

## MICHIGAN TECH - Mechanical Engineering - Technical Electives

2021-2022 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.

**MEEM Courses By Course Number** (including EE and MSE courses on the Aerospace Engineering and Manufacturing minors also)  
See below for guidelines regarding eligible courses in other engineering departments.

Course Number	Credits	Title	Summer 2021	Fall 2021	Spring 2022	Aerospace Engineering Minor	Manufacturing Minor
EE4240	4	Introduction to MEMS		X			PROCESS
EE4777	3	Open-Source 3-D Printing		X			PROCESS
ENG4300	3	Engineering Project Management	Track A (online)	X	X		
MEEM4150	3	Intermediate Mechanics of Materials	Track A (online section available)	X		REM. ELEC.	
MEEM4170	3	Failure of Materials in Mechanics			X	REM. ELEC.	
MEEM4180	3	Engineering Biomechanics	-----NOT OFFERED-----			REM. ELEC.	
MEEM4200	3	Principles of Energy Conversion & Storage		X			
MEEM4201	3	Applied Thermodynamics		X	X	REM. ELEC.	
MEEM4202	3	Intermediate Fluid Mechanics and Heat Transfer		X		ELECTIVE	
MEEM4210	3	Computational Fluids Engineering		X		ELECTIVE	
MEEM4220	3	Internal Combustion Engines I		X			
MEEM4230	3	Compressible Flow/Gas Dynamics			X	ELECTIVE	
MEEM4235	3	Wind Energy		X			
MEEM4240	3	Combustion & Air Pollution		X			
MEEM4250	3	Heating/Ventilation/Air Conditioning			X		
MEEM4260	3	Fuel Cell Technology		X			
MEEM4295	3	Introduction to Propulsion Systems for Hybrid Electric Vehicles		X			
MEEM4296	3	Experimental Studies in Hybrid Electric Vehicles		X			
MEEM4404	3	Mechanism Synthesis/Dynamic Modeling			X		
MEEM4405	3	Intro to Finite Element Method	Track B	X	X		
MEEM4430	4	Advanced Computer Aided Design and Manufacturing Methods	Track A (online section available)	X	X		SYSTEM
MEEM4450	3	Vehicle Dynamics			X		
MEEM4610	3	Advanced Machining Processes	-----NOT OFFERED-----				PROCESS
MEEM4615	4	Metal Forming Processes	-----NOT OFFERED-----				
MEEM4625	3	Precision Manufacturing and Metrology	-----NOT OFFERED-----				PROCESS
MEEM4630	3	Human Factors	-----NOT OFFERED-----			REM. ELEC.	SYSTEM
MEEM4635	3	Design with Plastics	-----NOT OFFERED-----				PROCESS
MEEM4640	3	Micromanufacturing Processes		X			PROCESS
MEEM4650	3	Quality Engineering	Track A (online)	X		REM. ELEC.	SYSTEM
MEEM4655	3	Production Planning	Track A (online)		X		SYSTEM
MEEM4675	3	Design of Material Handling Systems	-----NOT OFFERED-----				SYSTEM
MEEM4685	3	Environmentally Responsible Design & Manufacturing	-----NOT OFFERED-----				
MEEM4695	3	Additive Manufacturing			X		PROCESS
MEEM4701	4	Analytical and Experimental Modal Analysis		X		ELECTIVE	
MEEM4702	3	Shock and Vibration			X	REM. ELEC.	
MEEM4704	3	Acoustics and Noise Control			X	REM. ELEC.	
MEEM4705	4	Introduction to Robotics and Mechatronics	-----NOT OFFERED-----			REM. ELEC.	SYSTEM
MEEM4707	3	Autonomous Systems			X	REM. ELEC.	SYSTEM
MEEM4720	3	Space Mechanics			X	ELECTIVE	
MEEM4730	3	Dynamic System Simulation			X		
MEEM4775	4	Analysis & Design of Feedback Control Systems		X			
MEEM4810	3	Introduction to Aerospace Engineering		X		REQUIRED	
MEEM4820	3	Introduction to Aerospace Propulsion			X	ELECTIVE	
MEEM4850	3	Naval Systems and Platforms		X			
MEEM5110	3	Continuum Mechanics/Elasticity		X			
MEEM5130	3	Nanoscale Science and Technology			X		
MEEM5150	3	Advanced Mechanics of Materials			X		
MEEM5160	3	Experimental Stress Analysis		X			
MEEM5170	3	Finite Element and Variational Methods in Engineering		X			
MEEM5180	3	Mechanics of Composite Materials			X	ELECTIVE	
MEEM5201	1	Fundamentals of SI Engines	-----NOT OFFERED-----				
MEEM5202	1	Fundamentals of Diesel Engines	3-day short course, 7/14-7/16				
MEEM5203	1	SI Engine Control Systems	-----NOT OFFERED-----				
MEEM5204	1	Diesel Engine Control Systems	3-day short course, 7/21-7/23				
MEEM5210	3	Advanced Fluid Mechanics		X			
MEEM5212	3	Intermediate Thermodynamics		X			
MEEM5225	3	Advanced Power System and Pollution Control	-----NOT OFFERED-----				

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Course Number	Credits	Title	Summer 2021	Fall 2021	Spring 2022	Aerospace Engineering Minor	Manufacturing Minor
MEEM5230	3	Advanced Heat Transfer		X			
MEEM5240	3	Computational Fluid Dynamics			X		
MEEM5250	3	Internal Combustion Engines II			X		
MEEM5255	3	Advanced Powertrain Instrumentation and Experimental Methods			X		
MEEM5265	3	Physical Gasdynamics		X			
MEEM5270	3	Advanced Combustion			X		
MEEM5275	3	Energy Storage Systems	-----NOT OFFERED-----				
MEEM5280	3	Phase Change and Two-Phase Flows			X		
MEEM5295	3	Advanced Propulsion Systems for Hybrid Electric Vehicles			X		
MEEM5296	3	Powertrain Integration in HEV			X		
MEEM5300	3	Cybersecurity of Industrial Control Systems		X			
MEEM5315	3	Cyber Security of Automotive Systems I			X		
MEEM5401	3	Design for Reliability		X			PROCESS
MEEM5430	3	Human Factors - Transportation	-----NOT OFFERED-----				
MEEM5440	3	Advanced Vehicle Dynamics	-----NOT OFFERED-----				
MEEM5645	3	Numerical Analysis of Manufacturing Processes	-----NOT OFFERED-----				
MEEM5655	3	Introduction to Lean Manufacturing			X		SYSTEM
MEEM5665	3	Micro & Nano Fabrication for Energy	-----NOT OFFERED-----				
MEEM5670	3	Experimental Design in Engineering	Track A (online)	X			PROCESS
MEEM5680	3	Optimization I		X			SYSTEM
MEEM5685	3	Environmentally Responsible Design & Manufacturing	-----NOT OFFERED-----				
MEEM5700	4	Dynamic Measurement/Signal Analysis		X			
MEEM5701	3	Intermediate Dynamics		X			
MEEM5702	3	Analytical Vibroacoustics		X			
MEEM5703	4	Experimental Methods Vibro-Acoustics	-----NOT OFFERED-----				
MEEM5715	3	Linear Systems Theory and Design		X			
MEEM5750	3	Model-Based Embedded Control System Design		X			
MEEM5800	3	Advanced Engineering Mathematics with Applications	Full Semester (online)				
MEEM5811	3	Automotive Systems		X			
MEEM5812	3	Automotive Control Systems			X		
MEEM5990	3	Applied Machine Learning			X		
MSE4120	3	Material & Processing Selection			X	REM. ELEC.	PROCESS
MSE4240	4	Introduction to MEMS		X			PROCESS
MSE4310	3	Principles of Metal Casting		X			PROCESS
MSE4430	3	Composite Materials			X	ELECTIVE	
MSE4777	3	Open-Source 3-D Printing		X			PROCESS

In addition to the above courses, any 4000+ level courses in the College of Engineering except MET courses are acceptable for ME technical electives. **MET courses are not acceptable for ME technical elective credits.** These prefixes - BE, CM, CEE, EE, ENG, GE, MEEM, MSE - may be used by BSME 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, CEE4510, CEE4900, CEE4905, CEE4910, CEE4915, CEE4916, CEE4920, CEE4930, CEE4990, CEE5190, CEE5250, CEE5390, CEE5490, CEE5560, CEE5561, CEE5562, CEE5563, CEE5590, 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, EE4870, EE4901, EE4910, EE4800, EE4805, 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, MEEM4990, MEEM4901, MEEM4911, MEEM4999, MEEM5010, MEEM5990, MEEM5994, MEEM5995, MEEM5999, MEEM6000, 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 is also acceptable.