# 2018 - 2019 Major Map

**Mechanical Engineering (Computational Mechanics), BSE**

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

<table>
<thead>
<tr>
<th>Term 1 0 - 16 Credit Hours</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>MAT 265: Calculus for Engineers I (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>ASU 101-MEE: The ASU Experience</td>
<td>1</td>
<td></td>
<td></td>
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<tr>
<td>CHM 114: General Chemistry for Engineers (SQ) OR CHM 116: General Chemistry II (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>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</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>FSE 100: Introduction to Engineering</td>
<td>2</td>
<td>C</td>
<td></td>
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<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
<td></td>
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<tr>
<td><strong>Minimum 2.00 GPA ASU Cumulative.</strong></td>
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</table>

Term hours subtotal: 16

**Notes:**  
- 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.

<table>
<thead>
<tr>
<th>Term 2 16 - 32 Credit Hours</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>ENG 101: First-Year Composition or ENG 102: First-Year Composition OR ENG 107: First-Year Composition or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>MAT 242: Elementary Linear Algebra</td>
<td>2</td>
<td>C</td>
<td></td>
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<tr>
<td>MAT 266: Calculus for Engineers II (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>PHY 121: University Physics I: Mechanics (SQ)</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>PHY 122: University Physics Laboratory I (SQ)</td>
<td>1</td>
<td>C</td>
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<tr>
<td>MAE 215: Introduction to Programming in MATLAB</td>
<td>1</td>
<td>C</td>
<td></td>
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<tr>
<td>PHI 103: Principles of Sound Reasoning (L or HU)</td>
<td>3</td>
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<tr>
<td><strong>Minimum 2.00 GPA ASU Cumulative.</strong></td>
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<tr>
<td>Complete CHM 114 OR CHM 116 course(s).</td>
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<tr>
<td>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</td>
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</table>

Term hours subtotal: 16

**Notes:**  
- Create a [Handshake profile](#).  
- Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.

<table>
<thead>
<tr>
<th>Term 3 32 - 48 Credit Hours</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Critical course signified by</strong></td>
<td></td>
<td></td>
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<tr>
<td>MAE 201: Mechanics of Particles and Rigid Bodies I: Statics</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MAT 267: Calculus for Engineers III (MA)</td>
<td>3</td>
<td>C</td>
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</tbody>
</table>

**Notes:**  
- Prep for success using the [Sophomore Guide](#).
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
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
CSE 100: Principles of Programming with C++ (CS) OR CSE 110: Principles of Programming with Java (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
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

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 C

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 practice interview.

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.

Pursue an undergraduate research experience.
Apply for internships.
Attend career fairs and events.

Plan for success using the Junior Guide.
Network at student organization competitions or professional societies.

Research and prepare for graduate school
Apply for an engineering 4+1 program.
Develop a professional profile online.
<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEE 489: Mechanical Engineering Design II</td>
<td>3</td>
<td>C</td>
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</tr>
<tr>
<td>AEE 471: Computational Fluid Dynamics OR MAE 404: Finite Elements in Engineering</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MEE 491: Experimental Mechanical Engineering (L)</td>
<td>3</td>
<td>C</td>
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</tr>
<tr>
<td>Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)</td>
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*Term hours subtotal: 12

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

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**Computational Mechanics Technical Electives**

- AEE 360: Aerodynamics (L)
- CSE 205: Object-Oriented Programming and Data Structures (CS)
- IEE 305: Information Systems Engineering (CS)
- IEE 376: Operations Research Deterministic Techniques/Applications
- MAE 406: Advanced CAE Simulation
- MAT 362: Advanced Mathematics for Engineers and Scientists
- 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

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

**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 on the major map are current for the 2018 - 2019 academic year.