Aerospace Engineering

Technical Elective Categories

Courses in **bold** are AME courses

Aerospace

AME426 Rocket propulsion
AME429 Interplanetary mission design
SIE452 Space Systems Engineering
SIE456 Fund. Of Guidance/ Aero. Systems

Manufacturing/Fabrication

AME410 Additive manufacturing
AME489A Fabrication Tech Micro- & Nanodevices
MSE414 Solidification of Castings
SIE383 Integrated manufacturing Systems
SIE483 Computer Integrated Manufacturing

Energy

AME444 Applied thermodynamics
AME430 Intermediate thermodynamics
AME442A HVAC System Design
AME442B Adv HVAC System Analysis & Design
AME445 Renewable Energy
AME446 Fuel cell design
AME480 Intro to Nuclear Energy
CE476 Dev Next Gen Li-ion Batteries
MSE 424 Materials in Applied Solar Energy

Numerical methods

MSE350 Numerical Methods in MSE (Python)

Management/Decision making/ Entrepreneurship

AME 472 Reliability Engineering
SIE367 Engineering Management II
ENGR481 Innovation, Translation & Entrepreneurship
SIE 482 Lean Engineering
SIE 487 New Venture Dev & Industry Analysis
SIE422 Engr Decision Making w/ Uncertainty
SIE457 Project Management
SIE464 Cost Estimation
SIE474 Info Analytics & Decision Making in Engineering
SIE484 Development of New Venture Plans

Biomedical Engineering

AME/BME 466 Biomechanical Eng
AME 489B Bio Micro/Nano application
AME483 Micro Biomechanics
BE423 Biosystems Analysis and Design
BME330 Biomedical Instrumentation
BME416 Principles of Biomed Eng.
BME417 Meas/ Data Analysis Biomed Eng
BME480 Translational Biomedical Engineering
OPTI/PHYS 440 Medical Physics

Environment

CE423 Hydrology
BE452 Globalization, Sustainability & Innov
CE476 Water Treatment System Design
MNE/ENGR422 Engineering Sustainable Dev
MSE450 Materials Selection for the Environ

Earth sciences

GEN427 GeoMechanics
GEN 402 Prob Stat Concepts Geolog Media
GEN446 Earthquake engineering
Geo/PHYS 419 Physics of the earth
PHYS403 Physics of the Solar System

Information

The following tracks are provided as a suggestion in order to help students in selecting their elective courses. Completion of all courses in a specific track is *not* required

Mechatronics/Electronics

ECE 320 Circuit theory
AME 487 Guided Self- Studies Mechatronics
ECE 351 Electronic Circuits

Automotive

AME434 Internatl combustion engines
AME 451 Vehicle Dynamics
AME 452 Planar multibody dynamics

Materials and structures

AME460 Mechanical Vibrations
AME462 Composite structures
CE 333 Elemental Structural Analysis
MSE 424 Physics Chem Ceramic Materials
MSE 434 Electical & Optical Prop of Mat
MSE435 Corrosion/ Degradation
MSE452 Material Aspects of Composite Materials
MSE455 Physical Metal & Processing Alloys
MSE460 Materials Science of Polymers

Fluid Mechanics

AME433 Principles/ Applications of Fluid Mech.
AME 331 Fluid Mechanics

Thermal sciences

AME430 Intermediate thermo
AME434 Internal Combustion Engines
AME442A HVAC System Design
AME442B Adv HVAC System Analysis & Design
AME444 Applied thermodynamics
AME446 Fuel cell design
AME480 Intro to Nuclear Energy
MSE414 Solidification of Castings

Dynamics & Controls

AME 451 Vehicle Dynamics
AME 452 Planar multibody dynamics
AME 455 Control System Design
BE/BME 447 Sensors and controls
SIE456 Fund. Of Guidance/ Aero. Systems