

This resource is for ENGRUD students who entered the UW in AUT22 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 207 - Intro to Differential Equations (3cr)
[pr: MATH 125]

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

One of the following: IND E 315 (3cr); MATH 209 (3cr), MATH 224 (3cr); MATH 318 (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 Inquiry:

Arts & Humanities – A&H (10cr)

Social Sciences - SSc (10cr)

Additional A&H or SSc (4cr)

Diversity - DIV (3cr) (may overlap with A&H or SSc)

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 122 - Computer Programming II (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 207.*

Updated July 2022

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MSE

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

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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; 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	A&H / SSc		5	★ MSE 170 - Fundamentals of Materials Science		4
◆ E-FIG; ENGR 101 & GEN ST 199		2						
Qtr. Total:		17	Qtr. Total:		15	Qtr. Total:		14

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 207 - Differential Equations		3
AMATH 301 - Scientific Computing		4	A&H / SSc		5	CEE 220 - Mechanics of Materials		4
OR CSE 122 - Computer Programming II		4	AA 210 - Engineering Statics		4	A&H / SSc		5
A&H / SSc								
Qtr. Total:		16	Qtr. Total:		17	Qtr. Total:		15

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 208 Differential Equations		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 - Functional 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:		16	Qtr. Total:		14	Qtr. Total:		13

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	A&H / SSc		5
Engineering Elective		4	MSE 491 - Materials Design I		2			
			MSE Technical Elective		3			
Qtr. Total:		15-16	Qtr. Total:		15-16	Qtr. Total:		14

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★ = 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 207.

Updated July 2022