2020 - 2021 Major Map
Mechanical Engineering (Computational Mechanics), BSE

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

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. • Mathematics Placement Assessment score determines placement in mathematics course. • ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students. • FSE 100 is required for first-year students and should be completed the first semester. Non-first year students: see advisor for petitioning replacement electives. • If ENG 105 is taken, a 3 hour applicable elective must also be taken prior to graduation. See advisor. • Prep for success using the First-Year Student 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	
Social-Behavioral Sciences (SB) AND Global Awareness (G)	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	
PHI 103: Principles of Sound Reasoning (L or HU)	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 - 46 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.
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	
MAE 214: Computer-Aided Engineering I	1	C	
PHY 132: University Physics Laboratory II (SQ)	1	C	
Complete CHM 114 OR CHM 116 course(s).			
Minimum 2.00 GPA ASU Cumulative.			
Complete Mathematics (MA) requirement.			
Term hours subtotal:	14		

Term 4 46 - 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	
EEE 202: Circuits I	4	C	
MAE 384: Advanced Mathematical Methods for Engineers (CS)	3	C	
Term hours subtotal:	16		

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.
CSE 100: Principles of Programming with C++ (CS) OR CSE 110: Principles of Programming (CS)	3	C	
MAE 242: Introduction to Fluid Mechanics	3	C	
MAE 301: Applied Experimental Statistics	3	C	
MSE 250: Structure and Properties of Materials	3	C	
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	• Research and prepare for graduate school

	MAE 318: System Dynamics and Control I	4	C
	MEE 323: Computer-Aided Engineering II	2	C
	MEE 340: Heat Transfer	3	C
	Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)	3	
★	Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).		
	Term hours subtotal:	15	

- 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 400: Engineering Profession (L)	3	C	
Complete 2 courses: Upper Division Computational Mechanics Technical Elective	6	C	
Social-Behavioral Sciences (SB) AND Historical Awareness (H)	3		
Term hours subtotal:	15		

- For additional information regarding Upper Division Computational Mechanics Technical Electives, please go to: Upper Division Computational Mechanics Technical Electives.
- Plan for success using the Senior Guide.
- Use Handshake to apply for full-time positions.
- Complete an in person or virtual practice interview.

Term 8 108 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ MEE 489: Mechanical Engineering Design II	3	C	
AEE 471: Computational Fluid Dynamics OR MAE 404: Finite Elements in Engineering OR MAE 460: Applied Computational Fluid Dynamics	3	C	
MEE 491: Experimental Mechanical Engineering (L)	3	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 Computational Mechanics Technical Electives, please go to: Upper Division Computational Mechanics Technical Electives.

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

Computational Mechanics Technical Electives
AEE 360: Aerodynamics (L)
AEE 471: Computational Fluid Dynamics

CSE 205: Object-Oriented Programming and Data Structures (CS)

IEE 305: Information Systems Engineering (CS)

IEE 376: Operations Research Deterministic Techniques/Applications

MAE 404: Finite Elements in Engineering

MAE 460: Applied Computational Fluid Dynamics

MAE 501: Linear Algebra in Engineering

MAE 502: Partial Differential Equations in Engineering

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 494: Intro to FEA for Matl Design and Characterization

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.

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 2020 - 2021 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.