### General Requirements for Graduation Without Thesis

- **6 units** AME 525 *Engineering Analysis* and AME 526 *Engineering Analytical Methods*
- **12 units** 400 or 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, Physics, or other Engineering Departments
  (ASTE, BME, CE, CHE, CS, EE, ENE, ENGR, INF, ISE, ITP, MASC, PTE, SAE)
- No more than 3 classes (9 units) at 400 level
- Only 3 units of AME 590 *Directed Research* can be taken as elective credit

### Recommended Courses by Specialization: Note Specializations do not appear on transcripts or diplomas

<table>
<thead>
<tr>
<th>Thermal and Fluid Sciences Track</th>
<th>Fluid Dynamics Core Courses: AME 457 <em>Engineering Fluid Dynamics (F)</em></th>
<th>Heat Transfer Core Courses: AME 457 <em>Engineering Fluid Dynamics (F)</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustion Core Courses:</td>
<td>AME 436 <em>Energy and Propulsion (Sp)</em></td>
<td>AME 511 <em>Compressible Gas Dynamics (Sp)</em></td>
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<tr>
<td>AME 513 <em>Principles of Combustion (F)</em></td>
<td>AME 530a <em>Dynamics of Incompressible Fluids (F)</em></td>
<td>AME 515 <em>Advanced Problems in Heat Conduction (Sp)</em> +</td>
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<tr>
<td>AME 514 <em>Applications of Combustion and Reacting Flows (Sp)</em></td>
<td>AME 535a *Intro to Computational Fluid Mechanics <em>(F)</em></td>
<td>AME 516 <em>Convective Processes (Sp)</em> +</td>
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<tr>
<td>AME 530a <em>Dynamics of Incompressible Fluids (F)</em></td>
<td>AME 535b <em>Intro to Computational Fluid Dynamics (Sp)</em></td>
<td>AME 517 <em>Radiation Heat Transfer (F)</em> +</td>
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**Electives with any emphasis:**

AME 530b *Dynamics of Incompressible Fluids (Sp)* +

AME 535b *Intro to Computational Fluid Dynamics (Sp)* +

*AME 526 is recommended prep for AME 535a.*

### Design Track

<table>
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<tr>
<th>Design Core Courses: AME 503 <em>Advanced Mechanical Design (F)(Su)</em></th>
<th>AME 505 <em>Engineering Information Modeling (Sp)</em></th>
<th>AME 509 <em>Applied Elasticity (Sp)</em></th>
</tr>
</thead>
</table>

**Electives:**

AME 404 *Mechanical Engineering Problems (F)*

AME 451 *Linear Controls Systems I (F)(Sp)*

AME 527 *Elements of Vehicle and Energy Systems Design (Sp)*

AME 541 *Linear Control Systems II *(F)*

ASTE 520 *Spacecraft System Design (F)(Sp)*

ASTE 523 *Design of Low Cost Space Missions (Sp)*

CE 529a *Finite Element Analysis (F)(Su)*

SAE 549 *System Architecting (F)(Sp)(Su)*

^AME 451 is pre-req for AME 541.

□AME 451 is only recommended elective if equivalent not taken during undergrad.

### Mechanics and Materials Track

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<tr>
<th>Mechanics and Materials Core Courses: AME 509 <em>Applied Elasticity (Sp)</em></th>
<th>AME 560 <em>Fatigue and Fracture (Sp)</em></th>
<th>MASC 551 <em>Mechanical Behavior of Engineering Materials (F)</em></th>
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**Electives:**

AME 588 *Materials Selection (F)*

AME 559 *Creep (F)* +

CE 529a *Finite Element Analysis (F)(Su)*

MASC 534 *Materials Characterization (F)*

MASC 561 *Dislocation Theory and Applications (Sp)*

**Notes:** Term course typically offered

(F)=Fall   (Sp)=Spring   (Su)=Summer   + Not Regularly Offered

Ex: AME 436 *Energy and Propulsion (Sp)* is typically offered in the Spring.
Dynamics and Control Track

Dynamics and Control Core Courses:
AME 521 Engineering Vibrations II (F)  AME 524 Advanced Engineering Dynamics (F)  AME 552 Nonlinear Control Systems (Sp)
AME 522 Nonlinear Vibrations (F)  AME 541 Linear Control Systems II * (F)

Electives:
AME 420 Engineering Vibrations I (Sp) □  AME 451 Linear Control Systems I (F) □  AME 539 Multi-body Dynamics (Sp) +
AME 544 Computer Control of Mechanical Systems (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 Track

Energy Core Courses:
AME 430 Thermal System Design (F)  AME 577 Survey of Energy & Power for a Sustainable Future (Sp)  CE 515 Sustainable Infrastructure Systems (F)
AME 578 Modern Alternative Energy Conversion Devices (F)

Electives:
AME 513 Principles of Combustion (F)  AME 579 Combustion Chemistry and Physics (Sp)
AME 514 Applications of Combustion and Reacting Flows (Sp)  AME 581 Intro to Nuclear Engineering (F)  AME 582 Nuclear Reactor Physics (Sp)  ENE 505 Energy and Environment (F)(Sp)

Notes: 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.

Program of Study Worksheet

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<thead>
<tr>
<th>Course</th>
<th>Semester</th>
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*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.