

Course	Course Title	Area	Frequency	08F	09S	09F	10S	10F	11S	11F	12S	12F	13S
MMAE433	Design of Thermal System	Thermal Sciences	2	x		x		x		x		x	
MMAE445	CAD/CAM with Numerical Control	Design & Manufacturing	2	x		x		x		x		x	
MMAE451	Finite Element Methods in Engineering	Solids Mechanics	2		x		x		x		x		x
MMAE465/554	Electrical, Magnetic, and Optical Properties of Materials	Materials Science & Eng	2		x		x		x		x		x
MMAE468	Introduction to Ceramic Materials	Materials Science & Eng	2	x		x		x		x		x	
MMAE470	Introduction to Polymer Science	Materials Science & Eng	2	x		x		x		x		x	
MMAE475	Powder Metallurgy	Materials Science & Eng	TBD										
MMAE482	Composites	Materials Science & Eng	2		x		x		x		x		x
MMAE485	Manufacturing Processes	Materials Science & Eng	2	x		x		x		x		x	
MMAE486	Properties of Ceramics	Materials Science & Eng	TBD										
MMAE501	Engineering Analysis I	Engineering Analysis	1	x	x	x	x	x	x	x	x	x	x
MMAE502	Engineering Analysis II	Engineering Analysis	2		x		x		x		x		x
MMAE503	Advanced Engineering Analysis	Engineering Analysis	TBD										
MMAE507	Introduction to Continuum Mechanics	Engineering Analysis	4	x				x				x	
MMAE508	Perturbation Methods	Engineering Analysis	4			x				x			
MMAE510	Fundamentals of Fluid Mechanics	Fluid Dynamics	2	x		x		x		x		x	
MMAE511	Dynamics of Compressible Fluids	Fluid Dynamics	5			x					x		
MMAE512	Dynamics of Viscous Fluids	Fluid Dynamics	5					x					x
MMAE513	Turbulent Flows	Fluid Dynamics	4		x				x				x
MMAE514	Stability of Viscous Flows	Fluid Dynamics	5				x					x	
MMAE515	Engineering Acoustics	Fluid Dynamics	5				x					x	
MMAE516	Advanced Experimental Methods in Fluid Mechanics	Fluid Dynamics	5			x					x		
MMAE517	Computational Fluid Dynamics	Fluid Dynamics	4		x				x				x
MMAE518	Spectral Methods in Computational Fluid Dynamics	Fluid Dynamics	5					x					x
MMAE520	Advanced Thermodynamics	Thermal Sciences	4			x				x			
MMAE521	Statistical Thermodynamics	Thermal Sciences	TBD										
MMAE523	Fundamentals of Power Generation	Thermal Sciences	5	x					x				
MMAE524	Fundamentals of Combustion	Thermal Sciences	3			x			x				
MMAE525	Fundamentals of Heat Transfer	Thermal Sciences	2		x		x		x		x		x
MMAE526	Heat Transfer: Conduction	Thermal Sciences	TBD										
MMAE527	Heat Transfer: Convection and Radiation	Thermal Sciences	TBD										
MMAE528	Liquid-Vapor Phase-Change Phenomena	Thermal Sciences	6				x						x
MMAE529	Theory of Plasticity	Solid Mechanics	TBD										
MMAE530	Advanced Mechanics of Solids	Solid Mechanics	2	x		x		x		x		x	
MMAE531	Theory of Elasticity	Solid Mechanics	TBD										
MMAE532	Finite Element Methods II	Solid Mechanics	2	x		x		x		x		x	
MMAE533	Fatigue and Fracture Mechanics	Solid Mechanics	TBD										
MMAE535	Design and Analysis of Brittle Structures	Solid Mechanics	TBD										
MMAE536	Experimental Solid Mechanics	Solid Mechanics	4			x			x				x
MMAE538	Computational Techniques in Finite Element Methods	Solid Mechanics	TBD										
MMAE540	Robotics	Dynamics & Control	4			x				x			
MMAE541	Advanced Dynamics	Dynamics & Control	2		x		x		x		x		x
MMAE543	Modern Control Systems	Dynamics & Control	4		x				x				x
MMAE544	Optimization Techniques in Computer-Aided Design	Design & Manufacturing	TBD										
MMAE545	Advanced CAD/CAM	Design & Manufacturing	2		x		x		x		x		x
MMAE546	Advanced Manufacturing Engineering	Design & Manufacturing	2	x		x		x		x		x	
MMAE547	Computer Integrated Manufacturing Technologies	Design & Manufacturing	2		x		x		x		x		x
MMAE548	Principles of Minimum-Weight Design	Design & Manufacturing	TBD										
MMAE549	Tribology	Design & Manufacturing	TBD										
MMAE551	Experimental Mechatronics	Dynamics & Control	4	x				x				x	
MMAE552	Practical Machine Design	Design & Manufacturing	TBD										
MMAE555	Introduction to Navigation Systems	Dynamics & Control	6	x						x			
MMAE556	Nanoscale Imaging and Manipulation	Design & Manufacturing	4	x				x				x	
MMAE557	Computer-Integrated Manufacturing Systems	Design & Manufacturing	2	x		x		x		x		x	
MMAE560	Statistical Quality and Process Control	Design & Manufacturing	2		x		x		x				
MMAE561	Solidification	Materials Science & Eng	6		x						x		
MMAE562	Design of Modern Alloys	Materials Science & Eng	8			x							
MMAE563	Advanced Mechanical Metallurgy	Materials Science & Eng	3		x			x			x		
MMAE564	Dislocations and Strengthening Mechanisms	Materials Science & Eng	3			x			x			x	
MMAE565	Materials Laboratory II	Materials Science & Eng	2	x		x		x		x		x	
MMAE566	Problems in High-Temperature Materials	Materials Science & Eng	6				x						x
MMAE567	Fracture Mechanisms	Materials Science & Eng	4	x				x				x	
MMAE568	Diffusion	Materials Science & Eng	8							x			
MMAE569	Advanced Physical Metallurgy	Materials Science & Eng	4	x				x				x	
MMAE570	Computational Methods in Materials Processing	Materials Science & Eng	TBD										
MMAE573	Transmission Electron Microscopy	Materials Science & Eng	5		x					x			
MMAE574	Ferrous Transformations	Materials Science & Eng	TBD										
MMAE575	Ferrous Products: Metallurgy and Manufacture	Materials Science & Eng	TBD										
MMAE576	Materials and Process Selection	Materials Science & Eng	6						x				
MMAE577	Lasers in Manufacturing	Materials Science & Eng	TBD										
MMAE578	Fiber Composite Materials	Solids Mechanics	4			x				x			
MMAE579	Characterization of Polymers	Materials Science & Eng	6		x						x		
MMAE580	Structure and Properties of Polymers	Materials Science & Eng	6						x				
MMAE581	Theory of Mechanical Behavior of Polymers	Materials Science & Eng	6				x						x
MMAE584	Forging and Forming	Materials Science & Eng	TBD										
MMAE589	Applications in Reliability Engineering I	Design & Manufacturing	2	x		x		x		x		x	
MMAE590	Applications in Reliability Engineering II	Design & Manufacturing	2		x		x		x		x		x