# 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-SMM (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-ACDS (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

## 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](#)
## 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.

### Aerospace Systems Engineering Required (2)
- AE 542  Aerospace Systems Engineering I (F)
- AE 543  Aerospace Systems Engineering II (Sp)

### 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
- 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
<table>
<thead>
<tr>
<th>SMM tract</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AE 400-level (choose 2):</strong></td>
</tr>
<tr>
<td>AE 451</td>
</tr>
<tr>
<td>AE 420</td>
</tr>
<tr>
<td>AE428</td>
</tr>
<tr>
<td>AE 427</td>
</tr>
<tr>
<td><strong>AE 500-level (choose 2):</strong></td>
</tr>
<tr>
<td>AE 521</td>
</tr>
<tr>
<td>AE 550</td>
</tr>
<tr>
<td>AE 528</td>
</tr>
<tr>
<td>AE 522</td>
</tr>
<tr>
<td>AE 525</td>
</tr>
<tr>
<td><strong>Breadth-AFMCP (choose 1):</strong></td>
</tr>
<tr>
<td>AE 412</td>
</tr>
<tr>
<td>AE 416</td>
</tr>
<tr>
<td>AE 433</td>
</tr>
<tr>
<td>AE 434</td>
</tr>
<tr>
<td>AE 410</td>
</tr>
<tr>
<td>AE 419</td>
</tr>
<tr>
<td>AE 435</td>
</tr>
<tr>
<td><strong>Breadth-ACDS (choose 1):</strong></td>
</tr>
<tr>
<td>F14, 15</td>
</tr>
<tr>
<td>F14, 15</td>
</tr>
<tr>
<td>S15, 16</td>
</tr>
<tr>
<td>F14, 15</td>
</tr>
<tr>
<td><strong>Math (choose 1):</strong></td>
</tr>
<tr>
<td>MATH 415 EGR: Applied Linear Algebra</td>
</tr>
<tr>
<td>MATH 461 EGR: Probability Theory</td>
</tr>
<tr>
<td>MATH 488 EGR: Math Methods In Eng.</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
</tr>
<tr>
<td>CEE 470 ONL: Structural Analysis</td>
</tr>
<tr>
<td>CEE 471 ONL: Structural Mechanics</td>
</tr>
<tr>
<td>CEE 472 ONL: Structural Dynamics I</td>
</tr>
<tr>
<td>ME 430 ONL: Failure of Engrg Materials</td>
</tr>
<tr>
<td>TAM 514 ONL: Elastodynamics and Vibrations</td>
</tr>
<tr>
<td>TAM 598 MSO: Mechanics of Random Media</td>
</tr>
<tr>
<td>ENG 460 ONL: Entrepreneurship for Engineers</td>
</tr>
<tr>
<td>ENG 461 ONL: Technology Entrepreneurship</td>
</tr>
<tr>
<td>ENG 560 ONL: Managing Advanced Technol I</td>
</tr>
<tr>
<td>ENG 561 ONL: Managing Advanced Technol II</td>
</tr>
</tbody>
</table>
### 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