

MSE

Material Science Engineering
Graduation Requirements
University of Washington
<https://mse.washington.edu>

ENGRUD Requirement Sheet – Key

◆ = Placement Requirements

Placement Periods

Placement 1 = July 1 at end of first year
Placement 2 = January 15 of second year
Placement 3 = July 1 at end of second year

Mathematics (24cr)	
◆ MATH 124, 125, 126 - Calculus with Analytical Geometry I, II, III (15cr)	<input type="checkbox"/>
MATH 307 - Introduction to Differential Equations (3cr) [pr: MATH 125]	<input type="checkbox"/>
MATH 308 - Matrix Algebra with Applications (3cr) [pr: MATH 126]	<input type="checkbox"/>
One course from the following: MATH 324; IND E 315; MATH 309; STAT 390	<input type="checkbox"/>
Sciences (31cr – 35cr)	
◆ CHEM 142 - General Chemistry (5cr)	<input type="checkbox"/>
◆ CHEM 152 - General Chemistry (5cr)	<input type="checkbox"/>
◆ PHYS 121 - Mechanics (5cr)	<input type="checkbox"/>
PHYS 122 - Electromagnetism (5cr) [pr: MATH 125]	<input type="checkbox"/>
PHYS 123 - Waves (5cr) [pr: MATH 126]	<input type="checkbox"/>
Two courses from the following: BIOL 180 (5cr), 200, 220; CHEM 162, 223, 237, 238, 239, 335, 336, 337; PHYS 224, 225, 226, 227, 228	<input type="checkbox"/>
Engineering General Education Requirements (32cr)	
<i>Written and Oral Communication(8cr):</i>	
◆ English Composition (5cr)	<input type="checkbox"/>
ENGR 231 - Introduction to Technical Communication (3cr)	<input type="checkbox"/>
<i>Areas of Knowledge:</i>	
Visual, Literary & Performing Arts - VLPA (10cr)	<input type="checkbox"/>
Individuals & Society - I&S (10cr)	<input type="checkbox"/>
VLPA or I&S (4cr)	<input type="checkbox"/>
Diversity -DIV (3cr) - (may overlap with VLPA/I&S)	<input type="checkbox"/>
Engineering Fundamentals (24cr)	
AA 210 - Engineering Statics (4cr) [pr: MATH 126; PHYS 121]	<input type="checkbox"/>
CEE 220 - Intro to Mechanics of Materials (4cr) [pr: AA 210]	<input type="checkbox"/>
MSE 170 - Fundamentals of Materials Science (4cr) [pr: CHEM 142]	<input type="checkbox"/>
AMATH 301 - Beginning Scientific Computing (4cr) [pr: either MATH 125, Q SCI 292, or MATH 135] <u>OR</u> CSE 142-Computer Programming I (4cr)	<input type="checkbox"/>
Two of the following: AA 260 or CHEM 325, EE 215, IND E 250, NME 220, ME 123, ME 230	<input type="checkbox"/>

Departmental Core (53cr)	
MSE 310 - Introduction to MSE (3cr)	<input type="checkbox"/>
MSE 311 - Integrated Undergraduate Lab.I (3cr)	<input type="checkbox"/>
MSE 321 - Thermodynamics and Phase Equilibrium (4cr)	<input type="checkbox"/>
MSE 331 - Crystallography and Structure (3cr)	<input type="checkbox"/>
MSE 312 - Integrated Undergraduate Lab. II (3cr)	<input type="checkbox"/>
MSE 322 - Kinetics and Microstructural Evolution (4cr)	<input type="checkbox"/>
MSE 342 - Materials Processing I (3cr)	<input type="checkbox"/>
MSE 351 - Electronic Properties of Materials (3cr)	<input type="checkbox"/>
MSE 399 - Undergraduate Research Seminar (1cr)	<input type="checkbox"/>
MSE 313 - Integrated Undergraduate Lab III (3cr)	<input type="checkbox"/>
MSE 333 - Materials Characterization (3cr)	<input type="checkbox"/>
MSE 352 - Functional Properties of Materials I (3cr)	<input type="checkbox"/>
MSE 362 - Mechanical Behavior of Materials I (3cr)	<input type="checkbox"/>
MSE 499 - Senior Project (4cr)	<input type="checkbox"/>
MSE 442 - Materials Processing II (3cr)	<input type="checkbox"/>
MSE 491 - Design in Materials Engineering I (2cr)	<input type="checkbox"/>
MSE 431 - Failure Analysis and Durability of Materials (3cr)	<input type="checkbox"/>
MSE 492 - Design in Materials Engineering II (2cr)	<input type="checkbox"/>
Senior Technical Electives (8-16cr)	<input type="checkbox"/>
See MSE website for list of courses	
Total credits required for graduation: 180cr	

Honors or accelerated sequences of math and chemistry can satisfy some of the above requirements, see department website for specifics. AMATH 351/352/353 are alternatives to Math 307/308/309.



Material Science & Engineering
Sample Curriculum
 University of Washington
<https://mse.washington.edu>

Materials Science & Engineering Advising
 Office: 302A Roberts Hall, Box 352120
 Seattle, WA 98195-2120
 Phone: (206) 616-6581
 Email: askmse@uw.edu

This is a sample four-year plan for ENGRUD students. It is intended to provide a framework for ENGRUD students to reference as they create their own individual academic plan.

Courses required to request placement for ENGRUD students: **MATH 124, MATH 125, MATH 126; CHEM 142; CHEM 152; PHYS 121; 5 credits of English Composition.**

	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	AMATH 301 - Beginning Scientific Computing OR CSE 142 - Programming I	4
	VLPA/I&S	5	◆ English Composition	5	MSE 170 – Fundamentals of Materials Science	4
	E-FIG; ENGR 101 & GEN ST 199	2				
	Qtr. Total:	17	Qtr. Total:	15	Qtr. Total:	13
	Autumn Quarter	Cr	Winter Quarter	Cr	Spring Quarter	Cr
Sophomore	MATH 307 - Differential Equations	3	MATH 308 - Matrix Algebra	3	ENGR 231 - Introduction to Technical Communication	3
	◆ PHYS 121 - Mechanics	5	PHYS 122 - Electromagnetism	5	PHYS 123 - Waves	5
	VLPA/I&S	4	AA 210 - Engineering Statics	4	CEE 220 - Mechanics of Materials	4
	MSE 311 - Integrated Undergraduate Lab I*	3	MSE 312 - Integrated Undergrad Lab II*	3	MSE 313 - Integrated Undergrad Lab III*	3
	Qtr. Total:	15	Qtr. Total:	15	Qtr. Total:	15
	Autumn Quarter	Cr	Winter Quarter	Cr	Spring Quarter	Cr
Junior	MSE 310 - Introduction to MSE	3	MSE 342 - Materials Processing I	3	MSE 333 - Materials Characterization	3
	MSE 321 - Thermodynamics & Phase Equilibrium	4	MSE 322 - Kinetics & Microstructural Evolution	4	MSE 352 - Functional Properties of Materials	3
	MSE 331 - Crystallography & Structure	3	MSE 351 - Electron Properties of Materials	3	MSE 362 - Mechanical Behavior of Materials I	3
	Engineering Elective	4	MSE - 399 - UG Research Seminar	1	VLPA/I&S/DIV	5
			Science Elective	3	VLPA/I&S	2
	Qtr. Total:	14	Qtr. Total:	14	Qtr. Total:	16
	Autumn Quarter	Cr	Winter Quarter	Cr	Spring Quarter	Cr
Senior	MSE 442 - Materials Processing II	3	MSE 431 - Failure Analysis	3	MSE 499 - Senior Project	2
	MSE 491 - Materials Design I	2	MSE 492 - Materials Design II	2	MSE Technical Elective	3
	MSE 499 - Senior Project	1	MSE 499 - Senior Project	1	MSE Technical Elective	3
	MSE Technical Elective	4	MSE Technical Elective	3	Science Elective	3
	Math Elective	3	Engineering Elective	4	VLPA/I&S	5
	VLPA/I&S	3	MSE Technical Elective	3		
	Qtr. Total:	16	Qtr. Total:	16	Qtr. Total:	16

◆ = Placement Requirements

* = MSE 311, 312, 313 taken in sophomore year if ENGRUD students enter the major at P1, if ENGRUD students enter at P2 they can be taken in the junior year

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