2017 - 2018 Major Map
Mechanical Engineering (Energy and Environment), BSE

School/College: Ira A. Fulton Schools of Engineering
ESMAEEBSE

Term 1 0 - 16 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)	4	C	• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses. • ASU Mathematics Placement Test score determines placement in mathematics course. • ASU 101 or college-specific equivalent First-Year Seminar required of all freshman students. • ASU 101-MEE and FSE 100 required for freshmen and should be completed first semester. Non-freshmen: see advisor for petitioning replacement electives. • If ENG 105 taken, a 3 hr applicable elective must also be taken prior to graduation. See advisor. • Prep for success using the Freshman Guide. • Join a Fulton community. • Explore engineering and technical professions.
MAT 265: Calculus for Engineers I (MA)	3	C	
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	
ASU 101-MEE: The ASU Experience	1		
FSE 100: Introduction to Engineering	2	C	
Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3		
Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	16		

Term 2 16 - 32 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition	3	C	• Create a Handshake profile. • Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
MAT 242: Elementary Linear Algebra	2	C	
MAT 266: Calculus for Engineers II (MA)	3	C	
PHY 121: University Physics I: Mechanics (SQ)	3	C	
PHY 122: University Physics Laboratory I (SQ)	1	C	
MAE 215: Introduction to Programming in MATLAB	1	C	
Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3		
Minimum 2.00 GPA ASU Cumulative.			
Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
Term hours subtotal:	16		

Term 3 32 - 48 Credit Hours Critical course signified by	Hours	Minimum	Notes

			Grade	
❗	MAE 201: Mechanics of Particles and Rigid Bodies I: Statics	3	C	• Prep for success using the Sophomore Guide. • Consult the Resume, Presentation, and Resource Library for tips on how to create a technical resume, job shadow, do informational interviews and mentor with alumni.
❗	MAT 267: Calculus for Engineers III (MA)	3	C	
❗	MAT 275: Modern Differential Equations (MA)	3	C	
❗	PHY 131: University Physics II: Electricity and Magnetism (SQ)	3	C	
	EEE 202: Circuits I	4	C	
❗	Minimum 2.00 GPA ASU Cumulative.			
	Complete Mathematics (MA) requirement.			
	Term hours subtotal:	16		

Term 4 48 - 62 Credit Hours Critical course signified by ❗	**Hours**	**Minimum Grade**	**Notes**
❗ MAE 202: Mechanics of Particles and Rigid Bodies II: Dynamics	3	C	• Pursue an undergraduate research experience. • Apply for internships. • Attend career fairs and events.
❗ MAE 213: Mechanics of Materials	3	C	
❗ MAE 241: Introduction to Thermodynamics	3	C	
PHY 132: University Physics Laboratory II (SQ)	1	C	
MAE 214: Computer-Aided Engineering I	1	C	
MAE 384: Advanced Mathematical Methods for Engineers (CS)	3	C	
Term hours subtotal:	14		

Term 5 62 - 78 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ MEE 322: Structural Mechanics	4	C	• Plan for success using the Junior Guide. • Network at student organization competitions or professional societies.
MSE 250: Structure and Properties of Materials	3	C	
MAE 242: Introduction to Fluid Mechanics	3	C	
MAE 301: Applied Experimental Statistics	3	C	
CHM 231: Elementary Organic Chemistry (SQ) OR CHM 233: General Organic Chemistry I	3	C	
Term hours subtotal:	16		

Term 6 78 - 93 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**

★	MAE 318: System Dynamics and Control I	4	C
★	MEE 340: Heat Transfer	3	C
	MEE 342: Principles of Mechanical Design	3	C
	MEE 323: Computer-Aided Engineering II	2	C
	MAE 400: Engineering Profession (L)	3	C
	Term hours subtotal:	15	

- Research and prepare for graduate school.
- Apply for an engineering 4+1 program.
- Develop a professional profile online.

Term 7 93 - 108 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ MEE 482: Intermediate Thermodynamics	3	C	
MEE 491: Experimental Mechanical Engineering (L)	3	C	
MAE 417: System Dynamics and Control II	3	C	
GCU 364: Energy in the Global Arena (SB & G) OR PUP 190: Sustainable Cities ((HU or SB) & G) OR SOS 171: The Thread of Energy (SB & G) OR GPH 314: Global Change (HU & G) OR HST 302: Energy Transitions and Sustainability ((HU or SB) & G & H)	3		
Upper Division Energy and Environment Technical Elective	3	C	
Term hours subtotal:	15		

- For additional information about Upper Division Energy and Environment Technical Electives, please see: Upper Division Energy and Environment Technical Electives
- Plan for success using the Senior Guide.
- Apply for full-time positions.
- Complete an in-person or practice interview.

Term 8 108 - 120 Credit Hours Necessary course signified by ★	**Hours**	**Minimum Grade**	**Notes**
★ MEE 446: Energy Systems Design	3	C	
GCU 364: Energy in the Global Arena (SB & G) OR PUP 190: Sustainable Cities ((HU or SB) & G) OR SOS 171: The Thread of Energy (SB & G) OR GPH 314: Global Change (HU & G) OR HST 302: Energy Transitions and Sustainability ((HU or SB) & G & H)	3		
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Upper Division Technical Elective	3	C	
Term hours subtotal:	12		

- For additional information about Upper Division Technical Electives, please go to: Upper Division Technical Electives

- Students may be allowed by instructor consent to take these courses without having the pre-requisites fulfilled. Please contact advisor if overrides are needed.

MAE 484/498/499 can only use max of 3 credits towards Technical Elective requirements.

To take any 494 class, please check with your advisor first.

Courses not listed here require a department petition for approval.

For additional information about Upper Division Technical Electives, please go to: Upper Division Technical Electives

Hide Course List(s)/Track Group(s)

Upper Division Energy and Environment Technical Electives
BIO 320: Fundamentals of Ecology
CEE 361: Introduction to Environmental Engineering
CHE 494: Biomass Energy Conversion Technology
CHM 302: Environmental Chemistry
EEE 360: Energy Systems and Power Electronics
EEE 460: Nuclear Power Engineering
EEE 463: Electrical Power Plants
MAE 494: Chem of Global Climate Change
MEE 440: Renewable Energy: Mechanical Systems
MAE 494: Structural Materials in Nuclear Power Systems or MSE 494: Structural Materials in Nuclear Power Systems
MEE 441: Wind Energy
MEE 434: Internal Combustion Engines
MSE 460: Nanomaterials in Energy Production and Storage
By approval:
MAE 484: Internship
MAE 492: Honors Directed Study
MAE 493: Honors Thesis (L)
MAE 498: Pro-Seminar or MAE 499: Individualized Instruction

Technical Electives
AEE 313: Aircraft Dynamics and Control
AEE 415: Vibration Analysis
AEE 426: Design of Aerospace Structures
AEE 462: Space Vehicle Dynamics and Control
AEE 466: Rotary Wing Aerodynamics and Performance
AST 321: Introduction to Planetary and Stellar Astrophysics (SQ)
AST 322: Introduction to Galactic and Extragalactic Astrophysics (SQ)
CHE 494: Special Topics
EEE 304: Signals and Systems II
EEE 334: Circuits II
EEE 350: Random Signal Analysis
EEE 460: Nuclear Power Engineering
EEE 463: Electrical Power Plants
EEE 480: Feedback Systems
FSE 301: Entrepreneurship and Value Creation or IEE 300: Economic Analysis for Engineers
MAE 341: Mechanism Analysis and Design
MAE 455: Polymers and Composites
MAE 494: Special Topics
MAT 300: Mathematical Structures (L)
MAT 362: Advanced Mathematics for Engineers and Scientists
MSE 494: Special Topics
PHY 310: Classical Particles, Fields, and Matter I
SES 311: Essentials of Astrobiology: Exploration for Life in the Universe
By approval:

MAE 484: Internship

MAE 492: Honors Directed Study

MAE 493: Honors Thesis (L)

MAE 498: Pro-Seminar or MAE 499: Individualized Instruction

*Students may be allowed by instructor consent to take these courses without have the pre-requisites fulfilled. Courses not listed here require a department petition form. To take any 494 class, please check with your advisor first. MAE 484/498/499 can only use max of 3 credits towards TE requirements.

Total Hours: 120
Upper Division Hours: 45 minimum
Major GPA: 2.00 minimum
Cumulative GPA: 2.00 minimum
Total hrs at ASU: 30 minimum
Hrs Resident Credit for Academic Recognition: 56 minimum
Total Community College Hrs: 64 maximum

General University Requirements Legend

General Studies Core Requirements:

- Literacy and Critical Inquiry (L)
- Mathematical Studies (MA)
- Computer/Statistics/Quantitative Applications (CS)
- Humanities, Arts and Design (HU)
- Social-Behavioral Sciences (SB)
- Natural Science - Quantitative (SQ)
- Natural Science - General (SG)

General Studies Awareness Requirements:

- Cultural Diversity in the U.S. (C)
- Global Awareness (G)
- Historical Awareness (H)

First-Year Composition

General Studies designations listed next to courses on the major map were valid for the 2017 - 2018 academic year. Please refer to the course catalog for current General Studies designations at time of class registration. General Studies credit is applied according to the designation the course carries at the time the class is taken.