













2014 - 2015 Major Map  
Materials Science & Engineering, BSE

Ira A. Fulton Schools of Engineering  
Tempe campus  
ESMSEBSE







Term 1	0 - 16 Credit Hours	Critical course signified by 	Hours	Minimum Grade	Notes
	CHM 114: General Chemistry for Engineers (SQ) OR CHM 113: General Chemistry I (SQ) AND CHM 116: General Chemistry II (SQ)		4	C	<ul style="list-style-type: none"> <li>An SAT, ACT, Accuplacer, or TOEFL score determines placement into first-year composition courses.</li> <li>ASU Math Placement Exam score determines placement in Mathematics course.</li> <li>ASU 101 or College specific equivalent First Year Seminar required of all freshman students.</li> <li>If student takes ENG 105 a 3 hr applicable elective must also be taken prior to graduation. See Advisor.</li> </ul>
	FSE 100: Introduction to Engineering		2		
	MAT 265: Calculus for Engineers I (MA)		3	C	
	ASU 101-MSE: The ASU Experience		1		
	ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition		3	C	
	Social and Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C) OR Social and Behavioral Sciences (SB) AND Global Awareness (G) OR Social and Behavioral Sciences (SB) AND Historical Awareness (H)		3		
	Minimum 2.00 GPA ASU Cumulative.				
	Term hours subtotal:		16		

Mesa Community College	
Course	Hours
CHM 152 and CHM 152LL	4
ECE 102 and ECE 103	2 2
MAT 221 or MAT 220	4 5
ENG 101 or ENG 102 OR ENG 107 or ENG 108	3
General Studies (SB-C OR SB-G OR SB-H)	3



\*\*\* ECE 102 and ECE 103 satisfy both ASU 101 and FSE 100

Term 2	17 - 32 Credit Hours	Critical course signified by 	Hours	Minimum Grade	Notes
	MAT 266: Calculus for Engineers II (MA)		3	C	<ul style="list-style-type: none"> <li>Complete ENG 101 OR ENG 105 OR ENG 107 course(s).</li> <li>Minimum 2.00 GPA ASU Cumulative.</li> </ul>
	MSE 250: Structure and Properties of Materials		3	C	
	PHY 121: University Physics I: Mechanics (SQ)		3	C	
	PHY 122: University Physics Laboratory I (SQ)		1	C	
	ENG 101 or ENG 102: First-Year Composition OR ENG 105: Advanced First-Year Composition OR ENG 107 or ENG 108: First-Year Composition		3	C	
	Humanities, Fine Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Humanities, Fine Arts and Design (HU) AND Global Awareness (G) OR Humanities, Fine Arts and Design (HU) AND Historical Awareness (H)		3		
	Complete ENG 101 OR ENG 105 OR ENG 107 course(s).				
	Minimum 2.00 GPA ASU Cumulative.				
	Term hours subtotal:		16		


Mesa Community College	
Course	Hours
MAT 231 or MAT 230	4 5
PHY 121	4
ENG 101 or ENG 102 OR ENG 107 or ENG 108	3
General Studies (HU-C OR HU-G OR HU-H)	3

Term 3	33 - 48 Credit Hours	Critical course signified by 	Hours	Minimum Grade	Notes
	MAT 267: Calculus for Engineers III (MA)		3	C	<ul style="list-style-type: none"> <li>For a list of Math or Science Elective course options, please go to: <a href="http://engineering.asu.edu/semte/materials_B.html">http://engineering.asu.edu/semte/materials_B.html</a>.</li> </ul>
	PHY 131: University Physics II: Electricity and Magnetism (SQ)		3	C	
	PHY 132: University Physics Laboratory II (SQ)		1	C	
	MSE 215: Materials Synthesis		3		
	Math or Science Elective		3-4		
	Social and Behavioral Sciences (SB) AND Cultural Diversity in the U.S. (C) OR Social and Behavioral Sciences (SB) AND Global Awareness (G) OR Social and Behavioral Sciences (SB) AND Historical Awareness (H)		3		
	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		


Mesa Community College	
Course	Hours
MAT 241 or MAT 240	4 5
PHY 131	4
AST 111 or GLG 101 or CHM 151 and CHM 151LL	3 4
General Studies (SB-C OR SB-G OR SB-H)	3


Term 4	49 - 63 Credit Hours	Critical course signified by	Hours	Minimum Grade	Notes
		 MSE 211: Introduction to Mechanics of Materials	3		
		IEE 380: Probability and Statistics for Engineering Problem Solving (CS)	3		
		MAT 275: Modern Differential Equations (MA)	3		
		MAT 343: Applied Linear Algebra	3		
		PHY 241: University Physics III	3		
		 Minimum 2.00 GPA ASU Cumulative.			
Term hours subtotal:			15		


Mesa Community College	
Course	Hours
MAT 277	3
PHY 241	4

Term 5	64 - 79 Credit Hours	Necessary course signified by	Hours	Minimum Grade	Notes
		 MSE 355: Structure and Defects	3	C	<ul style="list-style-type: none"> <li>For a list of Technical Elective course options, please go to: <a href="http://engineering.asu.edu/semte/materials_B.html">http://engineering.asu.edu/semte/materials_B.html</a>.</li> </ul>
		MSE 330: Thermodynamics of Materials	3		
		MSE 356: Structures, Properties, and Defects Lab	1		
		MSE 415: Mathematical and Computer Methods in Materials (CS)	3		
		Technical Elective	3		
		Humanities, Fine Arts and Design (HU) AND Cultural Diversity in the U.S. (C) OR Humanities, Fine Arts and Design (HU) AND Global Awareness (G) OR Humanities, Fine Arts and Design (HU) AND Historical Awareness (H)	3		
Term hours subtotal:			16		

Mesa Community College	
Course	Hours
General Studies (HU-C OR HU-G OR HU-H)	3

Term 6	80 - 93 Credit Hours	Necessary course signified by	Hours	Minimum Grade	Notes
		 MSE 420: Physical Metallurgy	3		
		MSE 335: Materials Kinetics and Processing	3		
		MSE 421: Physical Metallurgy Laboratory	1		
		MSE 450: Introduction to Materials Characterization	3		
		MSE 451: Introduction to Materials Characterization Lab	1		
		MSE 458: Introduction to Electronic, Magnetic, and Optical Properties	3		
Term hours subtotal:			14		

Term 7	94 - 105 Credit Hours	Necessary course signified by	Hours	Minimum Grade	Notes
		 MSE 482: Materials Engineering Design (L)	3		
		MSE 440: Mechanical Properties of Solids	3		
		MSE 470: Polymers and Composites	3		
		MSE 471: Introduction to Ceramics	3		
Term hours subtotal:			12		

Term 8	106 - 120 Credit Hours	Necessary course signified by	Hours	Minimum Grade	Notes
		 MSE 490: Capstone Design Project II (L)	3		<ul style="list-style-type: none"> <li>For a list of Advanced Science Elective course options, please go to: <a href="http://engineering.asu.edu/semte/materials_B.html">http://engineering.asu.edu/semte/materials_B.html</a>.</li> <li>For a list of Technical Elective course options, please go to: <a href="http://engineering.asu.edu/semte/materials_B.html">http://engineering.asu.edu/semte/materials_B.html</a>.</li> </ul>
		Advanced Science Elective	3		
		Complete 2 courses: Technical Elective	6		
		Upper Division Humanities, Fine Arts and Design (HU) OR Upper Division Social and Behavioral Sciences (SB)	3		
Term hours subtotal:			15		

- For a list of Math or Science Elective course options, Advanced Science Elective course options, or Technical

Elective course options, please go to: [http://engineering.asu.edu/semte/materials\\_B.html](http://engineering.asu.edu/semte/materials_B.html).

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, Fine Arts and Design (HU)
- Social and 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 2014 - 2015 academic year.