

Aerospace Engineering • 2

*Technical electives can be chosen from the following list. At least three credit hours must come from either AER/ME 501 OR AER/ME 590.

AER 380 Topics in Aerospace Engineering (Variable Topics)

AER/ME 530 Gas Dynamics

AER/ME 531 Fluid Dynamics I

AER/ME 532 Advanced Strength of Materials

AER 545 Aircraft Control and Simulation

AER/ME 548 Aerodynamics of Turbomachinery

AER/ME 563 Basic Combustion Phenomena

AER/ME 565 Scale Modeling in Engineering

AER/ME 590 Applied CFD and Numerical Heat Transfer

AER/ME 516 Systems Engineering

AER 599 Topics in Aerospace Engineering (Subtitle required)

AER 395 Independent Work in Aerospace Engineering

AER/ME 501 Mechanical Design with Finite Element Methods

AER/ME 506 Mechanics of Composite Materials

AER/ME 510 Vibro-Acoustic Design in Mechanical Systems

AER/ME 513 Mechanical Vibrations

AER/ME 514 Computational Techniques in Mechanical System Analysis

Mechanical Engineering • 2

Mathematics Elective	Hours
Choose one course from the following:	
MA 320 Introductory Probability.....	3
MA 321 Introduction to Numerical Methods.....	3
MA 322 Matrix Algebra and Its Applications.....	3
MA 416G Introduction to Optimization.....	3
MA 432G Methods of Applied Mathematics I.....	3
MA 433G Introduction to Complex Variables.....	3
MA 481G Differential Equations.....	3
STA 381 Engineering Statistics – A Conceptual Approach.....	3
Subtotal: Mathematics Elective.....	3
Technical Electives	Hours
Choose 9 hours from the following:*	
ME 380 Topics in Mechanical Engineering (Variable Topics).....	3
ME 395 Independent Work in Mechanical Engineering.....	1-3
ME 416 Automotive Painting Technology.....	3
ME 417 Sheet Metal Forming.....	3
ME 418 Automotive Assembly and Quality Control.....	3
ME 501 Mechanical Design with Finite Element Methods.....	3
ME/MFS 503 Lean Manufacturing Principles and Practices.....	3
ME/MFS 505 Modeling of Manufacturing Processes and Machines.....	3
ME/MSE 506 Mechanics of Composite Materials.....	3
ME/MFS 507 Design for Manufacturing.....	3
ME 510 Vibro-Acoustic Design in Mechanical Systems.....	3
ME/MFS 511 Machining of Materials and Applications.....	3
ME/MFS 512 Manufacturing Systems.....	3
ME 513 Mechanical Vibrations.....	3
ME 514 Computational Techniques in Mechanical System Analysis.....	3
ME 515 Rotordynamics of Turbomachinery.....	3
ME 516 Systems Engineering.....	3
ME/EE/MFS 526 Lean Operations Management I.....	3
ME 527 Applied Mathematics in the Natural Sciences I.....	3
ME 530 Gas Dynamics.....	3
ME 531 Fluid Dynamics I.....	3
ME 532 Advanced Strength of Materials.....	3
ME 542 Kinematic Synthesis of Mechanisms.....	3
ME 548 Aerodynamics of Turbomachinery.....	3
ME 549 Power Generation.....	3
ME/MFS/CME/MSE 554 Chemical and Physical Processing of Polymer Systems.....	3
ME/EE/MSE 555 Introduction to Micro-/Nano-Electromechanical Systems.....	3
ME/MFS/CME/MSE 556 Introduction to Composite Materials.....	3
ME 560 Engineering Optics.....	3
ME 563 Basic Combustion Phenomena.....	3
ME 565 Scale Modeling in Engineering.....	3
ME/EE/MSE 570 Fundamentals of Nanoelectric Devices and Materials.....	3
ME/BAE 580 Heating, Ventilating and Air-Conditioning.....	3
ME/BAE/EGR/MFS/EE 583 Industrial Energy Utilization and Assessment.....	3
ME 585 Fourier Series and Boundary Value Problems.....	3
ME 590 Applied CFD and Numerical Heat Transfer.....	3
ME 599 Topics in Mechanical Engineering (Subtitle required).....	3
MFS 599 Topics in Manufacturing Systems Engineering (Subtitle required).....	3

Non-ME Technical Electives	
BAE 502 Modeling of Biological Systems.....	3
BAE 515 Fluid Power Systems.....	3
BAE 516 Control of Off-Road Vehicles.....	3
BME 440 Introduction to Biomedical Signal Processing.....	3
BME 472 Human Biomechanics.....	3
BME 473 Fundamentals of Biofluid Mechanics.....	3
BME 488 Introduction to Biomaterials.....	3
BME 532 Modeling of Physiological Systems.....	3
BME 540 Biomedical Instrumentation.....	3
BME 550 Introduction to Biomedical Imaging.....	3
BME 571 Mechanical Modeling of Human Motion.....	3
BME 573 Cell Mechanics and Mechanobiology.....	3
BME 579 Neural Engineering: Merging Engineering with Neuroscience.....	3
EGR 523 Concepts, Assessment Tools and Methods in Sustainable Power and Energy.....	3
EGR 537 Numerical Analysis.....	3
EGR 540 Power Economics and Public Policy.....	3
EGR 542 Electric Power Generation Technologies.....	3
EGR 546 Electric Power System Fundamentals.....	3
EGR 553 Environmental Consequence of Energy Production.....	3
MFS 509 Leadership for a Lean Enterprise.....	3
MFS/MNG 520 Industrial Automation and Control.....	3
MFS 525 Organizational Learning for Lean Manufacturing.....	3
MFS 581 Quality Control.....	3
MFS 599 Topics in Manufacturing Systems Engineering (Subtitle required).....	3
MSE 201 Materials Science.....	3
MSE/CME 552 Automotive Plastics.....	3

*A minimum of 6 credit hours (two courses) must have an ME prefix or be cross-listed as an ME course. A maximum of 3 credit hours (one course) may be chosen from technical electives with prefixes other than ME. Exceptions only with the approval of the Director of Undergraduate Studies.

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MNG 555 Advanced Geomechanics I
MNG 561 Mine Construction Engineering I
MNG 575 Coal Preparation Design
MNG 580 Mineral Processing Plant Design
MNG 585 Applied Surface Chemistry
MNG 599 Topic in Mining Engineering