

## RECOMMENDED COURSES FOR INCOMING GRADUATE STUDENTS

**\*\*\*Suggested: 3 Courses\*\*\***

**PLEASE NOTE:** All course offerings, including MAE 589 (Special Topics), are subject to change each semester.  
Please consult the current semester's class search for up-to-date offerings.

Topical Area	If starting in the FALL		If starting in the SPRING		
Mostly AE type courses but certainly open to ME's	<b>Aerodynamics &amp; Applied Aerodynamics</b>	MAE 550	Foundations of Fluid Dynamics	MAE 553	Compressible Fluid Flow
		MAE 551	Airfoil Theory	MAE 554	Hypersonic Aerodynamics
		MAE 561	Wing Theory	MA 405	Introduction to Linear Algebra
		MA 405	Introduction to Linear Algebra		
	<b>Aerospace Propulsion</b>	MAE 550	Foundations of Fluid Dynamics	MAE 553	Compressible Fluid Flow
		MAE 504	Fluid Dynamics of Combustion I	MAE 550	Foundations of Fluid Dynamics
MA 501		Adv Mathematics for Engineers & Sci I	MA 501	Adv Mathematics for Engineers & Sci I	
<b>Computational Fluid Dynamics</b>	MAE 550	Foundations of Fluid Dynamics	MAE 550	Foundations of Fluid Dynamics	
	MAE 560	Computat Fluid Mech & Heat Transfer Intro to Linear Algebra OR Adv Math for Engineers & Sci I	MAE 553	Compressible Fluid Flow Intro to Linear Algebra OR Adv Math for Engineers & Sci I	
<b>Dynamics &amp; Design of Spacecraft &amp; Systems</b>	MAE 511	Adv Dynamics with Applications to Aerospace Systems	MAE 534	Mechatronics Design	
	MA 501	Adv Mathematics for Engineers & Sci I	MAE 521	Linear Control & Design for MIMO Systems	
<b>Flight Dynamics &amp; Control</b>	MAE 551	Airfoil Theory	MAE 535	Design of Electromechanical Systems	
	MAE 525	Adv Flight Vehicle Stability & Control	MA 501	Adv Mathematics for Engineers & Sci I	
	MAE 561	Wing Theory	MAE 521	Linear Control & Design for MIMO Systems	
	MA 405	Introduction to Linear Algebra	MAE 535	Design of Electromechanical Systems	
<b>Multifunctional Materials &amp; Smart Structures</b>	MAE 541	Advanced Solid Mechanics I	MA 405 or 501*	Intro to Linear Algebra OR Adv Math for Engineers & Sci I	
	MAE 539	Advanced Materials	MAE 538	Smart Structures and Materials	
	MAE 546	Photonic Sensor Applications in Structure	MAE 535	Design of Electromechanical Systems	
			MAE 589	Special Topics - Struct Health Monitoring	
			MAE 537	Mechanics of Composite Structures	
			MA 501	Adv Mathematics for Engineers & Sci I	
Mostly ME type courses but certainly open to AE's	<b>Applied Mechanics</b>	MAE 511	Adv Dynamics with Applications to Aerospace Systems	MAE 537	Mechanics of Composite Structures
		MAE 541	Advanced Solid Mechanics I	MAE 543	Fracture Mechanics
		MAE 533	Finite Element Analysis I	MA 501	Adv Mathematics for Engineers & Sci I
		MA 501	Adv Mathematics for Engineers & Sci I		
	<b>Bio Mechanics</b>	MAE 541	Advanced Solid Mechanics I	MAE 538	Smart Structures and Materials
		MA 501	Adv Mathematics for Engineers & Sci I	MAE 537	Mechanics of Composite Structures
	<b>Combustion</b>	MAE 504	Fluid Dynamics of Combustion I	MAE 550	Foundations of Fluid Dynamics
		MAE 505	Heat Transfer Theory and Applications	MA 501	Adv Mathematics for Engineers & Sci I
		MA 501	Adv Mathematics for Engineers & Sci I	MAE 501	Advanced Engineering Thermodynamics
	<b>Design &amp; Manufacturing</b>	MAE 541	Advanced Solid Mechanics I	MAE 501	Foundations of Fluid Dynamics
		MAE 533	Finite Element Analysis I	MA 501	Adv Mathematics for Engineers & Sci I
		MAE 742	Mech Design for Automated Assembly	MAE 544 or 545	Real Time Robotics OR Metrology for Precision Manufacturing
		MAE 501	Advanced Engineering Thermodynamics	MAE 535	Design of Electromechanical Systems
	<b>Dynamic Systems &amp; Control</b>	MAE 513	Principles of Structural Vibration	MAE 534	Mechatronics Design
MA 501		Adv Mathematics for Engineers & Sci I	MAE 535	Design of Electromechanical Systems	
			MA 501	Adv Mathematics for Engineers & Sci I	
<b>Energy Conversion &amp; Systems</b>	MAE 504	Fluid Dynamics of Combustion I	MAE 501	Advanced Engineering Thermodynamics	
	MAE 505	Heat Transfer Theory and Applications	MAE 589	Special Topics - Solar Energy	
	MA 501	Adv Mathematics for Engineers & Sci I	MA 501	Adv Mathematics for Engineers & Sci I	
<b>Experimental Mechanics</b>	MAE 541	Advanced Solid Mechanics I	MAE 537	Mechanics of Composite Structures	
	MAE 546	Photonic Sensor Applications in Structure	MAE 545	Metrology for Precision Manufacturing	
	MA 501	Adv Mathematics for Engineers & Sci I	MA 501	Adv Mathematics for Engineers & Sci I	
<b>Fluid Dynamics</b>	MAE 504	Fluid Dynamics of Combustion I	MAE 501	Advanced Engineering Thermodynamics	
	MAE 505	Heat Transfer Theory and Applications	MAE 550	Foundations of Fluid Dynamics	
	MAE 550	Foundations of Fluid Dynamics	MA 501	Adv Mathematics for Engineers & Sci I	
	MA 501	Adv Mathematics for Engineers & Sci I			
<b>Heat Transfer</b>	MAE 504	Fluid Dynamics of Combustion I	MAE 550	Foundations of Fluid Dynamics	
	MAE 505	Heat Transfer Theory and Applications	MAE 501	Advanced Engineering Thermodynamics	
	MA 501	Adv Mathematics for Engineers & Sci I	MA 501	Adv Mathematics for Engineers & Sci I	
<b>Mechanics of Materials</b>	MAE 541	Advanced Solid Mechanics I	MAE 538	Smart Structures and Materials	
	MAE 533	Finite Element Analysis I	MAE 543	Fracture Mechanics	
	MAE 539	Advanced Materials	MAE 537	Mechanics of Composite Structures	
			MA 501	Adv Mathematics for Engineers & Sci I	
<b>Micro, Nano &amp; MEMS</b>	MAE 589	Special Topics - Continuum Thermo-Mechanics (not yet offered)	MAE 589	Special Topics - Nanotechnology (not yet offered)	
	MA 501	Adv Mathematics for Engineers & Sci I	MA 501	Adv Mathematics for Engineers & Sci I	
<b>Vibration &amp; Acoustics</b>	MAE 513	Principles of Structural Vibration	MAE 518	Acoustic Radiation I	
	MAE 550 or 541	550 Foundations of Fluid Dynamics if interested in fluids OR 541 Advanced Solid Mechanics if interested in solids	MAE 550 or 541	550 Foundations of Fluid Dynamics if interested in fluids OR 541 Advanced Solid Mechanics if interested in solids	
	MA 501	Adv Mathematics for Engineers & Sci I	MA 501	Adv Mathematics for Engineers & Sci I	

\* In this case the choice between 405 and 501 is determined by whether the student has had linear algebra. If not, we recommend 405.