

This resource is for ENGRUD students who entered the UW in AUT24 or later.

# MSE

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

**ENGRUD Requirement Sheet – Key:**

◆ = Placement Requirements;

★ = *Pick one to satisfy placement requirement*

**Placement:** July 1 at the end of the first year

◆ **E-FIG: ENGR 101 and GEN ST 199 (2cr)**

### **Mathematics (24cr)**

◆ **MATH 124, 125, 126 - Calc w/Analytical Geom. I-III (15cr)**

MATH 207 - Intro to Differential Equations (3cr)  
[pr: MATH 125] OR AMATH 351 (3cr)

MATH 208 - Matrix Algebra with Applications (3cr)  
[pr: MATH 126] OR AMATH 352 (3cr)

One of the following: IND E 315 (3cr), MATH 209 (3cr), MATH 224 (3cr), MATH 318 (3cr), STAT 390 (4cr)

### **Sciences (31cr)**

◆ **CHEM 142 - General Chemistry (5cr)**  
[pr: CHEM 110]

★ **CHEM 152 - General Chemistry (5cr)**  
[pr: CHEM 142]

◆ **PHYS 121 - Mechanics (5cr)**  
[pr: MATH 124]

★ **PHYS 122 - Electromagnetism (5cr)**  
[pr: MATH 125, PHYS 121]

★ **PHYS 123 - Waves, Light, Heat (5cr)**  
[pr: MATH 126, PHYS 122]

Two science electives, (see "Natural Science Reqmts"):  
<https://mse.washington.edu/current/undergrad/courses>

### **General Education Requirements (34 - 40cr)**

#### **Written and Oral Communication**

◆ **English Composition (5cr)**

Writing (7cr) met by coursework in the major

#### **Areas of Inquiry:**

Arts & Humanities - A&H (10cr)

Social Sciences - SS (10cr)

Additional A&H or SS (4cr)

**Diversity** - DIV (5cr) (may overlap with Areas of Inquiry or W)

### **Engineering Fundamentals (24cr)**

A A 210 - Engineering Statics (4cr)  
[pr: MATH 126, PHYS 121]

CEE 220 - Intro to Mechanics of Materials (4cr)  
[pr: A A 210]

★ **CSE 122 - Computer Programming II (4cr)**  
OR

★ **AMATH 301 - Beginning Scientific Computing (4cr)**

★ **MSE 170 - Fundamentals of Materials Science (4cr)**  
[pr: CHEM 142]

Eight credits from MSE fundamentals list to reach 24 credits.  
<https://mse.washington.edu/current/undergrad/courses>

### **Departmental Core (51cr)**

MSE 311 - Integrated Undergraduate Lab I (3cr) (*W Course*)

MSE 312 - Integrated Undergraduate Lab II (3cr) (*W Course*)

MSE 313 - Integrated Undergraduate Lab III (3cr) (*W Course*)

MSE 321 - Thermodynamics and Phase Equilibrium (4cr)

MSE 322 - Kinetics and Microstructural Evolution (4cr)

MSE 331 - Crystallography and Structure (3cr)

MSE 333 - Materials Characterization (3cr)

MSE 342 - Materials Processing I (3cr)

MSE 351 - Electronic Properties of Materials (3cr)

MSE 352 - Functional Properties of Materials I (3cr)

MSE 362 - Mechanical Behavior of Materials I (3cr)

MSE 399 - Undergraduate Research Seminar (1cr)

MSE 431 - Failure Analysis and Durability of Materials (3cr)

MSE 442 - Materials Processing II (3cr)

MSE 493 - Intro to Design in Materials Engineering (1cr)

MSE 494 - Design in Materials Engineering I (2cr)

MSE 495 - Design in Materials Engineering II (3cr)

### **Technical Electives (15cr)**

View MSE website for list of courses to choose from:

<https://mse.washington.edu/current/undergrad/courses>

**Total credits required for graduation: 180cr**

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

**Materials Science & Engineering Advising**  
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This is a sample four-year plan for ENGRUD students that prepares them to be able to request placement at the end of the first year. 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: **ENGR 101 & GEN ST 199; MATH 124, 125, 126; CHEM 142; PHYS 121; English Composition**; plus **one course** from the list of [common placement requirements](#).

**First Year**

<u>Autumn Quarter</u>	<u>cr</u>	<u>Winter Quarter</u>	<u>cr</u>	<u>Spring Quarter</u>	<u>cr</u>
◆ MATH 124 - Calc w Analytic Geom I	5	◆ MATH 125 - Calc w Analytic Geom II	5	◆ MATH 126 - Calc w Analytic Geom III	5
◆ CHEM 142 - General Chemistry	5	★ CHEM 152 - General Chemistry	5	◆ PHYS 121 - Mechanics	5
◆ E-FIG; ENGR 101 & GEN ST 199	5	◆ English Composition	5	★ MSE 170 - Fundamentals of Materials Science	4
A&H / SSc	3				
Qtr. Total:	<b>15</b>	Qtr. Total:	<b>15</b>	Qtr. Total:	<b>14</b>

**Second Year**

<u>Autumn Quarter</u>	<u>cr</u>	<u>Winter Quarter</u>	<u>cr</u>	<u>Spring Quarter</u>	<u>cr</u>
PHYS 122 - Electromagnetism	5	PHYS 123 - Waves	5	MSE 313 - Integrated UG Lab III (W)	3
MSE 311 - Integrated UG Lab I (W)	3	MSE 312 - Integrated UG Lab II (W)	3	MATH 207 - Differential Equations	3
AMATH 301 - Scientific Computing	4	A A 210 - Engineering Statics	4	CEE 220 - Mechanics of Materials	4
OR CSE 122 - Computer Prog II		A&H / SSc / DIV	5	A&H / SSc	5
A&H / SSc	4				
Qtr. Total:	<b>16</b>	Qtr. Total:	<b>17</b>	Qtr. Total:	<b>15</b>

**Third Year**

<u>Autumn Quarter</u>	<u>cr</u>	<u>Winter Quarter</u>	<u>cr</u>	<u>Spring Quarter</u>	<u>cr</u>
MATH 208 - Matrix Algebra	3	MSE 322 - Kinetics & Microstructural Evo	3	MSE 333 - Materials Characterization	3
MSE 321 - Thermodynamics & Phase Equilibrium	3	MSE 342 - Materials Processing I	4	MSE 352 - Functional Prop of Materials I	3
MSE 331 - Crystallography & Structure	4	MSE 351 - Electron Properties of Materials	3	MSE 362 - Mech Behavior of Materials I	3
MSE 399 - UG Research Seminar	1	MSE 310 - Introduction to MSE	3	MSE 493 - Intro to Design in MSE	3
		Elective	4	Elective	
Qtr. Total:	<b>16</b>	Qtr. Total:	<b>14</b>	Qtr. Total:	<b>12</b>

**Fourth Year**

<u>Autumn Quarter</u>	<u>cr</u>	<u>Winter Quarter</u>	<u>cr</u>	<u>Spring Quarter</u>	<u>cr</u>
MSE 442 - Materials Processing II	3	MSE 494 - Materials Design I	2	MSE 495 - Materials Design II	3
MSE Technical Elective	3	MSE 431 - Failure Analysis	3	MSE Technical Elective	3
MSE Technical Elective	3	MSE Technical Elective	3	Science Elective	3
Engineering Elective	4	MSE Technical Elective	3	A&H / SSc	5
		Engineering Elective	4		
Qtr. Total:	<b>15-16</b>	Qtr. Total:	<b>15-16</b>	Qtr. Total:	<b>14</b>

◆ = Placement Requirements

★ = Pick **one** to satisfy placement requirements

*All MSE courses (except for 170 and the Technical Electives) must be completed in the order outlined above.*

*Honors or accelerated sequences of chemistry, math and physics will satisfy the placement requirements.*

Updated September, 2024