

















## 2024 - 2025 Major Map

### Aerospace Engineering (Astronautics), **BSE**

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

Term 1 0 - 16 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 MAT 265: Calculus for Engineers I (MATH OR MA)	3	C	<ul style="list-style-type: none"> <li>ASU 101 or college-specific equivalent First-Year Seminar required of all first-year students.</li> <li>FSE 100 required for first-year students and should be completed in the first semester.</li> <li>If ENG 105 is taken, a three hour applicable elective must also be taken prior to graduation. See advisor.</li> <li>Prep for success using the <b>First-Year Student Guide</b>.</li> <li>Join a <b>Fulton community</b>.</li> <li>Explore <b>engineering and technical professions</b>.</li> </ul>
ASU 101-AEE: The ASU Experience	1		
CHM 114: General Chemistry for Engineers (SCIT OR SQ) OR CHM 116: General Chemistry II (SCIT OR 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 OR SES 100: Introduction to Exploration (QTRS OR CS)	2-3	C	
Humanities, Arts and Design (HUAD)	3		
 Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	16-17		
Term 2 16 - 32 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 MAT 242: Elementary Linear Algebra	2	C	<ul style="list-style-type: none"> <li>Create a <b>Handshake</b> profile.</li> <li>Get involved with EPICS, the Generator Labs, and the <b>Fulton Start-Up Center</b>.</li> </ul>
 MAT 266: Calculus for Engineers II (MATH OR MA)	3	C	
 PHY 121: University Physics I: Mechanics (SCIT OR SQ)	3	C	
 PHY 122: University Physics Laboratory I (SCIT OR SQ)	1	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	
MAE 215: Introduction to Programming in MATLAB	1	C	
Sustainability (SUST)	3		
 Complete ENG 101 OR ENG 105 OR ENG 107 course(s).			
 Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:	16		
Term 3 32 - 46 Credit Hours <b>Critical course signified by</b> 	Hours	Minimum Grade	Notes
 MAE 201: Mechanics of Particles and Rigid Bodies I: Statics	3	C	<ul style="list-style-type: none"> <li>Prep for success using the <b>Sophomore Guide</b>.</li> </ul>
 MAT 267: Calculus for Engineers III (MATH OR MA)	3	C	
 MAT 275: Modern Differential Equations (MATH OR MA)	3	C	
 PHY 131: University Physics II: Electricity and Magnetism (SCIT OR SQ)	3	C	
 PHY 132: University Physics Laboratory II (SCIT OR SQ)	1	C	

MAE 214: Computer-Aided Engineering I	1	C	
❗ Complete CHM 114 OR CHM 116 course(s).			
❗ Complete First-Year Composition requirement.			
❗ Minimum 2.00 GPA ASU Cumulative.			
Complete Mathematics (MATH) 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	<ul style="list-style-type: none"> <li>Pursue an undergraduate research experience.</li> <li>Apply for internships.</li> <li>Attend career fairs and events.</li> </ul>
❗ MAE 213: Mechanics of Materials	3	C	
❗ MAE 242: Introduction to Fluid Mechanics	3	C	
EEE 202: Circuits I	4	C	
MAE 384: Advanced Mathematical Methods for Engineers (QTRS OR CS)	3	C	
Term hours subtotal:	16		
Term 5 62 - 78 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ AEE 360: Aerodynamics (L)	3	C	<ul style="list-style-type: none"> <li>Plan for success using the Junior Guide.</li> <li>Network at student organization competitions or professional societies.</li> </ul>
★ AEE 361: Aerodynamics Laboratory (L)	1	C	
★ MAE 241: Introduction to Thermodynamics	3	C	
★ MAE 301: Applied Experimental Statistics	3	C	
★ MAE 318: System Dynamics and Control I	3	C	
EEE 203: Signals and Systems I	3	C	
Term hours subtotal:	16		
Term 6 78 - 93 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ AEE 325: Aerospace Structures and Materials	3	C	<ul style="list-style-type: none"> <li>Choose an Upper Division HUAD Track Course from the list at the bottom of the major map.</li> <li>Research and prepare for graduate school.</li> <li>Apply for an engineering 4+1 program.</li> <li>Develop a professional profile online.</li> </ul>
★ AEE 362: High-Speed Aerodynamics (L)	3	C	
★ AEE 462: Space Vehicle Dynamics and Control	3	C	
EEE 350: Random Signal Analysis	3	C	
Upper Division HUAD Track Course	3		
Term hours subtotal:	15		
Term 7 93 - 108 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ AEE 445: Fundamentals of Spacecraft Design	3	C	<ul style="list-style-type: none"> <li>Choose an Upper Division SOBE Track Course from the list at the bottom of the major map.</li> <li>Plan for success using the Senior Guide.</li> <li>Use Handshake to apply for full-time positions.</li> <li>Complete an in-person or virtual practice interview.</li> </ul>
★ AEE 465: Rocket Propulsion	3	C	
EEE 455: Communication Systems OR EEE 459: Communication Networks	3	C	
Upper Division SOBE Track Course	3		
American Institutions (AMIT)	3		
Term hours subtotal:	15		
Term 8 108 - 120 Credit Hours Necessary course signified by ★	Hours	Minimum Grade	Notes
★ AEE 480: Space Systems Design	3	C	<ul style="list-style-type: none"> <li>For more information about Technical Electives, please visit: Upper Division Technical Electives.</li> </ul>
Upper Division Technical Elective	3	C	
Global Communities, Societies and Individuals (GCSI)	3		

- For more information about Upper Division Technical Elective options, please visit: [Upper Division Technical Electives](#).

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

Upper Division Technical Elective	Upper Division SOBE Track Course	Upper Division HUAD Track Course
AEE OR MAE OR MEE 3** Elective	PAF 311: Leadership and Change (SOBE OR SB)	ARC 434: Great Cities (HUAD OR (L or HU) & H)
AEE OR MAE OR MEE 4** Elective		
AST 321: Stellar and Planetary Astrophysics	PAF 410: Building Leadership Skills (SOBE OR SB)	BIS 345: Organizational Ethics (HUAD OR HU)
AST 322: Introduction to Galactic and Extragalactic Astrophysics	SWU 349: Stress Management Tools II (SOBE OR SB)	HPS 314: Philosophy of Science (HUAD OR HU)
BME 467: Tissue Engineering and Regenerative Medicine	SWU 350: Whole Person Health Across the Lifespan (SOBE OR SB)	HST 319: History of Aviation (HUAD OR SB & H)
BME 494: Wearable Devices for Sport, Health, and Wellness	POS 301: Empirical Political Inquiry (SOBE OR SB)	PHI 330: Theory of Knowledge (HUAD OR HU)
CHE 468: Polymer Principles and Processing	STS 304: Science, Technology and Society (SOBE OR SB)	REL 330: Native American Worldviews (HUAD OR HU & C)
CHE 478: Biomass Energy Conversion Technology		
CHE 494: Quantum Mechanical Simulations of Chemical Process or MSE 494: Quantum Mechanical Simulations of Chemical Process		
CEE 494: Airport Design		
CHE 494: Six Sigma Methodology/Engineering Experimentation		
CHM 325: Analytical Chemistry		
EEE 304: Signals and Systems II		
EEE 333: Hardware Design Languages and Programmable Logic		
EEE 334: Circuits II		
EEE 407: Digital Signal Processing		
EEE 473: Electrical Machinery		
EEE 480: Feedback Systems		
EEE 481: Computer-Controlled Systems		
EEE 498: Foundations Machine Learning: From Theory to Pract		
EGR 317: Humanitarian Engineering Project II		
EGR 433: Transforms and Systems Modeling		

FSE 301: Entrepreneurship and Value  
Creation

FSE 394: Engineering in Global Context

FSE 404: EPICS Gold: EPICS in Action

GLG 404: Fundamentals of Planetary  
Geology

IEE 300: Economic Analysis for Engineers

MAT 300: Mathematical Structures (L)

MAT 371: Advanced Calculus I

MAT 420: Scientific Computing

MAT 421: Applied Computational Methods  
(MATH OR CS)

MAT 423: Numerical Analysis I (MATH  
OR CS)

MAT 425: Numerical Analysis II (CS)

MAT 451: Mathematical Modeling (CS)

MSE 330: Thermodynamics of Materials

MSE 494: Quantum Mech Eng: SW and HW  
of Quantum Computers or MAE 494:  
Quantum Mech Eng: SW and HW of  
Quantum Computers

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 (QTRS OR  
CS)

SES 405: Exploration Systems Engineering

SES 407: Space Works II: Model, Fabricate,  
Test

SES 410: Senior Exploration Project I

SES 494: Modeling and Analysis of Space  
Thermal Systems

By approval only:

MAE 484: Internship

MAE 492: Honors Directed Study

MAE 493: Honors Thesis (L)

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 program petition prior to enrollment. Please check with your advisor.

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- **Total Hours:** 120
- **Upper Division Hours:** 45 minimum
- **University Undergraduate Graduation Requirements**

**Notes:**

Mathematics Placement Assessment score determines placement in first mathematics course.

General Studies designations listed next to courses on the major map were valid for the 2024 - 2025 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.