

# MSE

## Material Science Engineering

Plan of Study: **Sophomore** Year Start

University of Washington

<https://mse.washington.edu/student/undergraduate>

Email: [askmse@uw.edu](mailto:askmse@uw.edu)

**Schedule an Advising Appointment:**

<https://mse.washington.edu/student/undergraduate/advising>

## Key

◆ = Admission Requirements – to be completed before applying at the end of Winter quarter Sophomore year

◆ = Enrollment or Satisfactory Progress Requirements – to be completed before Fall quarter of Junior year

<b>Mathematics (24cr total required)</b>			
◆ <b>MATH 124, 125, 126 - Calculus with Analytical Geometry I, II, III (15cr) or honors equivalents</b>	<input type="checkbox"/>	◆ <b>AMATH 301 - Beginning Scientific Computing (4cr)</b> [pr: MATH 125] <u>OR</u> CSE 142 - Computer Programming I (4cr) <u>OR</u> CSE 122 - Intro to Computer Programming II (4cr)	<input type="checkbox"/>
◆ <b>MATH 207/307 - Introduction to Differential Equations (3cr)</b> [pr: MATH 125] or Honors Calculus sequence	<input type="checkbox"/>	Eight credits from the Eng. Fund Elective list at <a href="https://mse.washington.edu/current/undergrad/courses">https://mse.washington.edu/current/undergrad/courses</a>	<input type="checkbox"/>
MATH 208/308 - Matrix Algebra with Applications (3cr) [pr: MATH 126] or Honors Calculus sequence	<input type="checkbox"/>	<b>Departmental Core (54cr)</b>	
<b>One course from the following:</b> IND E 315; STAT 390; MATH 209/309; MATH 224/324; MATH 318.	<input type="checkbox"/>	MSE 311 – Integrated Undergraduate Lab. I (3cr)	<input type="checkbox"/>
Students who complete the honors calculus sequence will need to complete additional MATH/STAT/INDE courses to reach 24 credits.	<input type="checkbox"/>	MSE 312 – Integrated Undergraduate Lab. II (3cr)	<input type="checkbox"/>
<b>Sciences (31cr required)</b>		MSE 313 – Integrated Undergraduate Lab III (3cr)	<input type="checkbox"/>
◆ <b>CHEM 142 - General Chemistry (5cr) or honors/accel equiv</b>	<input type="checkbox"/>	MSE 310 – Introduction to MSE (3cr)	<input type="checkbox"/>
◆ <b>CHEM 152 - General Chemistry (5cr) or honors/accel equiv</b>	<input type="checkbox"/>	MSE 321 – Thermodynamics and Phase Equilibrium (4cr)	<input type="checkbox"/>
◆ <b>PHYS 121/141 - Mechanics (5cr)</b>	<input type="checkbox"/>	MSE 331 – Crystallography and Structure (3cr)	<input type="checkbox"/>
◆ <b>PHYS 122/142 - Electromagnetism (5cr)</b> [pr: MATH 125]	<input type="checkbox"/>	MSE 399 – Undergraduate Research Seminar (1cr)	<input type="checkbox"/>
PHYS 123/143 - Waves (5cr) [pr: MATH 126]	<input type="checkbox"/>	MSE 322 – Kinetics and Microstructural Evolution (4cr)	<input type="checkbox"/>
Two elective courses: From science elective list at <a href="https://mse.washington.edu/current/undergrad/courses">https://mse.washington.edu/current/undergrad/courses</a>	<input type="checkbox"/>	MSE 342 – Materials Processing I (3cr)	<input type="checkbox"/>
<b>Engineering General Education Requirements (36cr)</b>		MSE 351 – Electronic Properties of Materials (3cr)	<input type="checkbox"/>
<i>Written and Oral Communication(12cr):</i>		MSE 333 – Materials Characterization (3cr)	<input type="checkbox"/>
◆ <b>English Composition (5cr)</b>	<input type="checkbox"/>	MSE 352 – Functional Properties of Materials I (3cr)	<input type="checkbox"/>
ENGR 231 – Introduction to Technical Comm. (3cr)	<input type="checkbox"/>	MSE 362 – Mechanical Behavior of Materials I (3cr)	<input type="checkbox"/>
MSE 311, MSE 312, MSE 313 as W courses (4 cr requirement)	<input type="checkbox"/>	MSE 499 – Senior Project (4cr)	<input type="checkbox"/>
<i>Areas of Knowledge (24cr):</i>		MSE 442 – Materials Processing II (3cr)	<input type="checkbox"/>
Visual, Literary & Performing Arts-VLPA (10cr)	<input type="checkbox"/>	MSE 491 – Design in Materials Engineering I (2cr)	<input type="checkbox"/>
Individuals & Society-I&S (10cr)	<input type="checkbox"/>	MSE 431 – Failure Analysis and Durability of Materials (3cr)	<input type="checkbox"/>
VLPA or I&S (4cr)	<input type="checkbox"/>	MSE 492 – Design in Materials Engineering II (3cr)	<input type="checkbox"/>
Diversity-DIV (3cr) – (choose an overlap with VLPA/I&S course)	<input type="checkbox"/>	<b>MSE Technical Electives (15cr)</b>	
<b>Engineering Fundamentals (24cr)</b>		See <a href="https://mse.washington.edu/current/undergrad/courses">https://mse.washington.edu/current/undergrad/courses</a> for list of eligible courses.	<input type="checkbox"/>
AA 210 - Engineering Statics (4cr) [pr: MATH 126; PHYS 121]	<input type="checkbox"/>	Wondering what technical electives to select? Check out MSE Concentration Areas:	
CEE 220 - Intro to Mechanics of Materials (4cr) [pr: AA 210]	<input type="checkbox"/>	<a href="https://mse.washington.edu/current/undergrad/concentration-areas">https://mse.washington.edu/current/undergrad/concentration-areas</a>	
◆ <b>MSE 170 – Fundamentals of Materials Science (4cr)</b> [pr: CHEM 142]	<input type="checkbox"/>	<b>Total credits required for graduation: 180 cr</b>	

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## Materials Science & Engineering Advising

Office: 302A Roberts Hall, Box 352120

Seattle, WA 98195-2120

Phone: (206) 616-6581

**Schedule an Advising Appointment:**

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This is a sample four-year plan for ENGRUD students who start in MSE Autumn quarter of Sophomore year.

*\*\*Student completing the Nanoscience and Molecular Engineering (NME) degree option must enroll in NME 220+NME 221 Spring sophomore year, NME 321 Spring junior year, and NME 421 Spring senior year*

	Autumn Quarter	Cr	Winter Quarter	Cr	Spring Quarter	Cr
Freshman	◆ MATH 124 – Calculus with Analytical Geometry I	5	◆ MATH 125 – Calculus with Analytical Geometry II	5	◆ MATH 126 – Calculus with Analytical Geometry III	5
	◆ CHEM 142 – General Chemistry	5	◆ CHEM 152 – General Chemistry	5	◆ PHYS 121 – Mechanics	5
	◆ English Composition	5	VLPA/I&S	5		
	ENGR 101 (ENGRUD only)	1			◆ MSE 170 – Fundamentals of Materials Science	4
	<b>Qtr. Total:</b>	<b>15-16</b>	<b>Qtr. Total:</b>	<b>15</b>	<b>Qtr. Total:</b>	<b>14</b>
Sophomore	◆ PHYS 122 – Electromagnetism	5	PHYS 123 – Waves	5	◆ MATH 207/307 – Differential Equations	3
	◆ AMATH 301 – Sci Computing (OR CSE 142 Programming I OR CSE 122 Intro to Programming II)	4	VLPA/I&S	5	CEE 220 – Mechanics of Materials [Course Prereq. is AA 210]	4
	VLPA/I&S	4	AA 210 – Engineering Statics	4	VLPA/I&S	5
	MSE 311 – Integrated Undergraduate Lab I	3	MSE 312 – Integrated Undergrad Lab II	3	MSE 313 – Integrated Undergrad Lab III	3
	<b>Qtr. Total:</b>	<b>16</b>	<b>Qtr. Total:</b>	<b>17</b>	<b>Qtr. Total:</b>	<b>15</b>
Junior	Autumn Quarter	Cr	Winter Quarter	Cr	Spring Quarter **	Cr
	MSE 310 – Introduction to MSE	3	MSE 322 – Kinetics & Microstructural Evolution	4	MSE 499 - Senior Project	1
	MSE 321 – Thermodynamics & Phase Equilibrium	4	MSE 342 – Materials Processing I	3	MSE 333 – Materials Characterization	3
	MSE 331 – Crystallography & Structure	3	MSE 351 – Electron Properties of Materials	3	MSE 352 – Functional Properties of Materials	3
	MSE 399 – UG Research Seminar	1	ENGR 231 – Introduction to Technical Communication	3	MSE 362 – Mechanical Behavior of Materials I	3
	MATH 208/308 – Matrix Algebra	3	Science Elective	3	MATH Elective	3
	<b>Qtr. Total:</b>	<b>14</b>	<b>Qtr. Total:</b>	<b>16</b>	<b>Qtr. Total:</b>	<b>13</b>
Senior	Autumn Quarter	Cr	Winter Quarter	Cr	Spring Quarter **	Cr
	MSE 442 – Materials Processing II	3	MSE 431 – Failure Analysis [Course Prereq. is CEE 220]	3	MSE 492 – Materials Design II	3
	MSE 499 – Senior Project	2-3	MSE 491 – Materials Design I	2	MSE Technical Elective	3
	MSE Technical Elective	3	MSE 499 – Senior Project	0-1	Science Elective	3
	MSE Technical Elective	3	MSE Technical Elective	3	VLPA/I&S	5
	Engineering Elective	4	MSE Technical Elective	3		
			Engineering Elective	4		
<b>Qtr. Total:</b>	<b>15-16</b>	<b>Qtr. Total:</b>	<b>15-16</b>	<b>Qtr. Total:</b>	<b>14</b>	