# UNDERGRADUATE COURSES

| COURSE | FA24 | WI25 | SP25 |
|---|---|---|---|
| **MAE2** Introduction to Aerospace Engineering | ✔ | | |
| **MAE3** Introduction to Engineering Graphics and Design | ✔ | | ✔ |
| **MAE5** Quantitative Computer Skills | | | |
| **MAE7** Spatial Visualization | | | |
| **MAE8** Matlab Programming for Engineering Analysis | ✔ | ✔ | ✔ |
| **MAE11** Thermodynamics | ✔ | | |
| **MAE20** Elements of Materials Science | ✔ | ✔ | |
| **MAE21** Aerospace Materials Science | ✔ | | |
| **MAE30A** Statics and Introduction to Dynamics | ✔ | ✔ | |

| | | | |
|---|---|---|---|
| **MAE30B**<br>Dynamics and Vibrations | | ✔ | ✔ |
| **MAE40**<br>Linear Circuits | ✔ | ✔ | |
| **MAE92A**<br>Design Competition - Design, Build, and Fly Aircraft | | | |

| | | | |
|---|---|---|---|
| **MAE101A**<br>Introductory Fluid Mechanics | ✔ | ✔ | |
| **MAE101B**<br>Advanced Fluid Mechanics | | ✔ | ✔ |
| **MAE101C**<br>Heat Transfer | ✔ | | ✔ |
| **MAE101D**<br>Intermediate Heat Transfer | | | ✔ |
| **MAE104**<br>Aerodynamics | ✔ | | ✔ |
| **MAE105**<br>Introduction to Mathematical Physics | ✔ | | ✔ |
| **MAE107**<br>Computational Methods in Engineering | ✔ | | ✔ |
| **MAE108**<br>Probability and Statistical Methods for Mechanical Engineering | ✔ | | |
| **MAE110**<br>Thermodynamic Systems | | ✔ | |

| | | | |
|---|---|---|---|
| **MAE113**<br>Fundamentals of Propulsion | ✔ | | |
| **MAE114**<br>Space Propulsion | | ✔ | |
| **MAE117A**<br>Elementary Plasma Physics | | | |
| **MAE118**<br>Introduction to Energy and Environment | | | |
| **MAE119**<br>Introduction to Renewable Energy: Solar and Wind | | | ✔ |
| **MAE120**<br>Introduction to Nuclear Energy | | ✔ | |
| **MAE122**<br>Flow and Transport in the Environment | ✔ | | |

| | | | |
|---|---|---|---|
| **MAE123**<br>Introduction to Transport in Porous Media | | | |
| **MAE125**<br>Building Energy Efficiency | | ✔ | |
| **MAE126A**<br>Environmental Engineering Laboratory | | | |
| **MAE126B**<br>Environmental Engineering Design | | | |
| **MAE130**<br>Advanced Vibrations | | ✔ | |
| **MAE131A**<br>Solid Mechanics I | ✔ | | ✔ |

| | | | |
|---|---|---|---|
| **MAE131B**<br>Fundamentals of Solid Mechanics II | | ✔ | |
| **MAE133**<br>Finite Element Methods in Mechanical and Aerospace Engineering | ✔ | | |
| **MAE142**<br>Dynamics & Control of Aerospace Vehicles | ✔ | ✔ | |
| **MAE143A**<br>Signals and Systems | ✔ | ✔ | |
| **MAE143B**<br>Linear Control | | ✔ | ✔ |
| **MAE144**<br>Embedded Control and Robotics | | | |
| **MAE 145**<br>Introduction to Robotic Planning and Estimation | | | |
| **MAE146**<br>Introduction to Machine Learning Algorithms | | | ✔ |

| | | | |
|---|---|---|---|
| **MAE148**<br>Introduction to Autonomous Vehicles | ✔ | ✔ | ✔ |
| **MAE150**<br>Computer-Aided Design | ✔ | | ✔ |
| **MAE152**<br>Introductions to Manual and CNC Machining | ✔ | | ✔ |
| **MAE154**<br>Product Design and Entrepreneurship | ✔ | | |
| **MAE155A**<br>Aerospace Engineering Design I | | ✔ | |

| | | | |
|---|---|---|---|
| **MAE155B**<br>Aerospace Engineering Design II | | | ✔ |
| **MAE156A**<br>Fundamental Principles of Mechanical Design I | ✔ | ✔ | |
| **MAE156B**<br>Fundamental Principles of Mechanical Design II | | ✔ | ✔ |
| **MAE160**<br>Mechanical Behavior of Materials | | ✔ | |
| **MAE165**<br>Fatigue and Failure Analysis of Engineering Components | ✔ | | |
| **MAE166**<br>Modern Concepts in Nanotechnology | | | |
| **MAE170**<br>Experimental Techniques | ✔ | | ✔ |
| **MAE171A**<br>Mechanical Engineering Laboratory I | | ✔ | ✔ |
| **MAE175A**<br>Aerospace Engineering Laboratory I | | ✔ | ✔ |
| **MAE180**<br>Orbital Mechanics | ✔ | ✔ | |
| **MAE180A**<br>Spacecraft Guidance I | | | |
| **MAE181**<br>Space Mission Analysis and Design | | | |
| **MAE183**<br>Spacecraft Guidance and Navigation | | | |

| | | | |
|---|---|---|---|
| **MAE184**<br>Flight Simulation Techniques | | | ✔ |
| **MAE185**<br>Computational Fluid Dynamics | | | ✔ |
| **MAE190**<br>Topics in Mechanical and Aerospace Engineering (see website) | ✔ | ✔ | ✔ |

# GRADUATE COURSES (M.S. Plan II)

| COURSE | FA24 | WI25 | SP25 |
|---|---|---|---|
| **MAE200**<br>Controls | | ✔ | |
| **MAE201**<br>Mechanics of Fluids | ✔ | | |
| **MAE202**<br>Thermal Processes | ✔ | | |
| **MAE203**<br>Solid Mechanics and Materials | ✔ | | |
| **MAE204**<br>Robotics | | ✔ | |
| **MAE206**<br>Energy Systems | | ✔ | |
| **MAE208**<br>Mathematics for Engineers | ✔ | ✔ | |

| | | | |
|---|---|---|---|
| **MAE209**<br>Continuum Mechanics Applied to Medicine / Biology | | | ✔ |

# GRADUATE COURSES (M.S. Plan I & Ph.D.)

| COURSE | FA24 | WI25 | SP25 |
|---|---|---|---|
| **MAE205**<br>Graduate Seminar | ✔ | ✔ | ✔ |
| **MAE210A**<br>Fluid Mechanics I | ✔ | | |
| **MAE210B**<br>Fluid Mechanics II | | ✔ | |
| **MAE210C**<br>Fluid Mechanics III | | ✔ | |
| **MAE211**<br>Introduction to Combustion | | | |
| **MAE212**<br>Introductory Compressible Flow | | ✔ | |
| **MAE213**<br>Mechanics of Propulsion | | | |
| **MAE214A**<br>Introduction to Turbulence and Turbulent Mixing | | | ✔ |
| **MAE215**<br>Multiphase Flow and Heat Transfer | | | |

| | | | |
|---|---|---|---|
| **MAE217A**<br>Introduction to Gas Discharge Plasma Physics | ✔ | | |
| **MAE217B**<br>Introduction to Non-magnetized Hot Plasma Physics | | ✔ | |
| **MAE217C**<br>Introduction to Magnetized Hot Plasma Physics | | | |
| **MAE218A**<br>Introduction to High Energy Density Physics (MHD and Pinches) | | | |
| **MAE218B**<br>Introduction to High Energy Density Physics<br>(Laser-Plasma Interactions) | | | ✔ |
| **MAE219**<br>Design and Control of Haptic Systems | ✔ | | |

| | | | |
|---|---|---|---|
| **MAE220A**<br>Physics of Gases | | | |
| **MAE221A**<br>Heat Transfer | ✔ | | |
| **MAE221B**<br>Mass Transfer | | ✔ | |
| **MAE221C**<br>Convection Heat transfer | | ✔ | |
| **MAE221D**<br>Radiation Heat Transfer | | | ✔ |
| **MAE223**<br>Ocean Tech Design and Development | | | ✔ |

| | | | |
|---|---|---|---|
| **MAE224A**<br>Environmental Fluid Dynamics I | | | ✔ |
| **MAE226**<br>Advanced Dynamics | | | |
| **MAE227**<br>Convex Optimization for Engineering | | | ✔ |
| **MAE231A**<br>Foundations of Solid Mechanics | | ✔ | |
| **MAE231B**<br>Elasticity | | | ✔ |
| **MAE231C**<br>Inelasticity | | ✔ | |
| **MAE232A**<br>Finite Element Methods in Solid Mechanics I | ✔ | | |
| **MAE232B**<br>Finite Element Methods in Solid Mechanics II | | ✔ | |
| **MAE232C**<br>Finite Element Methods in Solid mechanics III | | | ✔ |
| **MAE235**<br>Computational Techniques in Finite Elements | ✔ | | |
| **MAE238**<br>Stress Waves in Solids | | | |
| **MAE240**<br>Space Flight Mechanics | | | ✔ |

| | | | |
|---|---|---|---|
| **MAE242**<br>Robot Motion Planning | | | ✔ |

| | | | |
|---|---|---|---|
| **MAE243**<br>Electronic Power Systems Modeling | ✔ | | |
| **MAE244**<br>Renewable Energy Integrations | | | |
| **MAE247**<br>Cooperative Control of Multi-Agent Systems | | | |
| **MAE248**<br>Safety for Autonomous Systems | | ✔ | |
| **MAE249**<br>Soft Robotics | | | ✔ |
| **MAE251**<br>Structure and Analysis of Solids | ✔ | | |
| **MAE253**<br>Advanced Ceramics | | | |
| **MAE254**<br>Energy Materials & Applications | | | ✔ |
| **MAE256**<br>Radiative Transfer for Energy Applications | | | ✔ |
| **MAE259**<br>ODE Simulation Methods | | | |
| **MAE261**<br>Cardiovascular Fluid Mechanics | | ✔ | |
| **MAE262**<br>Biological Fluid Mechanics | | ✔ | |
| **MAE263**<br>Experimental Methods in Cell Mechanics | | | ✔ |

| | | | |
|---|---|---|---|
| **MAE265A**<br>Electronic and Photonic Properties of Materials | ✔ | | |
| **MAE265B**<br>Magnetic Materials: Principles and Applications | | | |
| **MAE266**<br>Biomaterials and Medical Devices | | | ✔ |
| **MAE267**<br>Nanomaterials and Properties | | | |
| **MAE269**<br>Bioinspired Mobile Robotics | | | ✔ |
| **MAE270**<br>Multidisciplinary Design Optomization | | ✔ | |
| **MAE271A**<br>Thermodynamics of Solids | | ✔ | |
| **MAE271B**<br>Solid State Diffusion and Reaction Kinetics | | | ✔ |

| | | | |
|---|---|---|---|
| **MAE271C**<br>Phase Transformations | | | |
| **MAE272**<br>Imperfections in Solids | | | ✔ |
| **MAE274**<br>Model Reduction | | ✔ | |
| **MAE276**<br>Mechanics of Soft Materials | | ✔ | |
| **MAE279**<br>Uncertainty Quantification | | | |

| | | | |
|---|---|---|---|
| **MAE280A**<br>Linear Systems Theory | ✔ | | |
| **MAE280B**<br>Linear Control Design | | | ✔ |
| **MAE281A**<br>Nonlinear Systems | | ✔ | |
| **MAE281B**<br>Nonlinear Control | | | ✔ |
| **MAE283A**<br>Parametric Identification: Theory and Methods | ✔ | | |
| **MAE283B**<br>Approximate Identification and Control | | | |
| **MAE284**<br>Robust and Multivariable Control | | | |
| **MAE285**<br>Design of Micro/Nanoacousticofluidic Devices | | | |
| **MAE286**<br>Hybrid Systems | | ✔ | |
| **MAE288A**<br>Optimal Control | | | |
| **MAE288B**<br>Optimal Estimation | | | |
| **MAE289A**<br>Mathematical Analysis for Applications | | | |
| **MAE289B**<br>Real Analysis for Applications | | ✔ | |

| | | | |
|---|---|---|---|
| **MAE289C**<br>Functional Analysis and Applications | | | ✔ |
| **MAE290A**<br>Numerical Methods for Linear Algebra and ODE Simulation | ✔ | | |
| **MAE290B**<br>Numerical Methods for Differential Equations | | ✔ | |
| **MAE290C**<br>Computational Fluid Dynamics | | | ✔ |
| **MAE292**<br>Computer-Aided Design and Analysis | | | |
| **MAE294A**<br>Introduction to Applied Mathematics I | ✔ | | |
| **MAE294B**<br>Introduction to Applied Mathematics II | | ✔ | |
| **MAE294C**<br>Introduction to Applied Mathematics III | | | ✔ |