## 2013 - 2014 Major Map
### Materials Science and Engineering, BSE

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

### Term 1 - 16 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHM 114: General Chemistry for Engineers (SQ) OR CHM 113: General Chemistry I (SQ) AND CHM 116: General Chemistry II (SQ)</td>
<td>4</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>FSE 100: Introduction to Engineering</td>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 265: Calculus for Engineers I (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ASU 101-MSE: The ASU Experience</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C) OR Social-Behavioral Sciences (SB) AND Global Awareness (G) OR Social-Behavioral Sciences (SB) AND Historical Awareness (H)</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

### Term 2 - 16 - 32 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 266: Calculus for Engineers II (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MSE 250: Structure and Properties of Materials</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 121: University Physics I: Mechanics (SQ)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 122: University Physics Laboratory I (SQ)</td>
<td>1</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Humanities, Arts and Design (HU) AND Global Awareness (G) OR Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
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<tr>
<td>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</td>
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<tr>
<td>Minimum 2.00 GPA ASU Cumulative.</td>
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</table>

**Term hours subtotal:** 16

### Term 3 - 32 - 48 Credit Hours

<table>
<thead>
<tr>
<th>Course Description</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAT 267: Calculus for Engineers III (MA)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 131: University Physics II: Electricity and Magnetism (SQ)</td>
<td>3</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>PHY 132: University Physics Laboratory II (SQ)</td>
<td>1</td>
<td>C</td>
<td></td>
</tr>
<tr>
<td>MSE 215: Materials Synthesis</td>
<td>3</td>
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</tr>
<tr>
<td>Math or Science Elective</td>
<td>3-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social-Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C) OR Social-Behavioral Sciences (SB) AND Global Awareness (G) OR Social-Behavioral Sciences (SB) AND Historical Awareness (H)</td>
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</tbody>
</table>

**Term hours subtotal:** 16

- An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses.
- ASU Math Placement Exam score determines placement in Mathematics course.
- ASU 101 or College specific equivalent First Year Seminar required of all freshman students.
- If student takes ENG 105 a 3 hr applicable elective must also be taken prior to graduation. See Advisor.
Minimum 2.00 GPA ASU Cumulative.

Complete FSE 100 AND CHM 114 OR CHM 116 AND MAT 265 AND MAT 266 AND MAT 267 AND PHY 121 AND PHY 122 AND PHY 131 AND PHY 132 AND MSE 250 course(s).

Term hours subtotal: 16-17

<table>
<thead>
<tr>
<th>Term 4 48 - 63 Credit Hours</th>
<th>Critical course signified by 🟠</th>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 211: Introduction to Mechanics of Materials</td>
<td>3</td>
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<tr>
<td>IEE 380: Probability and Statistics for Engineering Problem Solving (CS)</td>
<td>3</td>
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<tr>
<td>MAT 275: Modern Differential Equations (MA)</td>
<td>3</td>
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<tr>
<td>MAT 343: Applied Linear Algebra</td>
<td>3</td>
<td></td>
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<tr>
<td>PHY 241: University Physics III</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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<tr>
<td>Term hours subtotal:</td>
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<td>15</td>
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**Term 5 63 - 79 Credit Hours** Necessary course signified by 🟠

<table>
<thead>
<tr>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>MSE 355: Structure and Defects</td>
<td>3</td>
<td>C</td>
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<tr>
<td>MSE 330: Thermodynamics of Materials</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MSE 356: Structures, Properties, and Defects Lab</td>
<td>1</td>
<td></td>
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<tr>
<td>MSE 415: Mathematical and Computer Methods in Materials (CS)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Technical Elective</td>
<td>3</td>
<td></td>
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<tr>
<td>Humanities, Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Humanities, Arts and Design (HU) AND Global Awareness (G) OR Humanities, Arts and Design (HU) AND Historical Awareness (H)</td>
<td>3</td>
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</tr>
<tr>
<td>Term hours subtotal:</td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

**Term 6 79 - 93 Credit Hours** Necessary course signified by 🟠

<table>
<thead>
<tr>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 420: Physical Metallurgy</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MSE 335: Materials Kinetics and Processing</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MSE 421: Physical Metallurgy Laboratory</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>MSE 450: Introduction to Materials Characterization</td>
<td>3</td>
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<tr>
<td>MSE 451: Introduction to Materials Characterization Lab</td>
<td>1</td>
<td></td>
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<tr>
<td>MSE 458: Introduction to Electronic, Magnetic, and Optical Properties</td>
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<tr>
<td>Term hours subtotal:</td>
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<td>14</td>
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**Term 7 93 - 105 Credit Hours** Necessary course signified by 🟠

<table>
<thead>
<tr>
<th>Hours</th>
<th>Minimum Grade</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>MSE 482: Materials Engineering Design (L)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MSE 440: Mechanical Properties of Solids</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MSE 470: Polymers and Composites</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MSE 471: Introduction to Ceramics</td>
<td>3</td>
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</tbody>
</table>

* For a list of Technical Elective course options, please go to: [http://engineering.asu.edu/semte/materials_B.html](http://engineering.asu.edu/semte/materials_B.html).
General Studies designations listed on the major map are current for the 2013 - 2014 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 Awareness Requirements listed on the major map are current for the 2013 - 2014 academic year.

<table>
<thead>
<tr>
<th>Term 8 105 - 120 Credit Hours</th>
<th>Necessary course signified by</th>
<th>Hours</th>
<th>Minimum Grade</th>
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</thead>
<tbody>
<tr>
<td>MSE 490: Capstone Design Project II (L)</td>
<td>⚫</td>
<td>3</td>
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<tr>
<td>Advanced Science Elective</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Complete 2 courses:</td>
<td></td>
<td>6</td>
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<tr>
<td>Technical Elective</td>
<td></td>
<td></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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<td>3</td>
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</tr>
<tr>
<td>Term hours subtotal:</td>
<td></td>
<td>15</td>
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</tbody>
</table>

- For a list of Advanced Science Elective course options, please go to: [http://engineering.asu.edu/semte/materials_B.html](http://engineering.asu.edu/semte/materials_B.html).
- For a list of Technical Elective course options, please go to: [http://engineering.asu.edu/semte/materials_B.html](http://engineering.asu.edu/semte/materials_B.html).

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

**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)