## Materials Science and Engineering Graduation Requirements

### University of Washington
depts.washington.edu/mse

<table>
<thead>
<tr>
<th>Requirement Sheet Key</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ = Upper-Division Admission Requirements</td>
<td></td>
</tr>
</tbody>
</table>

### Mathematics (24 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ MATH 124 (5cr)</td>
<td>Calculus I</td>
</tr>
<tr>
<td>♦ MATH 125 (5cr)</td>
<td>Calculus II</td>
</tr>
<tr>
<td>♦ MATH 126 (5cr)</td>
<td>Calculus III</td>
</tr>
<tr>
<td>♦ MATH 307 (3cr)</td>
<td>Differential Equations [pr: Math 125]</td>
</tr>
</tbody>
</table>

One (1) math elective from the following list (3cr):
- INDE 315, MATH 309, MATH 324, MATH/STAT 390

### Natural Sciences (31 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ CHEM 142 (5cr)</td>
<td>General Chemistry with lab</td>
</tr>
<tr>
<td>♦ CHEM 152 (5cr)</td>
<td>General Chemistry with lab</td>
</tr>
<tr>
<td>♦ PHYS 121 (5cr)</td>
<td>Mechanics with lab [pr: Math 124]</td>
</tr>
<tr>
<td>♦ PHYS 122 (5cr)</td>
<td>Electro/Oscillatory with lab [pr: Math 125]</td>
</tr>
<tr>
<td>♦ PHYS 123 (5cr)</td>
<td>Waves with lab [pr: Math 126]</td>
</tr>
</tbody>
</table>

Two (2) science electives from the following list (6cr):
- BIOL 180, 200, 220; CHEM 162, 223, 224, 237, 238, 239; PHYS 224, 225, 227, 228

### Written & Oral Communications (8 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ English Composition</td>
<td></td>
</tr>
<tr>
<td>♦ HCDE 231 (3cr)</td>
<td>Intro to Technical Writing [pr: Engl. Comp]</td>
</tr>
</tbody>
</table>

*Additional writing credits are built into major core courses.

### Visual, Literary & Performing Arts/Individuals & Society (VLPA/I&S) (24 Credits)

Minimum 10 credits in VLPA required.
Minimum 10 credits in I&S required.
Remaining 4 credits can be either VLPA or I&S
Minimum 3 credits in Diversity (DIV) required (can overlap with VLPA/I&S requirements).

### Engineering Fundamentals (24 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>♦ AMATH 301 (4cr)</td>
<td>Beginning Scientific Computing</td>
</tr>
<tr>
<td>♦ CSE 142 (4cr)</td>
<td>Computer Programming I</td>
</tr>
<tr>
<td>♦ MSE 170 (4cr)</td>
<td>Fund. of Material Science [pr: CHEM 152]</td>
</tr>
<tr>
<td>♦ AA 210 (4cr)</td>
<td>Engineering Statics [pr: Math 126, PHYS 121]</td>
</tr>
<tr>
<td>♦ CEE 220 (4cr)</td>
<td>Intro to Mech. of Materials [pr: AA 210]</td>
</tr>
</tbody>
</table>

Two (2) engineering electives from the following list (8cr):
- AA 260 (4cr) | Thermodynamics [pr: CHEM 142, Math 126, PHYS 121] |
- EE 215 (4cr) | Fund. of EE [pr: PHYS 122 & MATH 126] |
- IND E 250 (4cr) | Fundamentals of Engineering Economy |
- ME 123 (4cr) | Visualization and Computer Aided Design |
- ME 230 (4cr) | Kinematics & Dynamics [pr: AA 210] |

### MSE Core Courses (53 Credits)

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 310 (3cr)</td>
<td>Intro to Material Science &amp; Engineering</td>
</tr>
<tr>
<td>MSE 311 (3cr)</td>
<td>Integrated Junior Lab I</td>
</tr>
<tr>
<td>MSE 312 (3cr)</td>
<td>Integrated Junior Lab II</td>
</tr>
<tr>
<td>MSE 313 (3cr)</td>
<td>Integrated Junior Lab III</td>
</tr>
<tr>
<td>MSE 321 (4cr)</td>
<td>Thermodynamics and Phase Equilibrium</td>
</tr>
<tr>
<td>MSE 322 (4cr)</td>
<td>Kinetics and Microstructural Evolution</td>
</tr>
<tr>
<td>MSE 331 (3cr)</td>
<td>Crystallography and Structure</td>
</tr>
<tr>
<td>MSE 333 (3cr)</td>
<td>Characterization of Materials</td>
</tr>
<tr>
<td>MSE 342 (3cr)</td>
<td>Materials Processing I</td>
</tr>
<tr>
<td>MSE 351 (3cr)</td>
<td>Electron Theory</td>
</tr>
<tr>
<td>MSE 352 (3cr)</td>
<td>Functional Properties of Materials I</td>
</tr>
<tr>
<td>MSE 362 (3cr)</td>
<td>Mechanical Behavior of Materials I</td>
</tr>
<tr>
<td>MSE 399 (1cr)</td>
<td>Undergraduate Research Seminar</td>
</tr>
<tr>
<td>MSE 431 (3cr)</td>
<td>Principles of Physical Materials</td>
</tr>
<tr>
<td>MSE 442 (3cr)</td>
<td>Materials Processing II</td>
</tr>
<tr>
<td>MSE 491 (2cr)</td>
<td>Materials Design and Failure</td>
</tr>
<tr>
<td>MSE 492 (2cr)</td>
<td>Design in Materials Engineering II</td>
</tr>
<tr>
<td>MSE 499 (4cr)</td>
<td>Senior Project</td>
</tr>
</tbody>
</table>

### MSE Technical Electives (16 Credits)

16 credit minimum to include at least 8 MSE credits taken from the list of approved technical electives. Please see MSE Advisor for list of approved technical electives.

### Total Credits Required for Graduation (180 Credits)

### Early Admission Requirements

1. Early Admission is an option for Autumn Quarter only.
2. Students must be enrolled at UW-Seattle.
3. Math 124, 125 & 126 or equivalent.
4. 10 credits of physical sciences courses plus the accompanying lab at the level of CHEM 142, 152; PHYS 121, 122, 123.
5. 5 credits of English Composition
6. 15 credits must have been completed at UW.

### Application Deadlines

- Early admission - July 1st
- Upper Admission - July 1st
Materials Science and Engineering Sample Curriculum
University of Washington

Freshman – Autumn Quarter
- MATH 124 – Calculus I 5
- CHEM 142 – Chem I & Lab 5
- ENGL 131 – English Comp 5
Quarter Total 15

Freshman – Winter Quarter
- MATH 125 – Calculus II 5
- CHEM 152 – Chem II & Lab 5
- VLPA/I&S 5
Quarter Total 15

Freshman – Spring Quarter
- MATH 126 – Calculus III 5
- AMATH 301 or CSE 142 4
- MSE 170 – Materials Science 4
Quarter Total 13

Sophomore – Autumn Quarter
- MATH 307 – Diff Equations 3
- PHYS 121 – Mechanics & Lab 5
- HCDE 231 – Technical Writing 3
- Engineering Elective 4
Quarter Total 15

Sophomore – Winter Quarter
- MATH 308 – Matrix Algebra 3
- PHYS 122 – Electro & Lab 5
- AA 210 – Statics 3
- Science Elective 3
Quarter Total 15

Sophomore – Spring Quarter
- Math Elective 3
- PHYS 123 – Waves & Lab 5
- CEE 220 – Mech of Materials 4
- VLPA/I&S 5
Quarter Total 17

Junior – Autumn Quarter
- MSE 310 – Intro to MSE 3
- MSE 311 – Integrated Junior Lab I 3
- MSE 321 – Thermo & Phase Eq. 4
- MSE 331 – Crystalliztn & Structure 3
- VLPA/I&S 4
Quarter Total 15

Junior – Winter Quarter
- MSE 312 – Integrated Junior Lab II 3
- MSE 322 – Kinetics & Microstructure 4
- MSE 342 – Materials Processing I 3
- MSE 351 – Electron Theory 3
- MSE 399 – UG Research Seminar 1
Quarter Total 14

Junior – Spring Quarter
- MSE 313 – Integrated Junior Lab III 3
- MSE 333 – Characterization of Mat 4
- MSE 352 – Funct Prop of Mat I 3
- MSE 362 – Mech Behav of Mat I 3
- VLPA/I&S 5
Quarter Total 17

Senior – Autumn Quarter
- MSE 442—Materials Processing II 3
- MSE 491 – Material Design I 2
- MSE 499 – Senior Project 1
- MSE Technical Elective 4
- MSE Technical Elective 3
Quarter Total 13

Senior – Winter Quarter
- MSE 431 – Failure Analysis 3
- MSE 492 – Material Design II 2
- MSE 499 – Senior Project 1
- MSE Technical Elective 4
- Engineering Elective 1
Quarter Total 13

Senior – Spring Quarter
- MSE 499 – Senior Project 2
- MSE Technical Elective 3
- MSE Technical Elective 3
- Science Elective 3
- VLPA/I&S 5
Quarter Total 16

- Bold face courses are required for upper-division admission
Please see MSE Adviser for list of approved MSE technical electives.

For more information contact:
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