This resource is for ENGRUD students who entered the UW in AUT22 or later.

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

E-FIG: ENGR 101 and GEN ST 199

Mathematics (24cr)
- MATH 124, 125, 126 - Calc w Analytic Geom. I-II (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)
- 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]
- MSE 171 - Computer Programming II (4cr)
  OR ★ AMATH 301

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

Requirement Sheet Key:
◆ = Placement Requirements;
★ = Pick one to satisfy placement
Placeent: July 1 at the end of the first year

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
This resource is for ENGRUD students who entered the UW in AUT22 or later.

### Sample Curriculum

**Materials Science & Engineering**

**University of Washington**

[https://mse.washington.edu](https://mse.washington.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

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Courses</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td><strong>MATH 124 - Calc w Analytic Geom I</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>CHEM 142 - General Chemistry</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>English Composition</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>E-FIG; ENGR 101 &amp; GEN ST 199</strong></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>17</td>
</tr>
<tr>
<td>Winter</td>
<td><strong>MATH 125 - Calc w Analytic Geom II</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>CHEM 152 - General Chemistry</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>A&amp;H / SSc</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15</td>
</tr>
<tr>
<td>Spring</td>
<td><strong>MATH 126 - Calc w Analytic Geom III</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>PHYS 121 - Mechanics</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 170 - Fundamentals of Materials Science</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>14</td>
</tr>
</tbody>
</table>

#### Second Year

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Courses</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td><strong>MSE 311 - Integrated UG Lab I (W)</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>PHYS 122 - Electromagnetism</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>AMATH 301 - Scientific Computing</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>OR CSE 122 - Computer Programming II</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>A&amp;H / SSc</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16</td>
</tr>
<tr>
<td>Winter</td>
<td><strong>MSE 312 - Integrated UG Lab II (W)</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>PHYS 123 - Waves</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>A&amp;H / SSc</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><strong>AA 210 - Engineering Statics</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>17</td>
</tr>
<tr>
<td>Spring</td>
<td><strong>MSE 313 - Integrated UG Lab III (W)</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MATH 207 - Differential Equations</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>CEE 220 - Mechanics of Materials</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>A&amp;H / SSc</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15</td>
</tr>
</tbody>
</table>

#### Third Year

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Courses</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td><strong>MSE 310 - Intro to MSE</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MATH 208 Differential Equations</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>ENGR 231 - Intro to Technical Comm</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 321 - Thermodynamics &amp; Phase Equilibrium</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 331 - Crystallography &amp; Structure</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>16</td>
</tr>
<tr>
<td>Winter</td>
<td><strong>MSE 322 - Kinetics &amp; Microstructural Evo</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 342 - Materials Processing I</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 351 - Electron Properties of Materials</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 399 - UG Research Seminar</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>Science Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>14</td>
</tr>
<tr>
<td>Spring</td>
<td><strong>MSE 499 - Senior Project</strong></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 333 - Materials Characterization</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 352 - Functional Prop of Materials I</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 362 - Mech Behavior of Materials I</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Math Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>13</td>
</tr>
</tbody>
</table>

#### Fourth Year

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Courses</th>
<th>CR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autumn</td>
<td><strong>MSE 442 - Materials Processing II</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 499 - Senior Project</strong></td>
<td>2-3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE Technical Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE Technical Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Engineering Elective</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15-16</td>
</tr>
<tr>
<td>Winter</td>
<td><strong>MSE 431 - Failure Analysis</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 499 - Senior Project</strong></td>
<td>0-1</td>
</tr>
<tr>
<td></td>
<td><strong>MSE Technical Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Engineering Elective</strong></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td><strong>MSE 491 - Materials Design I</strong></td>
<td>2</td>
</tr>
<tr>
<td></td>
<td><strong>MSE Technical Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>15-16</td>
</tr>
<tr>
<td>Spring</td>
<td><strong>MSE 492 - Materials Design II</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>MSE Technical Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>Science Elective</strong></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td><strong>A&amp;H / SSc</strong></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>14</td>
</tr>
</tbody>
</table>

**= Placement Requirements**

**Pick one to satisfy placement requirements**

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