MICHIGAN TECH - Mechanical & Aerospace Engineering - Technical Electives

2025-2026 Academic Year (Planned) Course offerings subject to change.

Refer to the schedule of classes in BanWeb for current offerings, pre-requisites, restrictions, and course descriptions.

AE/ME Courses By Course Number

Including other courses on the Aerospace Engineering, Manufacturing, and Naval Systems Engineering minors, and ENG courses

See below for guidelines regarding eligible courses in other engineering departments.

Course Number	Credits	Title	Summer 2025	Fall 2025	Spring 2026	Aerospace Engineering Minor	Manufacturing Minor	Naval Systems Engineering Minor
AE4530	3	Compressible Flow			X	ELECTIVE		
AE4540	4	Aerospace Propulsion (with lab)	--NOT OFFERED (PLANNED S27)-			ELECTIVE		
AE4550	3	Spacecraft Thermal Engineering	--NOT OFFERED (PLANNED F26)-			ELECTIVE		
AE4560	3	Aerospace Materials and Structures	--NOT OFFERED (PLANNED F26)-			ELECTIVE		
AE4570	3	Space Mechanics		X		ELECTIVE		
AE4580	3	Spacecraft Dynamics and Control	--NOT OFFERED (PLANNED S27)-			ELECTIVE		
CEE5520	3	Introduction to Hydrodynamic Modeling			X			ELECTIVE
EE4227	3	Power Electronics		X				ELECTIVE
EE4228	1	Power Electronics Lab		X				ELECTIVE
EE4240	4	Introduction to MEMS (Micro ElectroMechanical Systems)	----------NOT OFFERED----------				PROCESS	
EE4252	4	Digital Signal Processing and its Applications		X				ELECTIVE
EE4490	4	Laser Systems and Applications		X				ELECTIVE
EE4777	3	Open-Source 3-D Printing	Full Semester (online)				PROCESS	
EET4144	4	Real-Time Robotics Systems	Online 4/28-5/23 In-Person Lab 5/15-5/18					
ENG4300	3	Engineering Project Management	Track A (online)	X	X			
ENG4505	3	Systems Analysis & Model Design		X				
ENG4515	3	Introduction to Sustainability and Resilience		X				
ME3400	3	Machine Design and Analysis	TECHNICAL ELECTIVE FOR BSAE STUDENTS ONLY					
ME3911	3	Mechanical Engineering Practice IV	TECHNICAL ELECTIVE FOR BSAE STUDENTS ONLY					
ME4150	3	Intermediate Mechanics of Materials	----------NOT OFFERED----------			ELECTIVE		ELECTIVE
ME4170	3	Failure of Materials in Mechanics	----------NOT OFFERED----------			ELECTIVE		ELECTIVE
ME4180	3	Engineering Biomechanics			X	ELECTIVE		ELECTIVE
ME4200	3	Principles of Energy Conversion & Storage			X			
ME4201	3	Applied Thermodynamics		X		ELECTIVE		
ME4202	3	Intermediate Fluid Mechanics and Heat Transfer		X		ELECTIVE		
ME4210	3	Computational Fluids Engineering		X		ELECTIVE		ELECTIVE
ME4220	3	Internal Combustion Engines I		X				
MEEM4230	3	Compressible Flow/Gas Dynamics	---NOT OFFERED (SEE AE4530)---			ELECTIVE		
ME4235	3	Wind Energy		X				
ME4240	3	Combustion & Air Pollution	----------NOT OFFERED----------					
ME4250	3	Heating/Ventilation/Air Conditioning			X			
ME4260	3	Fuel Cell Technology			X			
ME4295	3	Introduction to Propulsion Systems for Hybrid Electric Vehicles		X				ELECTIVE
ME4296	3	Experimental Studies in Hybrid Electric Vehicles		X				
ME4404	3	Mechanism Synthesis/Dynamic Modeling			X			
ME4405	3	Intro to Finite Element Method			X			
ME4430	4	Advanced Computer Aided Design and Manufacturing Methods		X			SYSTEM	
ME4450	3	Vehicle Dynamics			X			
ME4610	3	Advanced Machining Processes	----------NOT OFFERED----------				PROCESS	
ME4615	4	Metal Forming Processes	----------NOT OFFERED----------					
ME4625	3	Precision Manufacturing and Metrology	----------NOT OFFERED----------				PROCESS	
ME4630	3	Human Factors	----------NOT OFFERED----------				SYSTEM	ELECTIVE
ME4635	3	Design with Plastics	----------NOT OFFERED----------				PROCESS	
ME4640	3	Micromanufacturing Processes		X			PROCESS	
ME4650	3	Quality Engineering	Track A (online section available)	X		ELECTIVE	SYSTEM	ELECTIVE
ME4655	3	Production Planning	Track A (online section available)		X		SYSTEM	
ME4665	3	Introduction to Lean Manufacturing			X		SYSTEM	
ME4675	3	Design of Material Handling Systems	----------NOT OFFERED----------				SYSTEM	
ME4685	3	Environmentally Responsible Design & Manufacturing	----------NOT OFFERED----------					
ME4695	3	Additive Manufacturing			X		PROCESS	
ME4701	4	Analytical and Experimental Modal Analysis			X	ELECTIVE		ELECTIVE
ME4702	3	Shock and Vibration		X		ELECTIVE		ELECTIVE
ME4704	3	Acoustics and Noise Control			X	ELECTIVE		ELECTIVE
ME4705	4	Introduction to Robotics and Mechatronics			X	ELECTIVE	SYSTEM	ELECTIVE
ME4707	3	Autonomous Systems		X	X	ELECTIVE	SYSTEM	ELECTIVE
MEEM4720	3	Space Mechanics	---NOT OFFERED (SEE AE4570)---			ELECTIVE		
ME4730	3	Dynamic System Simulation			X			
ME4775	4	Analysis & Design of Feedback Control Systems		X		ELECTIVE		
ME4810	3	Introduction to Aerospace Engineering		X		REQUIRED FOR AEROSPACE ENG. MINOR - F25 FINAL OFFERING, STUDENTS DECLARED FOR THE AEROSPACE ENGINEERING MINOR ONLY		

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AE/ME Courses By Course Number

Including other courses on the Aerospace Engineering, Manufacturing, and Naval Systems Engineering minors, and ENG courses

See below for guidelines regarding eligible courses in other engineering departments.

Course Number	Credits	Title	Summer 2025	Fall 2025	Spring 2026	Aerospace Engineering Minor	Manufacturing Minor	Naval Systems Engineering Minor
ME4820	3	Introduction to Aerospace Propulsion			X	ELECTIVE		
ME4850	3	Naval Systems and Platforms	----------NOT OFFERED----------					REQUIRED
ME4990	3	Solar Energy Engineering			X			
ME4990	3	Nuclear Power & Propulsion			X			
ME5110	3	Continuum Mechanics/Elasticity		X				
ME5130	3	Nanoscale Science and Technology			X			
ME5150	3	Advanced Mechanics of Materials			X			
ME5160	3	Experimental Stress Analysis		X				
ME5170	3	Finite Element and Variational Methods in Engineering		X				
ME5180	3	Mechanics of Composite Materials	----------NOT OFFERED----------			ELECTIVE		
ME5190	3	Machine Learning for Engineering Applications			X			
ME5201	1	Fundamentals of SI Engines	----------NOT OFFERED----------					
ME5202	1	Fundamentals of Diesel Engines	Short Course (3 days, 6/9-6/11)					
ME5203	1	SI Engine Control Systems	----------NOT OFFERED----------					
ME5204	1	Diesel Engine Control Systems	Short Course (3 days, 6/11-6/13)					
ME5210	3	Advanced Fluid Mechanics		X				
ME5212	3	Intermediate Thermodynamics	----------NOT OFFERED----------					
ME5225	3	Advanced Power System and Pollution Control	----------NOT OFFERED----------					
ME5230	3	Advanced Heat Transfer			X			
ME5240	3	Computational Fluid Dynamics			X			
ME5250	3	Internal Combustion Engines II			X			
ME5255	3	Advanced Powertrain Instrumentation and Experimental Methods	----------NOT OFFERED----------					
ME5265	3	Physical Gasdynamics	----------NOT OFFERED----------					
ME5270	3	Advanced Combustion	----------NOT OFFERED----------					
ME5275	3	Energy Storage Systems	----------NOT OFFERED----------					
ME5280	3	Phase Change and Two-Phase Flows			X			
ME5295	3	Advanced Propulsion Systems for Hybrid Electric Vehicles			X			
ME5296	3	Powertrain Integration in HEV	----------NOT OFFERED----------					
ME5300	3	Cybersecurity of Industrial Control Systems		X				
ME5315	3	Cyber Security of Automotive Systems I			X			
ME5401	3	Design for Reliability	----------NOT OFFERED----------				PROCESS	
ME5430	3	Human Factors - Transportation	----------NOT OFFERED----------					
ME5440	3	Advanced Vehicle Dynamics	Track A (online)					
ME5645	3	Numerical Analysis of Manufacturing Processes	----------NOT OFFERED----------					
ME5665	3	Micro & Nano Fabrication for Energy	----------NOT OFFERED----------					
ME5670	3	Experimental Design in Engineering	Track A (online section available)		X		PROCESS	
ME5680	3	Optimization I		X			SYSTEM	
ME5685	3	Environmentally Responsible Design & Manufacturing	----------NOT OFFERED----------					
ME5700	4	Dynamic Measurement/Signal Analysis		X				
ME5701	3	Intermediate Dynamics	----------NOT OFFERED----------					
ME5702	3	Analytical Vibroacoustics			X			
ME5703	4	Experimental Methods Vibro-Acoustics		X				
ME5715	3	Linear Systems Theory and Design		X				
ME5750	3	Model-Based Embedded Control System Design		X				
ME5800	3	Advanced Engineering Mathematics with Applications	Full Semester (online)					
ME5811	3	Automotive Systems		X				
ME5812	3	Automotive Control Systems			X			
MSE4240	4	Introduction to MEMS	----------NOT OFFERED----------				PROCESS	
MSE4310	3	Principles of Metal Casting		X			PROCESS	
MSE4320	3	Corrosion and Environmental Effects			X			ELECTIVE
MSE4430	3	Composite Materials	----------NOT OFFERED----------			ELECTIVE		ELECTIVE
MSE4777	3	Open-Source 3-D Printing	----------NOT OFFERED----------				PROCESS	

In addition to the above courses, any 4000+ level courses in the College of Engineering except MET courses are acceptable for MAE technical electives. **MET courses are not acceptable for MAE technical elective credits, except for MET 4377 and MET 4378.** These prefixes - AE, BE, CM, CEE, EE, ENG, GE, ME, MSE - may be used by MAE students for technical elective credits (if allowed to enroll in the course by the offering department) with the following exceptions: BE4000, BE4900, BE4901, BE4910, BE4930, BE5000, BE5900, BE5930, CEE4510, CEE4900, CEE4905, CEE4910, CEE4915, CEE4916, CEE4920, CEE4930, CEE4990, CEE5190, CEE5250, CEE5390, CEE5490, CEE5560, CEE5561, CEE5562, CEE5563, CEE5590, CEE5690, CEE5890, CEE5920, CEE5930, CEE5990, CEE5991, CEE5992, CEE5994, CEE5997, CEE5998, CEE5999, CM4000, CM4020, CM 4040, CM4060, CM4080, CM4855, CM4860, CM4861, CM4900, CM4910, CM4990, CM5900, CM5950, CM5990, EE4000, EE4800, EE4805, EE4870, EE4901, EE4910, EE5290, EE5805, EE5900, EE5990, EE5991, EE5992, EE5994, ENG4060, ENG4070, ENG4900, ENG4905, ENG4910, ENG4990, ENG5060, ENG5100, ENG5200, ENG5300, ENG5400, ENG5990, ENG5998, GE4000, GE4900, GE4910, GE4916, GE4930, GE4931, GE4933, GE4934, GE4961, GE4962, GE4970, GE5187, GE5930, GE5940, GE5950, GE5960, GE5970, GE5994, GE5995, GE5998, GE5999, ME4990, ME4901, ME4911, ME4999, ME5010, ME5990, ME5994, ME5995, ME5999, ME6000, MSE4130, MSE4131, MSE4140, MSE4141, MSE4970, MSE4990, MSE5100, MSE5900, MSE5970, and MSE5990 or any other research/special topics/seminar/senior design/etc. credits (courses without a specific course description and/or syllabus). Undergraduate students cannot typically enroll in 6000-level courses. Special topics courses (4990, 5990, etc.) may be approved on an individual section/semester basis if a student/faculty member submits or creates a course syllabus for evaluation. OSM 4300 and EET 4144 are also acceptable.