

This resource is for ENGRUD students who entered the UW in AUT20 or later.

# MSE

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

**Requirement Sheet Key:**

◆ = Placement Requirements;

★ = Pick *one to satisfy placement*

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

◆ **E-FIG: ENGR 101 and GEN ST 199**

**Mathematics (24cr)**

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

MATH 307 - Intro to Differential Equations (3cr)  
[pr: MATH 125]

MATH 308 - Matrix Algebra with Applications (3cr)  
[pr: MATH 126]

One of the following: IND E 315 (3cr); MATH 309 (3cr), MATH 324 (3cr); STAT 390 (4cr)

**Sciences (31-35cr)**

◆ **CHEM 142 - General Chemistry (5cr)**

★ **CHEM 152 - General Chemistry (5cr)**  
[pr: CHEM 142, CHEM 143 or CHEM 145]

◆ **PHYS 121 - Mechanics (5cr)**

[pr: MATH 124 or MATH 134]

★ **PHYS 122 - Electromagnetism (5cr)**

[pr: MATH 125 or MATH 134; PHYS 121]

★ **PHYS 123 - Waves (5cr)**

[pr: MATH 126 or MATH 134; PHYS 122]

Two courses from this list (see "Natural Science Reqmts"):  
<https://mse.washington.edu/current/undergrad/courses>

**Engineering General Education Requirements (32cr)**

**Written and Oral Communication:**

◆ **English Composition (5cr)**

ENGR 231 - Intro to Technical Communication (3cr)

**Areas of Knowledge:**

Visual, Literary & Performing Arts - VLPA (10cr)

Individuals & Society - I&S (10cr)

VLPA or I&S (4cr).

Diversity - DIV (3cr) (may overlap with VLPA / I&S course)

**Engineering Fundamentals (24cr)**

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

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

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

★ **CSE 142 - Computer Programming I (4cr)**  
OR ★ **AMATH 301**

8 credits from this list (see "Engineering Fund. Reqmts"):  
<https://mse.washington.edu/current/undergrad/courses>

**Departmental Core (54cr)**

MSE 310 - Intro to MSE (3cr)

MSE 311 - Integrated Undergraduate Lab I (3cr)

MSE 312 - Integrated Undergraduate Lab II (3cr)

MSE 313 - Integrated Undergraduate Lab III (3cr)

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 491 - Design in Materials Engineering I (2cr)

MSE 492 - Design in Materials Engineering II (3cr)

MSE 499 - Senior Project (4cr)

**Technical Electives (15cr)**

See MSE website for list of courses to choose from.

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

**Note for students completing the NME degree option**

You must complete the following courses as outlined below:

Spring of soph. year: NME 220 (4) & 221 (1)

Spring of junior year: NME 321 (1)

Spring of senior year: NME 421 (1)

*Honors or accelerated sequences of chemistry, math and physics will satisfy the placement requirements.  
AMATH 351 is an acceptable alternative to MATH 307.*

Updated October 2020

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# MSE

**Materials 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](mailto:askmse@uw.edu)

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; MATH 124, MATH 125, MATH 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
◆ English Composition		5	VLPA / I&S		5	★ MSE 170 - Fundamentals of Materials Science		4
◆ E-FIG; ENGR 101 & GEN ST 199		2						
Qtr. Total:		<b>17</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>
MSE 311 - Integrated UG Lab I (W)		3	MSE 312 - Integrated UG Lab II (W)		3	MSE 313 - Integrated UG Lab III (W)		3
PHYS 122 - Electromagnetism		5	PHYS 123 - Waves		5	MATH 307 - Differential Equations		3
AMATH 301 - Scientific Computing		4	VLPA/I&S		5	CEE 220 - Mechanics of Materials		4
OR CSE 142 - Computer Programming I		4	AA 210 - Engineering Statics		4	VLPA / I&S		5
VLPA / I&S								
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>
MSE 310 - Intro to MSE		3	MSE 322 - Kinetics & Microstructural Evo		3	MSE 499 - Senior Project		1
MATH 308		3	MSE 342 - Materials Processing I		4	MSE 333 - Materials Characterization		3
ENGR 231 - Intro to Technical Comm		3	MSE 351 - Electron Properties of Materials		3	MSE 352 - Functinal Prop of Materials I		3
MSE 321 - Thermodynamics & Phase Equilibrium		4	MSE 399 - UG Research Seminar		1	MSE 362 - Mech Behavior of Materials I		3
MSE 331 - Crystallography & Structure		3	Science Elective		3	Math Elective		3
Qtr. Total:		<b>16</b>	Qtr. Total:		<b>14</b>	Qtr. Total:		<b>13</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 431 - Failure Analysis		3	MSE 492 - Materials Design II		3
MSE 499 - Senior Project		2-3	MSE 499 - Senior Project		0-1	MSE Technical Elective		3
MSE Technical Elective		3	MSE Technical Elective		3	Science Elective		3
MSE Technical Elective		3	Engineering Elective		4	VLPA / I&S		5
Engineering Elective		4	MSE 491 - Materials Design I		2			
			MSE Technical Elective		3			
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.  
AMATH 351 is an acceptable alternative to MATH 307.*

Updated October 2020