### Mech and Aero - Joint (MAAJ)

#### Mechanical and Aerospace Engineering (Joint) (MAAJ) Courses

**MAAJ 5001 [0.5 credit] (AMM 5101)**  
Theory of Elasticity

**MAAJ 5002 [0.5 credit] (AMM 5102)**  
Advanced Stress Analysis

**MAAJ 5003 [0.5 credit] (AMM 5103)**  
Theory Perfectly Plastic Solid

**MAAJ 5004 [0.5 credit] (MCG 5104)**  
Theory of Plates and Shells

**MAAJ 5005 [0.5 credit] (MCG 5105)**  
Continuum Mechanics

**MAAJ 5006 [0.5 credit] (AMM 5106)**  
Advanced Topics in Elasticity

**MAAJ 5007 [0.5 credit] (MCG 5107)**  
Adv. Dynamics w/Applications

**MAAJ 5008 [0.5 credit] (MCG 5108)**  
Finite Element Analysis

**MAAJ 5009 [0.5 credit] (MCG 5109)**  
Advanced Topics in Finite Element Analysis

**MAAJ 5010 [0.5 credit] (MCG 5310)**  
Performance and Economics of V/Stol Aircraft

**MAAJ 5011 [0.5 credit] (AMM 5138)**  
Advanced Topics in Advanced Materials and Manufacturing

**MAAJ 5012 [0.5 credit] (AMM 5364)**  
Computational Metallurgy

**MAAJ 5013 [0.5 credit] (MCG 5125)**  
Advanced Dynamics

**MAAJ 5014 [0.5 credit] (MCG 5314)**  
Ground Transportation Systems and Vehicles

**MAAJ 5021 [0.5 credit] (MCG 5321)**  
Methods of Energy Conversion

**MAAJ 5022 [0.5 credit] (MCG 5322)**  
Nuclear Engineering

**MAAJ 5025 [0.5 credit] (MCG 5325)**  
Wind Engineering

**MAAJ 5026 [0.5 credit] (MCG 5326)**  
System Modelling, Dynamics and Control

**MAAJ 5027 [0.5 credit] (MCG 5327)**  
Nonlinear System Analysis and Controls

**MAAJ 5028 [0.5 credit] (MCG 5328)**  
3D Machine Vision: From Robots to the Space Station

**MAAJ 5030 [0.5 credit] (MCG 5330)**  
Engineering Acoustics

**MAAJ 5031 [0.5 credit] (MCG 5331)**  
Aero-Acoustics

**MAAJ 5042 [0.5 credit] (MCG 5342)**  
Gas Turbines

**MAAJ 5048 [0.5 credit] (MCG 5348)**  
Convective Heat and Mass Transfers

**MAAJ 5050 [0.5 credit] (MCG 5300)**  
Fundamentals of Fluid Dynamics

Also listed as MECH 5000.

**MAAJ 5051 [0.5 credit] (AMM 5130)**  
Deformation and Fracture of Engineering Materials

**MAAJ 5052 [0.5 credit] (AMM 5122)**  
Failure Analysis of High-Temperature Protective Coatings for Aerospace Applications

**MAAJ 5053 [0.5 credit] (AMM 5124)**  
Fatigue and Damage Tolerance in Aircraft

**MAAJ 5054 [0.5 credit] (MCG 5147)**  
Finite-Volume Methods for Compressible Flows

**MAAJ 5055 [0.5 credit] (MCG 5148)**  
High-Performance Parallel Scientific Computing

**MAAJ 5056 [0.5 credit] (AMM 5125)**  
Materials Characterization Techniques

**MAAJ 5057 [0.5 credit] (AMM 5121)**  
Materials Selection in Engineering Design

**MAAJ 5058 [0.5 credit] (MCG 5149)**  
Non-Equilibrium Gas Dynamics

**MAAJ 5059 [0.5 credit] (MCG 5309)**  
Environmental Fluid Mechanics

Includes: Experiential Learning Activity  
Also listed as MECH 5009.

**MAAJ 5100 [0.5 credit] (MCG 5110)**  
Micromechanics of Solids

**MAAJ 5101 [0.5 credit] (MCG 5111)**  
Gas Dynamics

**MAAJ 5102 [0.5 credit] (AMM 5317)**  
Experimental Stress Analysis

**MAAJ 5103 [0.5 credit] (AMM 5374)**  
Integrated Manufacturing - CIMS
MAAJ 5105 [0.5 credit] (MCG 5115) 
Non-Linear Optimization

MAAJ 5107 [0.5 credit] (AMM 5117) 
Intro to Composite Materials
Includes: Experiential Learning Activity

MAAJ 5108 [0.5 credit] (AMM 5118) 
Introduction to Plasticity

MAAJ 5109 [0.5 credit] (AMM 5119) 
Fracture Mechanics

MAAJ 5122 [0.5 credit] (MCG 5352) 
Optimal Control Systems

MAAJ 5123 [0.5 credit] (MCG 5353) 
Robotics

MAAJ 5151 [0.5 credit] (MCG 5311) 
Dynamics and Aerodynamics of Flight
Includes: Experiential Learning Activity
Also listed as MECH 5101.

MAAJ 5152 [0.5 credit] (MCG 5301) 
Theory of Viscous Flows

MAAJ 5153 [0.5 credit] (MCG 5303) 
Incompressible Non-Viscous Flows

MAAJ 5154 [0.5 credit] (MCG 5304) 
Compressible Non-Viscous Flows

MAAJ 5155 [0.5 credit] (MCG 5315) 
Orbital Mechanics and Space Control
Includes: Experiential Learning Activity
Also listed as MECH 5105.

MAAJ 5156 [0.5 credit] (AMM 5381) 
Lightweight Structures

MAAJ 5157 [0.5 credit] (MCG 5121) 
Space Mission Analysis and Design

MAAJ 5158 [0.5 credit] (MCG 5308) 
Experimental Methods in Fluid Mechanics

MAAJ 5159 [0.5 credit] (MCG 5122) 
Smart Structures

MAAJ 5206 [0.5 credit] (AMM 5126) 
Deformation of Materials

MAAJ 5209 [0.5 credit] (AMM 5129) 
Hot Working of Metals

MAAJ 5251 [0.5 credit] (MCG 5354) 
Guidance, Navigation and Control

MAAJ 5252 [0.5 credit] (MCG 5356) 
Neuro and Fuzzy Control

MAAJ 5253 [0.5 credit] (MCG 5366) 
Finite Element Analysis II

MAAJ 5254 [0.5 credit] (MCG 5483) 
Fundamentals of Combustion
Also listed as MECH 5204.

MAAJ 5255 [0.5 credit] (MCG 5324) 
Building Performance Simulation
Includes: Experiential Learning Activity
Also listed as MECH 5205.

MAAJ 5301 [0.5 credit] (MCG 5131) 
Heat Transfer by Conduction

MAAJ 5302 [0.5 credit] (MCG 5132) 
Heat Transfer by Convection

MAAJ 5303 [0.5 credit] (MCG 5133) 
Heat Transfer by Radiation

MAAJ 5304 [0.5 credit] (MCG 5134) 
Heat Transfer w/Phase Change

MAAJ 5305 [0.5 credit] (MCG 5343) 
Advanced Thermodynamics

MAAJ 5306 [0.5 credit] (MCG 5136) 
Special Studies in Fluid Mech and Heat Transfer

MAAJ 5307 [0.5 credit] (AMM 5137) 
Special Studies in Solid Mechanics and Materials

MAAJ 5308 [0.5 credit] (MCG 5138) 
Advanced Topics in Mechanical Engineering

MAAJ 5309 [0.5 credit] (MCG 5375) 
CAD/CAM

MAAJ 5311 [0.5 credit] (MCG 5471) 
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5312 [0.5 credit] (MCG 5472) 
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5313 [0.5 credit] (MCG 5473) 
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5314 [0.5 credit] (MCG 5474) 
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5315 [0.5 credit] (MCG 5475) 
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5316 [0.5 credit] (MCG 5476) 
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5317 [0.5 credit] (MCG 5477) 
Special Topics in Mechanical and Aerospace Engineering
MAAJ 5318 [0.5 credit] (MCG 5478)
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5319 [0.5 credit] (MCG 5479)
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5340 [0.5 credit] (MCG 5344)
Gas Turbine Combustion

MAAJ 5352 [0.5 credit] (MCG 5332)
Instrumentation Techniques
   Also listed as MECH 5302.

MAAJ 5354 [0.5 credit] (MCG 5334)
Computational Fluid Dynamics of Compressible Flow
   Also listed as MECH 5304.

MAAJ 5356 [0.5 credit] (MCG 5306)
Theory of Subsonic Flows

MAAJ 5357 [0.5 credit] (MCG 5307)
Theory of Supersonic Flows

MAAJ 5401 [0.5 credit] (MCG 5141)
Statistical Thermodynamics

MAAJ 5402 [0.5 credit] (MCG 5370)
Special Topics in Mechanical and Aeronautical Engineering

MAAJ 5403 [0.5 credit] (MCG 5470)
Special Topics in Mechanical and Aerospace Engineering

MAAJ 5408 [0.5 credit] (MCG 5551)
Theorie d'Ecoulement Visqueux

MAAJ 5409 [0.5 credit] (MCG 5552)
Theorie de Turbulence

MAAJ 5451 [0.5 credit] (MCG 5341)
Turbomachinery
   Includes: Experiential Learning Activity
   Also listed as MECH 5401.

MAAJ 5452 [0.5 credit] (AMM 5144)
Superalloys and Ceramix-Metal Matrix Composites

MAAJ 5457 [0.5 credit] (MCG 5347)
Conductive and Radiative Heat Transfer
   Also listed as MECH 5407.

MAAJ 5459 [0.5 credit] (MCG 5349)
Two-Phase Flow and Heat Transfer

MAAJ 5500 [0.5 credit] (MCG 5557)
Méthodes numériques en mécanique

MAAJ 5501 [0.5 credit] (MCG 5151)
Laminar Flow Theory

MAAJ 5502 [0.5 credit] (MCG 5152)
Theory of Turbulence

MAAJ 5505 [0.5 credit] (MCG 5155)
Inviscid Flow Theory

MAAJ 5506 [0.5 credit] (MCG 5156)
Measurement of Fluid Mech

MAAJ 5507 [0.5 credit] (MCG 5157)
Num Comp: Fluid Dyn and Heat Tran

MAAJ 5509 [0.5 credit] (AMM 5159)
Advanced Production Planning and Control

MAAJ 5550 [0.5 credit] (MCG 5350)
Advanced Vibration Analysis
   Includes: Experiential Learning Activity
   Also listed as MECH 5500.

MAAJ 5555 [0.5 credit] (MCG 5355)
Stability Theory & Application
   Also listed as MECH 5505.

MAAJ 5557 [0.5 credit] (MCG 5124)
Advanced Kinematics
   Includes: Experiential Learning Activity
   Also listed as MECH 5507.

MAAJ 5607 [0.5 credit] (MCG 5167)
Nuclear Reactor Engineering

MAAJ 5608 [0.5 credit] (AMM 5168)
Industrial Organization

MAAJ 5609 [0.5 credit] (MCG 5169)
Advanced Topics in Reliability Engineer

MAAJ 5652 [0.5 credit] (AMM 5362)
Failure Prevention

MAAJ 5655 [0.5 credit] (MCG 5365)
Finite Element Analysis I
   Also listed as MECH 5605.

MAAJ 5656 [0.5 credit] (MCG 5367)
The Boundary Element Method
   Includes: Experiential Learning Activity
   Also listed as MECH 5607.

MAAJ 5657 [0.5 credit] (MCG 5361)
Creative Problem Solving and Design
   Also listed as MECH 5601.

MAAJ 5659 [0.5 credit] (AMM 5123)
Microstructure and Properties of Materials
   Also listed as MECH 5609.

MAAJ 5700 [0.5 credit] (MCG 5170)
Computer-Aided Design
   Includes: Experiential Learning Activity

MAAJ 5701 [0.5 credit] (MCG 5171)
Applied Reliability Theory
MAAJ 5703 [0.5 credit] (MCG 5173)  
Systems Engineer and Integration

MAAJ 5707 [0.5 credit] (MCG 5177)  
Robot Mechanics

MAAJ 5709 [0.5 credit] (AMM 5179)  
Manufacturing System Analysis

MAAJ 5750 [0.5 credit] (AMM 5345)  
Surfaces and Coatings  
Also listed as MECH 5700.

MAAJ 5751 [0.5 credit] (AMM 5369)  
Metallic Phases and Transformations  
Precludes additional credit for MECH 5701.

MAAJ 5802 [0.5 credit] (AMM 5182)  
Theory of Elastic Instability

MAAJ 5804 [0.5 credit] (MCG 5184)  
Mechatronics

MAAJ 5805 [0.5 credit] (MCG 5185)  
Multivariable Digital Control

MAAJ 5806 [0.5 credit] (MCG 5186)  
Non-Linear Disc Dyn and Control

MAAJ 5850 [0.5 credit] (MCG 5480)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5800.

MAAJ 5851 [0.5 credit] (MCG 5380)  
Safety and Risk Assessment of Nuclear Power

MAAJ 5852 [0.5 credit] (MCG 5483)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5802.

MAAJ 5853 [0.5 credit] (MCG 5488)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5803.

MAAJ 5854 [0.5 credit] (MCG 5384)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5804.

MAAJ 5855 [0.5 credit] (MCG 5482)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5805.

MAAJ 5857 [0.5 credit] (MCG 5487)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5807.

MAAJ 5858 [0.5 credit] (MCG 5376)  
Special Topics in Mechanical and Aerospace Engineering  
Also listed as MECH 5808.

MAAJ 5901 [0.5 credit] (MCG 5191)  
Combustion in Premixed Systems

MAAJ 5902 [0.5 credit] (MCG 5192)  
Combustion in Diffusion System

MAAJ 5901 [0.5 credit] (MCG 5483)  
Combustion in Premixed Systems