**Department of Aerospace and Mechanical Engineering**

**Dual Degree: MS—Aerospace Engineering/MS—Engineering Management**

**General Requirements for Graduation Without Thesis** – 48 units total with 3.0 GPA overall:

- **18 units** Approved graduate level course work in AME, approved by AME academic advisor
  - 4 units AME 525 Engineering Analysis
  - 14 units 500 level courses in AME department
- **18 units** Approved graduate level course work in ISE, approved by ISE academic advisor
  - 6 units of required ISE Core Courses (ISE 500 and ISE 561)
  - 12 units approved core courses from MS in Engineering Management program
- **12 units** Approved 400 or 500 level elective courses by AME and/or ISE departments
- No more than 5 classes (15 units) at 400 level

**Notes:** Term course typically offered is (F)=Fall   (Sp)= Spring   (Su)=Summer   + Not Regularly Offered
Ex: AME 436 Energy and Propulsion (Sp) is typically offered in the Spring.

### AME Aerospace Engineering Courses

#### Required AME Courses (4 units):
AME 525 Engineering Analysis (F)(Sp)(Su)

#### Recommended Electives:

**Aerospace Control Track**

- **AME 451 Linear Controls Systems I (F)(Sp)** □
- **AME 552 Nonlinear Control Systems (Sp)** ▲

- **AME 532a Flight Vehicle Stability and Control (Sp)**
- **AME 544 Computer Control of Mechanical Systems (Sp)**
- **AME 545 Modeling and Control of Distributed Dynamic Systems +**
- **AME 585 Spacecraft Attitude Control (Su)** +
- **AME 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.

**Aerospace Design Track**

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

- **AME 502 Modern Topics in Aerospace Design (F)**
- **AME 528 Elements of Composite Structure Design +**

**Aerospace Structures Track**

- **AME 529 Aircraft Structures Analysis (Sp)**
- **AME 546 Basic Aeroelasticity +**

**Recommended Electives:**

- **AME 509 Applied Elasticity (Sp)**
- **AME 521 Engineering Vibrations II (F)**
- **AME 559 Creep +**

- **AME 560 Fatigue and Fracture (Sp)**
- **CE 507 Mechanics of Solids I (F)**
- **CE 529a Finite Element Analysis (F)(Su)**

* AME 403 is pre-req for AME 509.  ▲ AME 420 is pre-req for AME 521
### Computational Fluid Dynamics Track

**Core Courses:**
- AME 511 Compressible Gas Dynamics (Sp)
- AME 530a Dynamics of Incompressible Fluids (F)

**Recommended Electives:**
- AME 457 Engineering Fluid Dynamics (F)
- AME 535b Intro to Computational Fluid Mechanics (Sp)
- AME 651 Statistical Theories of Turbulence
- AME 504ab Numerical Solution of Ordinary and Partial Differential Equations

**Math 504ab**

*AME 526 is recommended prep for AME 535a.

### Aerodynamics/Fluid Dynamics Track

**Core Courses:**
- AME 511 Compressible Gas Dynamics (Sp)
- AME 530a Dynamics of Incompressible Fluids (F)

**Recommended Electives:**
- AME 457 Engineering Fluid Dynamics (F)
- AME 537 Microfluids
- AME 621 Stability of Fluids

*AME 526 is recommended prep for AME 535a.

### Propulsion Track

**Core Courses:**
- AME 511 Compressible Gas Dynamics (Sp)
- AME 513 Principles of Combustion (F)

**Recommended Electives:**
- AME 436 Energy and Propulsion (Sp)
- AME 514 Application of Combustion (Sp)
- ChE 530 Thermodynamics for Chemical Engineers (Sp)

*AME 526 is recommended prep for AME 535a.

### ISE Engineering Management Courses

**Required Core Courses (6 units):**
- ISE 500 Engineering Management Decisions and Statistics
- ISE 561 Economic Analysis of Engineering Projects*

**Accounting Elective Courses**

Select one of the following courses (3 units):
- CE 502 Construction Accounting
- ISE 566 Financial Accounting for Engineering

**Engineering Management Elective Courses**

Select two of the following courses (6 units):
- ISE 515 Engineering Project Management
- ISE 544 Management of Engineering Teams
- ISE 565 Law and Finance for Engineering Innovation

**Quantitative Methods Elective Courses**

Select one of the following courses (3 units):
- ISE 513 Inventory Systems
- ISE 527 Quality Management for Engineers
- ISE 514 Advanced Production Planning and Scheduling

* ISE 460 is pre-req for ISE 561.

**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.
# Program of Study Worksheet

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<thead>
<tr>
<th>Course</th>
<th>Semester</th>
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<td>AME 525</td>
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<td>ISE 500</td>
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<td>ISE 561</td>
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**ISE Elective Courses**

**Please contact Mary Ordaz (mordaz@usc.edu) in ISE for elective recommendations.**

*To be approved to pursue the MSAE/MSEMT with Thesis, you must first discuss with an AME Academic Advisor during your first semester in program. An AME or ISE faculty thesis advisor must be secured by student and special planning of coursework and units must be discussed with AME Academic Advisor.*