## 2020 - 2021 Major Map

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

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

### 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>MAT 265: Calculus for Engineers I (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<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>
<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</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>FSE 100: Introduction to Engineering</td>
<td>2</td>
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</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Global Awareness (G)</td>
<td>3</td>
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<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
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</table>

**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 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.

### 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: First-Year Composition or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 242: Elementary Linear Algebra</td>
<td>2</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 266: Calculus for Engineers II (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 121: University Physics I. Mechanics (SQ)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 122: University Physics Laboratory I (SQ)</td>
<td>1</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAE 215: Introduction to Programming in MATLAB</td>
<td>1</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHI 103: Principles of Sound Reasoning (L, or HU)</td>
<td>3</td>
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<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
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</tbody>
</table>

Complete ENG 101 OR ENG 105 OR ENG 107 course(s).

**Term hours subtotal:** 16

- Create a Handshake profile.
- Get involved with EPICS, the Generator Labs, and the Fulton Start-Up Center.
<table>
<thead>
<tr>
<th>Term 3 32 - 46 Credit Hours</th>
<th>Critical course signified by ⚪</th>
<th>Hours</th>
<th>Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 201: Mechanics of Particles and Rigid Bodies I: Statics</td>
<td>3</td>
<td>C</td>
<td>• Prep for success using the Sophomore Guide.</td>
<td></td>
</tr>
<tr>
<td>MAT 267: Calculus for Engineers III (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 275: Modern Differential Equations (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 131: University Physics II: Electricity and Magnetism (SQ)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAE 214: Computer-Aided Engineering I</td>
<td>1</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PHY 132: University Physics Laboratory II (SQ)</td>
<td>1</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete CHM 114 OR CHM 116 course(s).</td>
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<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
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<tr>
<td>Complete Mathematics (MA) requirement.</td>
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<tr>
<td>Term hours subtotal:</td>
<td>14</td>
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<table>
<thead>
<tr>
<th>Term 4 46 - 62 Credit Hours</th>
<th>Critical course signified by ⚪</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAE 202: Mechanics of Particles and Rigid Bodies II: Dynamics</td>
<td>3</td>
<td>C</td>
<td>• Pursue an undergraduate research experience.</td>
<td></td>
</tr>
<tr>
<td>MAE 213: Mechanics of Materials</td>
<td>3</td>
<td>C</td>
<td>• Apply for internships.</td>
<td></td>
</tr>
<tr>
<td>MAE 241: Introduction to Thermodynamics</td>
<td>3</td>
<td>C</td>
<td>• Attend career fairs and events.</td>
<td></td>
</tr>
<tr>
<td>EEE 202: Circuits I</td>
<td>4</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAE 384: Advanced Mathematical Methods for Engineers (CS)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>16</td>
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<table>
<thead>
<tr>
<th>Term 5 62 - 78 Credit Hours</th>
<th>Necessary course signified by ⭐</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEE 322: Structural Mechanics</td>
<td>4</td>
<td>C</td>
<td>• Plan for success using the Junior Guide.</td>
<td></td>
</tr>
<tr>
<td>CSE 100: Principles of Programming with C++ (CS) OR CSE 110: Principles of Programming (CS)</td>
<td>3</td>
<td>C</td>
<td>• Network at student organization competitions or professional societies.</td>
<td></td>
</tr>
<tr>
<td>MAE 242: Introduction to Fluid Mechanics</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAE 301: Applied Experimental Statistics</td>
<td>3</td>
<td>C</td>
<td></td>
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<tr>
<td>MSE 250: Structure and Properties of Materials</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>16</td>
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<table>
<thead>
<tr>
<th>Term 6 78 - 93 Credit Hours</th>
<th>Necessary course signified by ⭐</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEE 342: Principles of Mechanical Design</td>
<td>3</td>
<td>C</td>
<td>• Research and prepare for graduate school</td>
<td></td>
</tr>
<tr>
<td>MAE 318: System Dynamics and Control I</td>
<td>4</td>
<td>C</td>
<td>• Apply for an engineering 4+1 program</td>
<td></td>
</tr>
<tr>
<td>MEE 323: Computer-Aided Engineering II</td>
<td>2</td>
<td>C</td>
<td>• Develop a professional profile online.</td>
<td></td>
</tr>
<tr>
<td>MEE 340: Heat Transfer</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete Cultural Diversity in the U.S. (C) AND Global Awareness (G) AND Historical Awareness (H) course(s).</td>
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<tr>
<td>Term hours subtotal:</td>
<td>15</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Term 7 93 - 108 Credit Hours</th>
<th>Necessary course signified by ⭐</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEE 488: Mechanical Engineering Design I</td>
<td>3</td>
<td>C</td>
<td>• For additional information regarding Upper Division Computational Mechanics Technical Electives, please go to: Upper Division Computational Mechanics Technical Electives.</td>
<td></td>
</tr>
<tr>
<td>MAE 400: Engineering Profession (L)</td>
<td>3</td>
<td>C</td>
<td>• Plan for success using the Senior Guide.</td>
<td></td>
</tr>
<tr>
<td>Complete 2 courses:</td>
<td></td>
<td></td>
<td>• Use Handshake to apply for full-time positions.</td>
<td></td>
</tr>
<tr>
<td>Upper Division Computational Mechanics Technical Elective</td>
<td>6</td>
<td>C</td>
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</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Historical Awareness (H)</td>
<td>3</td>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Term hours subtotal:</td>
<td>15</td>
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</table>
## Computational Mechanics Technical Electives

<table>
<thead>
<tr>
<th>Course</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEE 360: Aerodynamics (L)</td>
<td>3</td>
<td></td>
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</tr>
<tr>
<td>AEE 471: Computational Fluid Dynamics OR MAE 404: Finite Elements in Engineering OR MAE 460: Applied Computational Fluid Dynamics</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MEE 489: Mechanical Engineering Design II</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>
<td></td>
</tr>
<tr>
<td>Upper Division Humanities, Arts and Design (HU) OR Upper Division Social-Behavioral Sciences (SB)</td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Term hours subtotal: 12

* For additional information about Upper Division Computational Mechanics Technical Electives, please go to: Upper Division Computational Mechanics Technical Electives.
General Studies designations listed on the major map are current for the 2020 - 2021 academic year.

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 2020 - 2021 academic year.

<table>
<thead>
<tr>
<th>Total Hours: 120</th>
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</thead>
<tbody>
<tr>
<td>Upper Division Hours: 45 minimum</td>
</tr>
<tr>
<td>Major GPA: 2.00 minimum</td>
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<tr>
<td>Cumulative GPA: 2.00 minimum</td>
</tr>
<tr>
<td>Total hrs at ASU: 30 minimum</td>
</tr>
<tr>
<td>Hrs Resident Credit for Academic Recognition: 56 minimum</td>
</tr>
<tr>
<td>Total Community College Hrs: 64 maximum</td>
</tr>
</tbody>
</table>

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)