

# MICHIGAN TECH - Mechanical Engineering - Technical Electives

## 2019-2020 Academic Year (Planned)

Semesters/years offered 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)

Course Number	Credits	Title	Summer 2019	Fall 2019	Spring 2020	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			X	REM. ELEC.	
MEEM4170	3	Failure of Materials in Mechanics			X	REM. ELEC.	
MEEM4180	3	Engineering Biomechanics		X		REM. ELEC.	
MEEM4200	3	Principles of Energy Conversion & Storage		X			
MEEM4201	3	Applied Thermodynamics	Track A (1 online section)	X	X	REM. ELEC.	
MEEM4202	3	Intermediate Fluid Mechanics and Heat Transfer		X		REM. ELEC.	
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	-----NOT OFFERED-----				
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	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	-----NOT OFFERED-----				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			X		SYSTEM
MEEM4685	3	Environmentally Responsible Design & Manufacturing	-----NOT OFFERED-----				
MEEM4695	3	Additive Manufacturing			X		
MEEM4701	4	Analytical and Experimental Modal Analysis		X		REM. ELEC.	
MEEM4702	3	Shock and Vibration			X		
MEEM4704	3	Acoustics and Noise Control			X	REM. ELEC.	
MEEM4705	4	Introduction to Robotics and Mechatronics			X	REM. ELEC.	SYSTEM
MEEM4707	3	Autonomous Systems	-----NOT OFFERED-----			REM. ELEC.	SYSTEM
MEEM4720	3	Space Mechanics	-----NOT OFFERED-----			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		
MEEM5201	1	Fundamentals of SI Engines	-----NOT OFFERED-----				
MEEM5202	1	Fundamentals of Diesel Engines	May 22-24				
MEEM5203	1	SI Engine Control Systems	-----NOT OFFERED-----				
MEEM5204	1	Diesel Engine Control Systems	June 5-7				
MEEM5210	3	Advanced Fluid Mechanics		X			
MEEM5212	3	Intermediate Thermodynamics		X			
MEEM5225	3	Advanced Power System and Pollution Control	-----NOT OFFERED-----				
MEEM5230	3	Advanced Heat Transfer		X			
MEEM5240	3	Computational Fluid Dynamics			X		
MEEM5250	3	Internal Combustion Engines II			X		

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Course Number	Credits	Title	Summer 2019	Fall 2019	Spring 2020	Aerospace Engineering Minor	Manufacturing Minor
MEEM5255	3	Advanced Powertrain Instrumentation and Experimental Methods			X		
MEEM5265	3	Physical Gasdynamics	-----NOT OFFERED-----				
MEEM5270	3	Advanced Combustion	-----NOT OFFERED-----				
MEEM5275	3	Energy Storage Systems			X		
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		X			PROCESS
MEEM5680	3	Optimization I	-----NOT OFFERED-----				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			X		
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		
MSE4120	3	Material & Processing Selection			X	REM. ELEC.	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 course in the College of Engineering (BE, CM, CEE, EE, ENG, GE, 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: BE4900, BE4901, BE4910, BE4930, CEE4900, CEE4905, CEE4910, CEE4915, CEE4916, CEE4920, CEE4930, CM4900, CM4910, EE4870, EE4901, EE4910, EE4800, EE4805, GE4900, GE4910, GE4930, GE4931, GE4933, GE4934, GE4961, GE4962, GE4970, MEEM4990, MEEM4901, MEEM4911, MEEM4999, MEEM5990, MEEM5994, MSE4130, MSE4131, MSE4140, MSE4141, MSE4970, and MSE5970. Special topics courses (4990, 5990, etc.) may be approved on an individual section basis if a student submits the course syllabus for evaluation. OSM 4300 is also acceptable.