

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

(All classes must be passed with a grade of C or higher)

- **18 units** Approved graduate level course work in AME, approved by AME academic advisor
 - 6 units AME 525 Engineering Analysis and AME 526 Engineering Analytical Methods
 - 12 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, approved by AME and/or ISE department
- No more than 5 classes (15 units) at 400 level

AME Mechanical Engineering Courses

Required AME Courses (6 units):

AME 525 *Engineering Analysis (F)(Sp)(Su)* AME 526 *Engineering Analytical Methods (F)(Sp)(Su)*

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

Thermal and Fluid Sciences Track

Combustion Core Courses:

AME 436 *Energy and Propulsion (Sp)*

AME 513 *Principles of Combustion (F)*

AME 514 *Applications of Combustion and Reacting Flows (Sp)*

AME 530a *Dynamics of Incompressible Fluids (F)*

Electives with any emphasis:

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

* AME 526 is recommended prep for AME 535a.

Fluid Dynamics Core Courses:

AME 457 *Engineering Fluid Dynamics (F)*

AME 511 *Compressible Gas Dynamics (Sp)*

AME 530a *Dynamics of Incompressible Fluids (F)*

AME 535a *Intro to Computational Fluid Mechanics *(F)*

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

Heat Transfer Core Courses:

AME 457 *Engineering Fluid Dynamics (F)*

AME 515 *Advanced Problems in Heat Conduction (Sp) +*

AME 516 *Convective Processes (Sp) +*

AME 517 *Radiation Heat Transfer (F) +*

Design Track

Design Core Courses:

AME 503 *Advanced Mechanical Design (F)(Su)*

AME 505 *Engineering Information Modeling (Sp)*

AME 509 *Applied Elasticity (Sp)*

Electives:

AME 404 *Mechanical Engineering Problems (F)*

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

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

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

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

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

AME 527 *Elements of Vehicle and Energy Systems Design (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 Track

Mechanics and Materials Core Courses:

AME 509 *Applied Elasticity (Sp)*

AME 560 *Fatigue and Fracture (Sp)*

MASC 551 *Mechanical Behavior of Engineering Materials (F)*

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 582 *Nuclear Reactor Physics (Sp)*
AME 514 *Applications of Combustion and Reacting Flows (Sp)* AME 581 *Intro to Nuclear Engineering (F)* ENE 505 *Energy and Environment (F)(Sp)*

ISE Engineering Management Courses

ISE 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 564 *Performance Analysis*
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 514 *Advanced Production Planning and Scheduling* ISE 525 *Design of Experiments*
ISE 527 *Quality Management for Engineers* ISE 530 *Optimization Methods for Analytics*

ISE Elective Courses

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

* ISE 500 is pre-req for ISE 561.

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

Course	Semester	Notes
AME 525		
AME 526		
ISE 500		
ISE 561		

*To be approved to pursue the MSME/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.