**General Requirements for Graduation Without Thesis** – 27 units total with 3.0 GPA overall:

- **6 units** AME 525 *Engineering Analysis* and AME 526 *Engineering Analytical Methods*
- **12 units** 500 level courses in AME department
  - Cross listed classes (Ex: SAE 549, CE 507, MASC 551) count as AME department courses
- **9 units** Approved 400 or 500 level elective courses
  - Elective courses may be from AME, MATH, Natural Sciences or Other Engineering Departments
    (ASTE, BME, CE, CHE, CS, EE, ENE, ENGR, INF, ITP, MASC, PTE, SAE)

- No more than 9 units at 400 level may to taken as degree credit
- No more than 3 units of directed research, seminar, and/or internship may be taken as degree credit

**Recommended Courses by Area of Interest:** Specializations do not appear on transcripts or diplomas

<table>
<thead>
<tr>
<th>Aerospace Control</th>
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<tbody>
<tr>
<td><strong>Control Courses:</strong></td>
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<tr>
<td>AME 532a <em>Flight Vehicle Stability and Control</em> <em>(Sp)</em></td>
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<tr>
<td>AME 541 <em>Linear Control Systems II</em> <em>(F)</em></td>
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<tr>
<td>AME 544 <em>Computer Control of Mechanical Systems</em> <em>(Sp)</em></td>
</tr>
<tr>
<td>AME 545 <em>Modeling and Control of Distributed Dynamic Systems</em> +</td>
</tr>
<tr>
<td>AME 552 <em>Nonlinear Control Systems</em> <em>(Sp)</em></td>
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</tbody>
</table>

**Electives:**
- AME 451 *Linear Controls Systems I* *(F)/(Sp)* □
- ASTE 585 *Spacecraft Attitude Control* *(Su)* +
- ASTE 586 *Spacecraft Attitude Dynamics* +

* AME 451 is pre-req for AME 541.  
^ AME 541 is a pre-req for AME 552.
□ AME 451 is only recommended elective if equivalent not taken during undergrad.

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<tr>
<th>Aerospace Design</th>
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<tbody>
<tr>
<td><strong>Design Courses:</strong></td>
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<tr>
<td>AME 502 <em>Modern Topics in Aerospace Design</em> <em>(F)</em></td>
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<tr>
<td>AME 527 <em>Elements of Vehicle and Energy Systems Design</em> <em>(Sp)</em></td>
</tr>
</tbody>
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**Electives:**
- AME 408 *Computer-Aided Design of Mechanical Systems* *(F)/(Sp)*
- AME 415 *Turbine Design* *(F)*
- ASTE 520 *Spacecraft System Design* *(F)*

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<th>Aerospace Structures</th>
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<td><strong>Structures Courses:</strong></td>
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<tr>
<td>AME 509 <em>Applied Elasticity</em> <em>(Sp)</em></td>
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<tr>
<td>AME 521 <em>Engineering Vibrations II</em> <em>(Sp)</em></td>
</tr>
<tr>
<td>AME 529 <em>Aircraft Structures Analysis</em> <em>(Sp)</em></td>
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<tr>
<td>AME 560 <em>Fatigue and Fracture</em> <em>(Sp)</em></td>
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<tr>
<td>CE 507 <em>Mechanics of Solids I</em> <em>(F)</em> ∞</td>
</tr>
<tr>
<td>CE 529a <em>Finite Element Analysis</em> <em>(F)/(Su)</em> ∞</td>
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</tbody>
</table>

**Electives:**
- AME 403 *Stress Analysis* *(Sp)*
- AME 420 *Engineering Vibrations* *(Sp)*
- CE 541a *Dynamics of Structures* *(F)*

* AME 403 is pre-req for AME 509.  
^ AME 420 is pre-req for AME 521

**Notes:** ∞ Cross-listed
(F)=Fall  (Sp)= Spring  (Su)=Summer  + Not Regularly Offered  Ex: AME 541 *Linear Controls Systems II* *(F)* is typically offered in the Fall.
Computational Fluid Dynamics Courses:
AME 511 Compressible Gas Dynamics (Sp)  
AME 530b Dynamics of Incompressible Fluids (Sp) +  
AME 630 Transition to Chaos in Dynamical Systems (Sp)+  
AME 530a Dynamics of Incompressible Fluids (F)  
AME 535b Intro to Computational Fluid Mechanics (Sp)+  
AME 651 Statistical Theories of Turbulence +  
AME 526 is recommended prep for AME 535a.

Aerodynamics/Fluid Dynamics Courses:
AME 511 Compressible Gas Dynamics (Sp)  
AME 535a Intro to Computational Fluid Mechanics * (F)  
AME 537 Microfluids +  
AME 651 Statistical Theories of Turbulence +  
AME 530a Dynamics of Incompressible Fluids (F)  
AME 530b Dynamics of Incompressible Fluids (Sp)+  
AME 620 Aero and Hydrodynamic Wave Theory +  
AME 652 Turbulent Shear Flows +  
AME 525  
AME 526  
AME 457 Engineering Fluid Dynamics (F)

Propulsion Courses:
AME 511 Compressible Gas Dynamics (Sp)  
AME 436 Energy and Propulsion(Sp)  
AME 501a Physical Gas Dynamics +  
AME 513 Principles of Combustion (F)  
AME 457 Fluid Dynamics (F)  
AME 530 Principles of Combustion (Sp)+  
AME 514 Application of Combustion (Sp)+  
AME 516 Convection Processes (Sp)+  
ASTE 470 Spacecraft Propulsion (F)  
ChE 530 Thermodynamics for Chemical Engineers (F)

Notes: Term course typically offered  
(F)=Fall  (Sp)= Spring  (Su)=Summer  + Not Regularly Offered  
Ex: AME 511 Compressible Gas Dynamics (Sp) is typically offered in the Spring.

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Notes</th>
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<tbody>
<tr>
<td>AME 525</td>
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*To be approved to pursue the MSAE with Thesis, you must first discuss with an AME Academic Advisor during your first semester in program. An AME faculty thesis advisor must be secured by student and special planning of coursework and units must be discussed with AME Academic Advisor.