design ME 426 Ground Vehicle Dynamics and Design ME 427 Robics: Fundamentals and Applications ME 428 Nuclear Power Plant Design ME 438 Nuclear Power Plant Design ME 433 Therdomachinery ME 444 Combustion Engineering ME 435 Introduction to Building Energy Modeling ME 436 Petroleum Production Engineering ME 437 Nuclear Power Plant Design ME 438 Nuclear Power Plant Design ME 439 Nuclear Power Plant Design ME 430 Therend Power Plant Design	Select from th	ne following:	11/12	EE 255	Energy Conversion Electromagnetics	
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ME 453Thereads and Opportunities in HVACkarME 453ME 454Benchmarking & Assess of Build Energy PerforME 455Introduction to Building Energy ModelingME 456HVAC Air & Water Distribution System DesignME 456ME 456HVAC Air & Water Distribution System DesignME 453Trends and Opportunities in HVACkarME 458Building Heating and Cooling LoadsME 453Trends and Opportunities in HVACkarME 488Wind Energy EngineeringME 453Trends and Opportunities in HVACkarME 488Wind Energy EngineeringME 453Trends and Opportunities in HVACkarME 501/CE 511 Continuum Mechanics and ElasticityME 453Introduction to Building Energy ModelingME 503/CE 513 Inelastic Stress AnalysisME 455Introduction to Building Heating and Cooling LoadsME 506System DynamicsME 458Building Heating and Cooling LoadsME 517Advanced VibrationsME 541Advanced Heat Transfer IME 552Advanced Heat Transfer I**ME 553Advanced Heat Transfer II*ME 554Computational Heat Transfer II*ME 556Advanced Heat Transfer III*ME 579Fluid Power ControlSelect 0 -	IVIE 450	Solar Thermal Power Systems		ME 450	HVAC Senior Design Project I	4
ME 454 Benchmarking & Assess of build Energy Perfor Introduction to Building Energy Modeling ME 455 Introduction to Building Energy Modeling Introduction to Building Energy Modeling ME 457 Refrigeration Principles and Design ME 453 ME 458 Building Heating and Cooling Loads ME 454 ME 501/CE 511 Continuum Mechanics and Elasticity ME 454 Benchmarking & Assess of Build Energy Perfor ME 503/CE 513 Inelastic Stress Analysis ME 457 Refrigeration Principles and Design ME 506 System Dynamics ME 458 Building Heating and Cooling Loads ME 517 Advanced Vibrations ME 458 Building Heating and Cooling Loads ME 541 Advanced Heat Transfer I ME 452 Dynamics & Thermodynam of Compress Flow ME 553 Advanced Heat Transfer I Image and ME 430 (G). Image and ME 430 (G). ME 554 Computational Heat Transfer II Image and ME 430 (G). Image and ME 430 (G). ME 556 Advanced Heat Transfer II ME 470, ME 470, ME 470 and KE 571 are variable topics courses, and may or may court as ME Electives. Please contact instructor for additional information. A cours substitution form may be required. Short Me 470, ME 470 and ME 570 are independent study classes and may be acceptable for Tencinal Elective	IVIE 453	Denshrearlying & Assess of Duild Engrave Derfor		ME 460	HVAC Senior Design Project I	3
Mit 455 Introduction to Building Energy Modeling Mit 455 HVAC Air & Water Distribution System Design Mit 456 HVAC Air & Water Distribution System Design Mit 458 Building Heating and Cooling Loads Mit 458 Building Energy Engineering Mit 500/CE 511 Continuum Mechanics and Elasticity Mit 455 Mit 250 Fundamentals of HVAC Systems Mit 455 Introduction to Building Energy Modeling Mit 456 Hintite Element Analysis Mit 510 Mit 458 Soft Mechanical Control System Design Mit 458 Mit 517 Advanced Thermodynamics Mit 540 Viscous Flow Mit 553 Advanced Heat Transfer II Mit 554 Computational Heat Transfer II Mit 556 Advanced Heat Transfer III Mit 556 Advanced Heat Transfer III Mit 556 Advanced Heat Transfer III Mit 556 Advanced Heat Tr	IVIE 454	Benchmarking & Assess of Build Energy Perfor		Soloct from th	a following:	2
ME 455 HVAC Alf & Water Distribution System Design ME 457 Refrigeration Principles and Design ME 458 Building Heating and Cooling Loads ME 488 Wind Energy Engineering ME 503/CE 513 Inelastic Stress Analysis ME 453 ME 507 Mechanical Control System Design ME 507 Mechanical Control System Design ME 517 Advanced Vibrations ME 520 Viscous Flow ME 553 Advanced Heat Transfer I ME 554 Computational Heat Transfer II ME 555 Advanced Heat Transfer II ME 556 Advanced 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. Any upper-division or graduate level course in the College of Engineering project, thesis, special problems and co-op courses. Total Units 25-26	IVIE 455	Introduction to Building Energy Modeling		ME 250	Eundomontals of HVAC Systems	12
ME 457 Refrigeration Principles and Design ME 458 Building Heating and Cooling Loads ME 488 Wind Energy Engineering ME 501/CE 511 Continuum Mechanics and Elasticity ME 453 ME 503/CE 513 Inelastic Stress Analysis ME 453 ME 506 System Dynamics ME 507 Mechanical Control System Design ME 518 Machinery Vibration and Rotor Dynamics ME 542 Dynamics & Thermodynamics ME 543 Advanced Heat Transfer I ME 553 Advanced Heat Transfer II ME 554 Computational Heat Transfer III ME 579 Fluid Power Control Select 0 - 4 units from: Any upper-division or graduate level course in the College of Any upper-division or graduate level course in the College of ³ ME 470, ME 470 and ME 570 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required. ³ ME 400 and ME 500 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required.	ME 456	HVAC Air & Water Distribution System Design			Trands and Opportunities in HVACSP	
Mite 438 Billining Heating and Cooling Loads ME 488 Wind Energy Engineering ME 503 CE 511 Continuum Mechanics and Elasticity ME 503 Finite Element Analysis ME 506 System Dynamics ME 507 Mechanical Control System Design ME 517 Advanced Vibrations ME 541 Advanced Thermodynamics ME 552 Advanced Heat Transfer I ME 553 Advanced Heat Transfer I ME 556 Advanced Heat Transfer II ME 556 Advanced Heat Transfer III ME 5579 Fluid Power Control 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	IVIE 457	Reingeration Principles and Design			Ponchmarking & Accoss of Build Energy Derfor	
Mie 488 Wind Energy Engineering Mile 433 Introduction to building Energy Modeling ME 501/CE 511 Continuum Mechanics and Elasticity ME 453 Refrigeration Principles and Design ME 506 System Dynamics ME 457 Refrigeration Principles and Design ME 506 System Dynamics ME 458 Building Heating and Cooling Loads ME 507 Mechanical Control System Design Total Units 24 ME 517 Advanced Vibrations ME 541 Advanced Thermodynamics ME ME 542 Dynamics & Thermodynam of Compress Flow ME 552 Advanced Heat Transfer I ME 554 Computational Heat Transfer I ME 5579 Fluid Power Control Select 0 - 4 units from: Any upper-division or graduate level course in the College of Engineering program. ³ ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A cours 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. ⁴ ME 400 and ME 500 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required.	ME 458	Building Heating and Cooling Loads			Introduction to Building Energy Modeling	
ME 501/CE 511 Continuum Mechanics and Elasticity Me 437 Refigeration Principles and Design ME 503/CE 513 Inelastic Stress Analysis ME 458 Building Heating and Cooling Loads ME 506 System Dynamics ME 458 Building Heating and Cooling Loads ME 507 Mechanical Control System Design Me 458 Mathing Heating and Cooling Loads ME 517 Advanced Vibrations Me 541 Advanced Thermodynamics ME 554 Dynamics & Thermodynam of Compress Flow I ENGR 459, ENGR 460 and ENGR 461 (6), or ENGR 463, ENGR 464 and ENGR 465 (6) ME 552 Advanced Heat Transfer I I I ENGR 459, ENGR 460 and ENGR 461 (6), or ENGR 463, ENGR 464 and ENGR 465 (6) ME 554 Computational Heat Transfer II I I ENGR 459, ENGR 460 and ENGR 461 (6), or ENGR 463, ENGR 464 and ENGR 465 (6) ME 556 Advanced Heat Transfer III I I at 300-level Technical Electives cannot be used for graduate credit in the blended MS Mechanical Engineering program. Select 0 - 4 units from: 3ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A cours substitution form may be required. Any upper-division or graduate level course in the College of Engineering with the exception of GE Upper-Division B, ENGR 301, senorize independent study classes and may be	ME 488	Wind Energy Engineering			Defrigeration Dringiples and Design	
ME 503/CE 513 Inelastic Stress Analysis INIE 458 Building Heating and Cooling Loads ME/CE 504 Finite Element Analysis I ME 506 System Dynamics I ME 507 Mechanical Control System Design I ME 517 Advanced Vibrations I ME 518 Machinery Vibration and Rotor Dynamics I ME 540 Viscous Flow I ME 554 Dynamics & Thermodynam of Compress Flow I ME 555 Advanced Heat Transfer I I ME 556 Advanced Heat Transfer III I ME 579 Fluid Power Control I Select 0 - 4 units from: I I Any upper-division or graduate level course in the College of I I Engineering with the exception of GE Upper-Division B, ENGR 301, I ME 400 and ME 500 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required. I I Total Units 25-26 I I	ME 501/CE 51	Li Continuum Mechanics and Elasticity			Reingeration Principles and Design	
ME/CE 504 Finite Element Analysis 22 ME 506 System Dynamics 24 ME 507 Mechanical Control System Design 3 ME 517 Advanced Vibration and Rotor Dynamics 5 ME 540 Viscous Flow 5 ME 542 Dynamics & Thermodynam of Compress Flow 1 ME 552 Advanced Heat Transfer I 1 ME 553 Advanced Heat Transfer II 1 ME 554 Computational Heat Transfer III 1 ME 556 Advanced Heat Transfer III 1 ME 579 Fluid Power Control 2 Select 0 - 4 units from: 3 Me 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A course substitution form may be required. 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. 3 Total Units 25-266	ME 503/CE 51	13 Inelastic Stress Analysis		IVIE 458	Building Heating and Cooling Loads	
ME 506 System Dynamics ME 507 Mechanical Control System Design ME 517 Advanced Vibrations ME 518 Machinery Vibration and Rotor Dynamics ME 540 Viscous Flow ME 541 Advanced Thermodynamics ME 552 Advanced Heat Transfer I ME 553 Advanced Heat Transfer II ME 554 Computational Heat Transfer II ME 555 Advanced Heat Transfer III ME 556 Advanced Heat Transfer III ME 579 Fluid Power Control 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. ME 400 and ME 500 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required. * ME 400 and ME 500 are independent study classes and may be acceptable for Technical Elective credit. A course substitution form is required.	ME/CE 504	Finite Element Analysis		Total Units		25
ME 507 Mechanical Control System Design ME 517 Advanced Vibrations ME 518 Machinery Vibration and Rotor Dynamics ME 540 Viscous Flow ME 541 Advanced Thermodynamics ME 552 Advanced Heat Transfer I ME 554 Computational Heat Transfer ME 555 Advanced Heat Transfer III ME 556 Advanced Heat Transfer III ME 579 Fluid Power Control 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 Total Units 25-26	ME 506	System Dynamics				
ME 517 Advanced Vibrations ME 518 Machinery Vibration and Rotor Dynamics ME 540 Viscous Flow ME 541 Advanced Thermodynamics ME 542 Dynamics & Thermodynam of Compress Flow ME 552 Advanced Heat Transfer I ME 553 Advanced Heat Transfer II ME 554 Computational Heat Transfer ME 555 Advanced Heat Transfer III ME 579 Fluid Power Control Select 0 - 4 units from: 3 ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A course substitution form may be required. 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	ME 507	Mechanical Control System Design				
Mitchinery Vibration and Rotor Dynamics ME 540 Viscous Flow ME 541 Advanced Thermodynamics ME 542 Dynamics & Thermodynam of Compress Flow ME 552 Advanced Heat Transfer I ME 553 Advanced Heat Transfer II ME 554 Computational Heat Transfer ME 555 Advanced Heat Transfer III ME 556 Advanced Heat Transfer III ME 579 Fluid Power Control Select 0 - 4 units from: 3 ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A cours 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.		Advanced Vibrations				
ME 540 Viscous Flow ME 541 Advanced Thermodynamics ME 542 Dynamics & Thermodynam of Compress Flow ME 552 Advanced Heat Transfer I ME 553 Advanced Heat Transfer II ME 554 Computational Heat Transfer III ME 556 Advanced Heat Transfer III ME 579 Fluid Power Control Select 0 - 4 units from: 3 ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A course substitution form may be required. 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		Viscous Flow				
ME 541Advanced membodynamicsME 542Dynamics & Thermodynam of Compress FlowME 552Advanced Heat Transfer IME 553Advanced Heat Transfer IIME 554Computational Heat TransferME 556Advanced Heat Transfer IIIME 579Fluid Power ControlSelect 0 - 4 units from:Any upper-division or graduate level course in the College ofEngineering with the exception of GE Upper-Division B, ENGR 301,senior project, thesis, special problems and co-op courses.Total Units		VISCOUS FIOW		Footnotes f	or General Concentration	
ME 542Dynamics & memodynamic for compress howME 542Advanced Heat Transfer IME 553Advanced Heat Transfer IIME 554Computational Heat TransferME 556Advanced Heat Transfer IIIME 579Fluid Power ControlSelect 0 - 4 units from:Any upper-division or graduate level course in the College ofEngineering with the exception of GE Upper-Division B, ENGR 301,senior project, thesis, special problems and co-op courses.Total Units25-26	ME 541	Dynamics & Thermodynam of Compress Flow			EP 460 and ENCP 461 (6) or ENCP 462 ENCP 464 and ENCP (65 (6)
ME 551Advanced Heat Transfer IIME 553Advanced Heat Transfer IIME 554Computational Heat TransferME 556Advanced Heat Transfer IIIME 579Fluid Power ControlSelect 0 - 4 units from:Any upper-division or graduate level course in the College ofEngineering with the exception of GE Upper-Division B, ENGR 301,senior project, thesis, special problems and co-op courses.Total Units25-26	ME 552	Advanced Heat Transfer I		may substitute for	or ME 428 ME 429 and ME 430 (6)	(0) 20
ME 554Computational Heat TransferME 556Advanced Heat Transfer IIIME 579Fluid Power ControlSelect 0 - 4 units from:Any upper-division or graduate level course in the College ofEngineering with the exception of GE Upper-Division B, ENGR 301,senior project, thesis, special problems and co-op courses.Total Units25-26	ME 553	Advanced Heat Transfer II		2 Consultation w	ith advisor is recommended prior to selecting Technical Election	ves Note
ME 556 Advanced Heat Transfer III ME 579 Fluid Power Control Select 0 - 4 units from: MS Mechanical Engineering program. Any upper-division or graduate level course in the College of a Engineering with the exception of GE Upper-Division B, ENGR 301, senior project, thesis, special problems and co-op courses. Total Units 25-26	ME 554	Computational Heat Transfer		that 300-level Te	echnical Electives cannot be used for graduate credit in the bla	nded RS +
ME 579 Fluid Power Control Select 0 - 4 units from: 3 ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A cours substitution form may be required. 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. ³ ME 470, ME 471, ME 570 and ME 571 are variable topics courses, and may or may count as ME Electives. Please contact instructor for additional information. A cours 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. Total Units 25-26	ME 556	Advanced Heat Transfer III		MS Mechanical F	Engineering program.	
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 and WE S7 are variable topics courses, and may of may 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.	ME 579	Fluid Power Control		³ MF 470 MF 47	1 ME 570 and ME 571 are variable tonics courses and may o	r may not
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	Select 0 - 4 ur	nits from:	-	count as MF Flee	tives. Please contact instructor for additional information A	course
Engineering with the exception of GE Upper-Division B, ENGR 301, senior project, thesis, special problems and co-op courses. Total Units 25-26	Any upper-division or graduate level course in the College of			substitution form may be required.		
senior project, thesis, special problems and co-op courses. Total Units 25-26	Engineering v	vith the exception of GE Upper-Division B, ENGR 30	L,	⁴ ME 400 and ME 500 are independent study classes and may be acceptable for		
Total Units 25-26	senior project	senior project, thesis, special problems and co-op courses. Technical Elective credit. A course substitution form is required.				
	Total Units		25-26			



BS MECHANICAL ENGINEERING

2021-2022

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 Proiect I ¹	2		
ME 429	Senior Design Project II ¹	2		
ME 430	Senior Design Project III ¹	2		
Select from	the following: ²	3/4		
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 Unit	S	25-26		

¹ ENGR 459, ENGR 460 and ENGR 461 (6) may substitute for ME 428, ME 429 and ME 430 (6).

² Elective based on interests of students.

Manufacturin	g Concentration	
IME 327	Test Design & Analysis in Manufacturing Engr	4
ME 418	Implementation of Mechanical Controls	4
or ME 419	Advanced Control Systems	
ME 428	Senior Design Project I	2
ME 429	Senior Design Project II	2
ME 430 Take all of the c	Senior Design Project III	2
Mechanical Ma	nufacturing Emphasis Area	8
IME 330	Fundamentals of Manufacturing Engineering	
IME 450	Manufacturing Process and Tool Engineering	
Electronics Mar	nufacturing Emphasis Area	
IME/MATE 458	Microelectronics and Electronics Packaging	
MATE 430	Micro/Nano Fabrication	
& MATE 435	and Microfabrication Laboratory	
Design and Ma	nufacturing Elective	
Select from the	following:	3/5
IME 330	Fundamentals of Manufacturing Engineering ²	
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 ²	
IME 527	Design of Experiments	
IME 543	Applied Human Factors	
MATE 430	Micro/Nano Fabrication	
& MATE 435	and Microfabrication Laboratory ²	
MATE 440	Welding Metallurgy & Joining of Adv Materials	
& MATE 445	and Joining of Advanced Materials Laboratory	
ME 305	Introduction to Mechatronics	
ME 412	Composite Materials Analysis and Design	
Total Units		25-27
	ACO and ENCD ACA (C) man substitute for NAE 420 NAE 420 an	

¹ ENGR 459, ENGR 460 and ENGR 461 (6) may substitute for ME 428, ME 429 and ME 430 (6).

² If a course is taken to meet a Emphasis Area requirement, it cannot be double-counted as a Design and Manufacturing Elective.