## 2018 - 2019 Major Map
### Aerospace Engineering (Aeronautics), BSE

**School/College:** Ira A. Fulton Schools of Engineering  
**Location:** Tempe campus

**ESAEROBSE**

### Term 1 0 - 16 Credit Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 101/102/105/107</td>
<td>First-Year Composition OR Advanced First-Year Composition OR First-Year Composition</td>
<td>3 C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 265</td>
<td>Calculus for Engineers I (MA)</td>
<td>3 C</td>
<td></td>
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<tr>
<td>ASU 101-AEE</td>
<td>The ASU Experience</td>
<td>1</td>
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<tr>
<td>CHM 114/116</td>
<td>General Chemistry for Engineers (SQ) OR General Chemistry II (SQ)</td>
<td>4 C</td>
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<tr>
<td>FSE 100</td>
<td>Introduction to Engineering</td>
<td>2 C</td>
<td></td>
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</tr>
<tr>
<td>HU AND C</td>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)</td>
<td>3</td>
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</table>

• Minimum 2.00 GPA ASU Cumulative.

**Term hours subtotal:** 16

### Term 2 16 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 101/102/105/107</td>
<td>First-Year Composition OR Advanced First-Year Composition OR First-Year Composition</td>
<td>3 C</td>
<td></td>
<td></td>
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<tr>
<td>MAT 242</td>
<td>Elementary Linear Algebra</td>
<td>2 C</td>
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<tr>
<td>MAT 266</td>
<td>Calculus for Engineers II (MA)</td>
<td>3 C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 121/122</td>
<td>University Physics I, Mechanics (SQ) OR University Physics Laboratory I (SQ)</td>
<td>3 C</td>
<td></td>
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</tr>
<tr>
<td>MAE 215</td>
<td>Introduction to Programming in MATLAB</td>
<td>1 C</td>
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</tr>
<tr>
<td>SB AND H</td>
<td>Social-Behavioral Sciences (SB) AND Historical Awareness (H)</td>
<td>3</td>
<td></td>
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</tr>
</tbody>
</table>

• Complete CHM 114 OR CHM 116 course(s).

• Minimum 2.00 GPA ASU Cumulative.

**Term hours subtotal:** 16

- 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 freshman students.
- ASU 101-AEE 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.
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.
MAE 267: Calculus for Engineers III (MA) | 3 | C | • 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 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.
MAE 213: Mechanics of Materials | 3 | C | • Apply for internships.
MAE 242: Introduction to Fluid Mechanics | 3 | C | • Attend career fairs and events.
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 - 76 Credit Hours | Necessary course signified by ⭐ | Hours | Minimum Grade | Notes
--- | --- | --- | --- | ---
AEE 360: Aerodynamics (L) | 4 | C | • Both AEE 360 and AEE 362 must be taken to secure Literacy and Critical Inquiry (L) General Studies credit.
MAE 301: Applied Experimental Statistics | 3 | C | • Plan for success using the Junior Guide.
MAE 318: System Dynamics and Control I | 4 | C | • Network at student organization competitions or professional societies.
Term hours subtotal: | 14 |  |  |

Term 6 76 - 93 Credit Hours | Necessary course signified by ⭐ | Hours | Minimum Grade | Notes
--- | --- | --- | --- | ---
AEE 344: Fundamentals of Aircraft Design | 3 | C | • Both AEE 362 and AEE 360 must be taken to secure Literacy and Critical Inquiry (L) General Studies credit.
AEE 313: Aircraft Dynamics and Control | 3 | C | • Research and prepare for graduate school.
AEE 325: Aerospace Structures and Materials | 4 | C | • Apply for an engineering 4+1 program.
AEE 362: High-Speed Aerodynamics (L) | 4 | C | • Develop a professional profile online.
Social-Behavioral Sciences (SB) AND Global Awareness (G) | 3 |  |  
Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s). |  |  |  
Term hours subtotal: | 17 |  |  |

Term 7 93 - 108 Credit Hours | Necessary course signified by ⭐ | Hours | Minimum Grade | Notes
--- | --- | --- | --- | ---
AEE 463: Aircraft Propulsion | 3 | C | • For additional information about Upper Division Technical Elective course options, please visit: Upper Division Technical Electives
AEE 415: Vibration Analysis | 3 | C | • Plan for success using the Senior Guide.
MAE 400: Engineering Profession (L) | 3 | C | • Use Handshake to apply for full-time positions.
Upper Division Technical Elective | 3 | C | • Complete an in-person or virtual practice interview.
Humanities, Arts and Design (HU) | 3 |  |  
Term hours subtotal: | 15 |  |  |
### Upper Division Technical Electives

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEE 426</td>
<td>Design of Aerospace Structures</td>
<td>3</td>
<td>C</td>
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<tr>
<td>AEE 465</td>
<td>Rocket Propulsion</td>
<td>3</td>
<td>C</td>
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<tr>
<td>AEE 466</td>
<td>Rotary Wing Aerodynamics and Performance</td>
<td>3</td>
<td>C</td>
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<tr>
<td>AEE 471</td>
<td>Computational Fluid Dynamics</td>
<td>3</td>
<td>C</td>
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<tr>
<td>MAE 341</td>
<td>Mechanism Analysis and Design</td>
<td>3</td>
<td>C</td>
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<tr>
<td>MAE 404</td>
<td>Finite Elements in Engineering</td>
<td>3</td>
<td>C</td>
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<tr>
<td>MAE 417</td>
<td>System Dynamics and Control II</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>MAE 436</td>
<td>Combustion</td>
<td>3</td>
<td>C</td>
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<td>MAE 455</td>
<td>Polymers and Composites</td>
<td>3</td>
<td>C</td>
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<tr>
<td>MEE 323</td>
<td>Computer-Aided Engineering II</td>
<td>3</td>
<td>C</td>
<td></td>
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<td>MEE 340</td>
<td>Heat Transfer</td>
<td>3</td>
<td>C</td>
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<tr>
<td>MEE 351</td>
<td>Manufacturing Processes</td>
<td>3</td>
<td>C</td>
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<td>MEE 434</td>
<td>Internal Combustion Engines</td>
<td>3</td>
<td>C</td>
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<td>MEE 440</td>
<td>Renewable Energy: Mechanical Systems</td>
<td>3</td>
<td>C</td>
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<td>MEE 441</td>
<td>Wind Energy</td>
<td>3</td>
<td>C</td>
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<td>MEE 472</td>
<td>Intermediate Fluid Mechanics</td>
<td>3</td>
<td>C</td>
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<td>MEE 482</td>
<td>Intermediate Thermodynamics</td>
<td>3</td>
<td>C</td>
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<tr>
<td>AST 321</td>
<td>Introduction to Planetary and Stellar Astrophysics (SQ)</td>
<td>3</td>
<td>C</td>
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<tr>
<td>AST 322</td>
<td>Introduction to Galactic and Extragalactic Astrophysics (SQ)</td>
<td>3</td>
<td>C</td>
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<tr>
<td>CEE 440</td>
<td>Hydrology</td>
<td>3</td>
<td>C</td>
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<tr>
<td>CHM 325</td>
<td>Analytical Chemistry</td>
<td>3</td>
<td>C</td>
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<tr>
<td>EEE 304</td>
<td>Signals and Systems II</td>
<td>3</td>
<td>C</td>
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- For additional information about Upper Division Technical Elective options, please visit: [Upper Division Technical Electives](#)
EEE 333: Hardware Design Languages and Programmable Logic
EEE 334: Circuits II
EEE 350: Random Signal Analysis
EEE 480: Feedback Systems
EEE 481: Computer-Controlled Systems
EGR 433: Transforms and Systems Modeling
FSE 301: Entrepreneurship and Value Creation
IEE 300: Economic Analysis for Engineers
MAT 300: Mathematical Structures (L)
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)
MSE 330: Thermodynamics of Materials
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
SES 405: Exploration Systems Engineering
SES 410: Senior Exploration Project I

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.
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)

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

First-Year Composition

General Studies designations listed on the major map are current for the 2018 - 2019 academic year.