**General Requirements for Graduation Without Thesis** – 27 units total with 3.0 GPA overall:
(All classes must be passed with a grade of C or higher)

- **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
  - AME, BME, CE, CHE, CS, EE, ENE, ENGR, INF, ISE, 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

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

#### Thermal and Fluid Sciences

<table>
<thead>
<tr>
<th>Combustion Courses:</th>
<th>Fluid Dynamics Courses:</th>
<th>Heat Transfer Courses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME 513 <em>Principles of Combustion</em> (F)</td>
<td>AME 511 <em>Compressible Gas Dynamics</em> (Sp)</td>
<td>AME 515 <em>Advanced Problems in Heat Conduction</em> (Sp) +</td>
</tr>
<tr>
<td>AME 514 <em>Applications of Combustion and Reacting Flows</em> (Sp)</td>
<td>AME 530a <em>Dynamics of Incompressible Fluids</em> (F)</td>
<td>AME 516 <em>Convective Processes</em> (Sp) +</td>
</tr>
<tr>
<td>AME 530a <em>Dynamics of Incompressible Fluids</em> (F)</td>
<td>AME 535a <em>Intro to Computational Fluid Mechanics</em> *(F)</td>
<td>AME 517 <em>Radiation Heat Transfer</em> (F) +</td>
</tr>
</tbody>
</table>

**Electives with any emphasis:**

- AME 436 *Energy and Propulsion* (Sp)
- AME 457 *Engineering Fluid Dynamics* (F)
- AME 535b *Intro to Computational Fluid Dynamics* (Sp) +

* AME 526 is recommended prep for AME 535a.

#### Design

<table>
<thead>
<tr>
<th>Design Courses:</th>
<th>AME 505 <em>Engineering Information Modeling</em> (Sp)</th>
<th>AME 509 <em>Applied Elasticity</em> (Sp)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME 503 <em>Advanced Mechanical Design</em> (F)(Sp)</td>
<td>AME 541 <em>Linear Control Systems II</em> *(F)</td>
<td>SAE 549 <em>System Architecting</em> (F)(Sp)(Su) +</td>
</tr>
</tbody>
</table>

**Electives:**

- AME 404 *Mechanical Engineering Problems* (F)
- AME 410 *Engineering Design Theory and Methodology* (F)
- ASTE 520 *Spacecraft System Design* (F)(Sp)
- ASTE 523 *Design of Low Cost Space Missions* (Sp)

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

#### Mechanics and Materials

<table>
<thead>
<tr>
<th>Mechanics and Materials Courses:</th>
<th>AME 560 <em>Fatigue and Fracture</em> (Sp)</th>
<th>CE 507 <em>Mechanics of Solids</em> (F) +</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME 509 <em>Applied Elasticity</em> (Sp)</td>
<td>MASC 551 <em>Mechanical Behavior of Engineering Materials</em> <em>(F)</em></td>
<td>MASC 561 <em>Dislocation Theory and Applications</em> (Sp) +</td>
</tr>
<tr>
<td>MASC 583 <em>Materials Selection</em> <em>(F)</em> +</td>
<td>CE 529a <em>Finite Element Analysis</em> <em>(F)(Su)</em> +</td>
<td></td>
</tr>
</tbody>
</table>

**Electives:**

- MASC 534 *Materials Characterization* (F)

**Notes:** + Not Regularly Offered  Ex: AME 521 *Engineering Vibrations II* (F) is typically offered in the Fall.

Term course typically offered: (F)=Fall   (Sp)= Spring  (Su)=Summer   + Not Regularly Offered
## Dynamics and Control

**Dynamics and Control Courses:**
- AME 521 *Engineering Vibrations II (F)*
- AME 522 *Nonlinear Vibrations (F)*
- AME 544 *Computer Control of Mechanical Systems (Sp)*
- AME 524 *Advanced Engineering Dynamics (F)*
- AME 541 *Linear Control Systems II *(F)*
- AME 552 *Nonlinear Control Systems *(Sp)*
- AME 543a *Digital Control Systems (Sp)*
- EE 543a *Digital Control Systems (Sp)*

**Electives:**
- AME 420 *Engineering Vibrations I (Sp)*
- AME 451 *Linear Controls Systems I (F)(Sp)*

* AME 451 is pre-req for AME 541.  ^ AME 541 is pre-req for AME 552.
□ AME 420 & AME 451 are only recommended electives if equivalent not taken during undergrad.

## Energy

**Energy Courses:**
- AME 513 *Principles of Combustion (F)*
- AME 578 *Modern Alternative Energy Conversion Devices (F)*
- AME 582 *Nuclear Reactor Physics (Sp)*
- AME 514 *Applications of Combustion and Reacting Flows (Sp)*
- AME 579 *Combustion Chemistry and Physics (Sp)*
- AME 577 *Survey of Energy & Power for a Sustainable Future (Sp)*
- AME 581 *Intro to Nuclear Engineering (F)*

**Electives:**
- AME 430 *Thermal System Design (F)*
- ENE 505 *Energy and Environment (F)(Sp)*
- SAE 515 *Sustainable Infrastructure Systems (F)*

**Notes:**  ∞ Cross-listed
Term course typically offered: (F)=Fall  (Sp)= Spring  (Su)=Summer  + Not Regularly Offered  Ex: AME 521 *Engineering Vibrations II (F)* is typically offered in the Fall.

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### Program of Study Worksheet

<table>
<thead>
<tr>
<th>Course</th>
<th>Semester</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AME 525</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AME 526</td>
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</tr>
</tbody>
</table>

**Required**

**AMC Courses**

**Electives**

*To be approved to pursue the MSME 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.*