

# ASE tract

## **Aerospace Systems Engineering Required (2)**

- AE 542 Aerospace Systems Engineering I
- AE 543 Aerospace Systems Engineering II

## **Breadth-AFMCP (choose 1):**

- AE 410 Computational Aerodynamics
- AE 412 Viscous Flow
- AE 416 Applied Aerodynamics
- AE 419 Aircraft Flight Mechanics
- AE 433 Propulsion
- AE 434 Rocket Propulsion
- AE 435 Electric Propulsion
- AE 510 Advanced Gas Dynamics
- AE 514 Boundary Layer Theory
- AE 538 Combustion Fundamentals

## **Math (choose 1):**

- MATH 461 EGR: Probability Theory
- MATH 488 EGR: Math Methods In Eng.

## **Breadth-ACDS (choose 1):**

- AE 402 Orbital Mechanics
- AE 403 Spacecraft Attitude Control
- AE 454 Systems Dynamics and Controls
- AE 482 Introduction to Robotics
- AE 502 Advanced Orbital Mechanics
- AE 504 Optimal Aerospace Systems
- AE 508 Optimal Space Trajectories
- AE 554 Dynamical Systems Theory
- AE 556 Robust Control
- AE 583 Advanced Robotic Planning

## **Breadth-SMM (choose 1):**

- AE 420 Finite Elements
- AE 451 Aeroelasticity
- AE 521 Fracture Mechanics
- AE 522 Dynamic Behavior of Materials
- AE 528 Nonlinear Elasticity
- AE 550 Nonlinear Aeroelasticity

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## **Other possible electives (examples): (2)**

- AE 598 Special Problems
- AE 597 Independent Study
- GE 411 - Introduction to Reliability Engineering
- IE 431 (GE 498 QE) - Quality Engineering (3 hours)

- GE 530 – Multi-attribute Decision Making (4 hours)
- GE 531 - Genetic Algorithms in Search, Optimization and Machine Learning (4 hours)
- CEE 407. Airport Design (3-4 hours)
- CS 427: Software Engineering I

[Link to all online AE courses](#)

# ASE tract

## Aerospace Systems Engineering Required (2)

- AE 542 Aerospace Systems Engineering I (F)
- AE 543 Aerospace Systems Engineering II (Sp)

## Breadth-AFMCP (choose 1):

- AE 410 Computational Aerodynamics (Sp)
- AE 412 Viscous Flow (F)
- AE 416 Applied Aerodynamics (F)
- AE 419 Aircraft Flight Mechanics (Sp)
- AE 433 Propulsion (F)
- AE 434 Rocket Propulsion (Sp)
- AE 435 Electric Propulsion (Sp)
- AE 510 Advanced Gas Dynamics (F)
- AE 514 Boundary Layer Theory (Sp-odd)
- AE 538 Combustion Fundamentals (Sp)

## Math (choose 1):

- MATH 415 EGR: Applied Linear Algebra
- MATH 461 EGR: Probability Theory
- MATH 488 EGR: Math Methods In Eng.

## Breadth-ACDS (choose 1):

- AE 402 Orbital Mechanics (F)
- AE 403 Spacecraft Attitude Control (Sp)
- AE 454 Systems Dynamics and Controls (F)
- AE 482 Introduction to Robotics (Sp)
- AE 502 Advanced Orbital Mechanics (Sp)
- AE 504 Optimal Aerospace Systems (Sp)
- AE 508 Optimal Space Trajectories (Sp-even)
- AE 554 Dynamical Systems Theory (Sp-even)
- AE 556 Robust Control (F-even)
- AE 583 Advanced Robotic Planning (Sp-odd)

## Breadth-SMM (choose 1):

- AE 420 Finite Elements (F-Sp)
- AE 451 Aeroelasticity (F)
- AE 521 Fracture Mechanics (F-odd)
- AE 522 Dynamic Behavior of Materials (F-even)
- AE 525 Advanced Composite Materials (Sp-even)
- AE 528 Nonlinear Elasticity (F-even)
- AE 550 Nonlinear Aeroelasticity (Sp-even)

## Other possible electives (examples): (2)

- AE 598 Special Problems
- AE 597 Independent Study
- GE 411 - Introduction to Reliability Engineering
- IE 431 (GE 498 QE) - Quality Engineering  
Design for Six –sigma (3 hours)
- GE 498 DA1 - Decision Analysis I – not yet available online  
Is this equivalent to GE 450??*

- GE 530 – Multi-attribute Decision Making (F) (4 hours)
- GE 531 - Genetic Algorithms in Search, Optimization and  
Machine Learning (4 hours)
- CEE 407. Airport Design (3-4 hours)
- CS 427: Software Engineering I
- ENG 560 ONL: Managing Advanced Technology I

# AFMCP tract

## AE 400-level (choose 2):

AE 412 Viscous flow  
AE 416 Applied Aerodynamics  
AE 433 Propulsion  
AE 434 Rocket Propulsion  
AE 410 Computational Aerodynamics  
AE 419 Aircraft Flight Mechanics  
AE 435 Electric Propulsion

## Breadth-SMM (choose 1):

AE 451 Aeroelasticity  
AE 420 Finite Elements

## Breadth-ACDS (choose 1):

AE 402 Orbital Mechanics  
AE 454 Systems Dynamics and Controls  
AE 403 Spacecraft Attitude Control  
AE 482 Introduction to Robotics

## AE 500-level (choose 2):

AE 510 Advanced Gas Dynamics  
AE 538 Combustion Fundamentals  
AE 514 Boundary Layer Theory

## Math (choose 1):

MATH 415 EGR: Applied Linear Algebra  
MATH 461 EGR: Probability Theory  
MATH 488 EGR: Math Methods In Eng.

## Other possible electives (examples):

ME 411 ONL: Viscous Flow & Heat Transfer  
CEE 446 ONL: Air Quality Engineering  
CEE 457 ONL: Groundwater

ENG 460 ONL: Entrepreneurship for Engineers  
ENG 461 ONL: Technology Entrepreneurship  
ENG 560 ONL: Managing Advanced Technol I  
ENG 561 ONL: Managing Advanced Technol II

# SMM tract

## AE 400-level (choose 2):

AE 451 Aeroelasticity  
AE 420 Finite Elements  
AE428 Composite Materials  
AE 427 Mechanics of Polymers

## AE 500-level (choose 2):

AE 521 Fracture Mechanics  
AE 550 Nonlinear Aeroelasticity  
AE 528 Nonlinear Elasticity  
AE 522 Dynamic Behavior of Materials  
AE 525 Advanced Composite Materials

## Other:

CEE 470 ONL: Structural Analysis  
CEE 471 ONL: Structural Mechanics  
CEE 472 ONL: Structural Dynamics I

ME 430 ONL: Failure of Engrg Materials  
TAM 514 ONL: Elastodynamics and Vibrations  
TAM 598 MSO: Mechanics of Random Media

## Breadth-AFMCP (choose 1):

AE 412 Viscous Flow  
AE 416 Applied Aerodynamics  
AE 433 Propulsion  
AE 434 Rocket Propulsion  
AE 410 Computational Aerodynamics  
AE 419 Aircraft Flight Mechanics  
AE 435 Electric Propulsion

## Breadth-ACDS (choose 1):

F14, 15 AE 402 Orbital Mechanics  
F14, 15 AE 454 Systems Dynamics and Controls  
S15, 16 AE 403 Spacecraft Attitude Control  
F14, 15 AE 482 Introduction to Robotics

## Math (choose 1):

MATH 415 EGR: Applied Linear Algebra  
MATH 461 EGR: Probability Theory  
MATH 488 EGR: Math Methods In Eng.

ENG 460 ONL: Entrepreneurship for Engineers  
ENG 461 ONL: Technology Entrepreneurship  
ENG 560 ONL: Managing Advanced Technol I  
ENG 561 ONL: Managing Advanced Technol II

# ACDS tract

## AE 400-level (choose 2):

AE 402 Orbital Mechanics  
AE 454 Systems Dynamics and Controls  
AE 403 Spacecraft Attitude Control  
AE 482 Introduction to Robotics

## AE 500-level (choose 2):

AE 504 Optimal Aerospace Systems  
AE 502 Advanced Orbital Mechanics  
AE 554 Dynamical Systems Theory  
AE 508 Optimal Space Trajectories  
AE 556 Robust Control  
AE 583 Advanced Robotic Planning

## Breadth-AFMCP (choose 1):

AE 412 Viscous Flow  
AE 416 Applied Aerodynamics  
AE 433 Propulsion  
AE 434 Rocket Propulsion  
AE 410 Computational Aerodynamics  
AE 419 Aircraft Flight Mechanics  
AE 435 Electric Propulsion

## Breadth-SMM (choose 1):

AE 451 Aeroelasticity  
AE 420 Finite Elements

## Math (choose 1):

MATH 415 EGR: Applied Linear Algebra  
MATH 461 EGR: Probability Theory  
MATH 488 EGR: Math Methods In Eng.

## Other:

ENG 460 ONL: Entrepreneurship for Engineers  
ENG 461 ONL: Technology Entrepreneurship  
ENG 560 ONL: Managing Advanced Technol I  
ENG 561 ONL: Managing Advanced Technol II