2018 - 2019 Major Map
Mechanical Engineering, BSE

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

Term 1 0 - 16 Credit Hours Critical course signified by	Hours	Minimum Grade	Notes
MAT 265: Calculus for Engineers I (MA)	3	C	• An SAT, ACT, Accuplacer, IELTS, or TOEFL score determines placement into first-year composition courses. • ASU Mathematics Placement Assessment 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.
ASU 101-MEE: The ASU Experience	1		
CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)	4	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	
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 Global Awareness (G)	3		
Minimum 2.00 GPA ASU Cumulative.			
Complete CHM 114 OR CHM 116 course(s).			
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 Grade	Notes
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	
MAE 214: Computer-Aided Engineering I	1	C	
MAE 384: Advanced Mathematical Methods for Engineers (CS)	3	C	
PHY 132: University Physics Laboratory II (SQ)	1	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.
MAE 242: Introduction to Fluid Mechanics	3	C	
MAE 301: Applied Experimental Statistics	3	C	
MSE 250: Structure and Properties of Materials	3	C	
Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3		
Term hours subtotal:	16		

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

★	MEE 342: Principles of Mechanical Design	3	C
	MAE 318: System Dynamics and Control I	4	C
	MAE 400: Engineering Profession (L)	3	C
	MEE 323: Computer-Aided Engineering II	2	C
	MEE 340: Heat Transfer	3	C
★	Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).		
	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 488: Mechanical Engineering Design I	3	C	
MAE 417: System Dynamics and Control II	3	C	
MEE 491: Experimental Mechanical Engineering (L)	3	C	
Upper Division Technical Elective	3	C	
Humanities, Arts and Design (HU)	3		
Term hours subtotal:	15		

- For additional information about Upper Division Technical Electives, please go to: Upper Division Technical Electives.
- Plan for success using the Senior Guide.
- Use Handshake to 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 489: Mechanical Engineering Design II	3	C	
Complete 2 courses: Upper Division Technical Elective	6	C	
Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)	3		
Term hours subtotal:	12		

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

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

Upper Division Technical Electives
AEE OR MAE OR MEE Upper Division Elective
AST 321: Introduction to Planetary and Stellar Astrophysics (SQ)
AST 322: Introduction to Galactic and

- Extragalactic Astrophysics (SQ)
- BIO 320: Fundamentals of Ecology
- BME 300: Bioengineering Product Design
- BME 318: Biomaterials
- BME 350: Signals and Systems for Bioengineers
- BME 494: Bioenergy and Microbial Biotechnology
- CEE 361: Introduction to Environmental Engineering
- CEE 372: Transportation Engineering
- CEE 440: Hydrology
- CHM 302: Environmental Chemistry
- CHM 325: Analytical Chemistry
- CHE 494: Biomass Energy Conversion Technology , Fuel Cells & Biofuel Cells , Molecular Sensor Systems for Health & Environment , Nanobiotechnology , Polymer Principles & Processing , Six Sigma Methodology/Engineering Experimentation
- EEE 304: Signals and Systems II
- EEE 333: Hardware Design Languages and Programmable Logic
- EEE 334: Circuits II
- EEE 350: Random Signal Analysis
- EEE 460: Nuclear Power Engineering
- EEE 463: Electrical Power Plants
- EEE 480: Feedback Systems
- EGR 433: Transforms and Systems Modeling
- EGR 455: Robotic Systems I
- EGR 456: Robotic Systems II
- GLG 418: Geophysics
- IEE 305: Information Systems Engineering (CS)
- IEE 376: Operations Research Deterministic Techniques/Applications
- MAT 300: Mathematical Structures (L)
- MAT 310: Introduction to Geometry
- MAT 362: Advanced Mathematics for Engineers and Scientists
- MAT 371: Advanced Calculus I
- MAT 420: Scientific Computing
- MAT 421: Applied Computational Methods (CS)
- MAT 423: Numerical Analysis I (CS)
- MAT 425: Numerical Analysis II (CS)

MAT 451: Mathematical Modeling (CS)

MAT 461: Applied Complex Analysis

MSE 330: Thermodynamics of Materials

MSE 355: Structure and Defects

MSE 440: Mechanical Behavior of Materials

MSE 450: Introduction to Materials Characterization

MSE 460: Nanomaterials in Energy Production and Storage

MSE 476: Growth and Processing of Semiconductors

MSE 494: Bioinspired Materials and Biomaterials , Electrochemical Energy Storage and Conversion , Failure Analysis of Metallic Materials , Manufacturing Processes for Structural Materials , Structural Materials in Nuclear Power Systems

PHY 310: Classical Particles, Fields, and Matter I

PHY 361: Introductory Modern Physics

SES 311: Essentials of Astrobiology: Exploration for Life in the Universe

SES 350: Engineering Systems and Experimental Problem Solving

By approval only:

MAE 484: Internship

MAE 492: Honors Directed Study

MAE 493: Honors Thesis (L)

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

*Students who do not meet the enrollment requirements for these courses may be allowed to enroll with instructor consent. Courses not listed here require a department petition form. To take any 494 class, please check with your advisor first. A max of 3 credits from MAE 484/498/499 can be applied toward the TE requirements.

Students may only apply ONE (1) course from the list below:

CEE 400: Earth Systems Engineering and Management ((L or HU) & H)

FSE 301: Entrepreneurship and Value Creation

FSE 394: Engineering in Global Context

IEE 300: Economic Analysis for Engineers

IEE 431: Engineering Administration (L)

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 2018 - 2019 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.