# Materials Science and Engineering Graduation Requirements

## University of Washington

mse.washington.edu

### Requirement Sheet Key

- **◊ = Upper-Division Admission Requirements**

### Mathematics (24 Credits)

- **◊ MATH 124 (5cr) – Calculus I**
- **◊ MATH 125 (5cr) – Calculus II**
- **◊ MATH 126 (5cr) – Calculus III**
- **MATH 307 (3cr) – Differential Equations [pr: Math 125]**
- **◊ MATH 308 (3cr) – Matrix Algebra [pr: Math 126]**
- **One (1) math elective from the following list (3cr): AMATH 353, INDE 315, MATH 309, MATH 324, MATH/STAT 390**

### Natural Sciences (31 Credits)

- **◊ CHEM 142/144/145 (5cr) – General Chemistry & lab**
- **◊ CHEM 152/154/155 (5cr) – General Chemistry & lab**
- **◊ PHYS 121 (5cr) – Mechanics with lab [pr: Math 124]**
- **◊ PHYS 122 (5cr) – Electromag with lab [pr: Math 125]**
- **◊ PHYS 123 (5cr) – Waves with lab [pr: Math 126]**
- **Two (2) science electives from the following list (6cr): BIOL 180, 200, 220; CHEM 162/164/165, 223, 224, 237, 238, 239, 336, 337; PHYS 224, 225, 226, 227, 228**

### Written & Oral Communications (8 Credits)

- **English Comp (5cr) – English Composition**
- **ENGR 231 (3cr) – Technical Writing [pr: Engl. Comp]**

(The additional 4 UW writing credits required are built into major core courses.)

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

- **10 credits of VLPA courses**
- **10 credits of I&S courses**
- **4 additional credits of either VLPA or I&S courses**

Minimum 3 credits in Diversity (DIV) required (meet requirement by choosing a VLPA/I&S course that also counts as a DIV course).

### Total Credits Required for Graduation = 180

### Engineering Fundamentals (24 Credits)

- **◊ AMATH 301 (4cr) – Beginning Scientific Computing – or ** CSE 142 (4cr) – Computer Programming I**
- **◊ MSE 170 (4cr) – Fund. of Material Science [pr: CHEM 152]**
- **◊ AA 210 (4cr) – Engineering Statics [pr: Math 126, PHYS 121]**
- **◊ CEE 220 (4cr) – Intro to Mech. Of Materials [pr: AA 210]**
- **Two (2) engineering electives from the following list (8cr): AA 260 (4cr), CHEM E 325 (4cr), EE 215 (4cr), IND E 250 (4cr), NME 220 (4 cr)[NOT eligible as an elective for NME option students], ME 123 (4cr), ME 230 (4cr)**

### MSE Core Courses (53 Credits)

- **MSE 310 (3cr) – Intro to Material Science & Engineering**
- **MSE 311 (3cr) – Integrated Junior Lab I**
- **MSE 321 (4cr) – Thermodynamics and Phase Equilibrium**
- **MSE 331 (3cr) – Crystallography and Structure**
- **MSE 312 (3cr) – Integrated Junior Lab II**
- **MSE 322 (4cr) – Kinetics and Microstructural Evolution**
- **MSE 342 (3cr) – Materials Processing I**
- **MSE 351 (3cr) – Electron Theory**
- **MSE 399 (1cr) – Undergraduate Research Seminar**
- **MSE 313 (3cr) – Integrated Junior Lab II**
- **MSE 333 (3cr) – Characterization of Materials**
- **MSE 352 (3cr) – Functional Properties of Materials**
- **MSE 362 (3cr) – Mechanical Behavior of Materials I**
- **MSE 499 (4cr) – Senior Project**
- **MSE 442 (3cr) – Materials Processing II**
- **MSE 491 (2cr) – Materials Design and Failure**
- **MSE 431 (3cr) – Principles of Physical Materials**
- **MSE 492 (2cr) – Design in Materials Engineering II**

### MSE Technical Electives (16 Credits)

- **8 to 16 MSE 400-level elective course credits**
- **up to 8 credits from the Other Technical Electives list may be substituted. See list at http://www.mse.washington.edu/current/undergrad/courses. NME Option requirements differ – see web site.**

Last Updated October 11, 2016
## Sample 4-year Course Plan

<table>
<thead>
<tr>
<th>Freshman – Autumn Quarter</th>
<th>Freshman – Winter Quarter</th>
<th>Freshman – Spring Quarter</th>
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</thead>
<tbody>
<tr>
<td>♦ MATH 124 – Calculus I</td>
<td>♦ MATH 125 – Calculus II</td>
<td>♦ MATH 126 – Calculus III</td>
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<tr>
<td>♦ CHEM 142 – Chem I &amp; Lab</td>
<td>♦ CHEM 152 – Chem II &amp; Lab</td>
<td>♦ AMATH 301 or CSE 142</td>
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<td>♦ ENGL 131 – English Comp</td>
<td>VLPA/I&amp;S</td>
<td>♦ MSE 170 – Materials</td>
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<td>Science</td>
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<td>Quarter Total 15</td>
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<tr>
<th>Sophomore – Autumn Quarter</th>
<th>Sophomore – Winter Quarter</th>
<th>Sophomore – Spring Quarter**</th>
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<tbody>
<tr>
<td>♦ MATH 307 – Diff Equations</td>
<td>♦ PHYS 122–Electro &amp; Lab I</td>
<td>Math Elective 3</td>
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<tr>
<td>♦ PHYS 121–Mechanics &amp; Lab</td>
<td>MATH 308 – Matrix Algebra</td>
<td>PHYS 123 – Waves &amp; Lab 5</td>
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<tr>
<td>ENGR 231 – Technical Writing</td>
<td>AA 210 – Statics</td>
<td>CEE 220 – Mech of Materials 4</td>
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<tr>
<td>Engineering Elective</td>
<td>Science Elective 3</td>
<td>VLPA/I&amp;S 5</td>
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<td>Quarter Total 15</td>
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<tr>
<th>Junior – Autumn Quarter</th>
<th>Junior – Winter Quarter</th>
<th>Junior – Spring Quarter**</th>
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<tbody>
<tr>
<td>MSE 310 – Intro to MSE</td>
<td>MSE 312 – Integrated Junior Lab II</td>
<td>MSE 313 – Integrated Junior Lab III</td>
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<tr>
<td>MSE 311 – Integrated Junior Lab I</td>
<td>MSE 322 – Kinetics &amp; Microstructure</td>
<td>MSE 333 – Characterization of Mat 3</td>
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<td>MSE 321 – Thermo &amp; Phase Eq.</td>
<td>MSE 342 – Materials Processing I</td>
<td>MSE 352 – Func Prop of Mat I</td>
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<td>VLPA/I&amp;S 4</td>
<td>MSE 399 – UG Research Seminar</td>
<td>VLPA/I&amp;S 5</td>
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<td>Quarter Total 17</td>
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<th>Senior – Autumn Quarter</th>
<th>Senior – Winter Quarter</th>
<th>Senior – Spring Quarter**</th>
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<tr>
<td>MSE 442—Materials Processing II</td>
<td>MSE 431 – Failure Analysis</td>
<td>MSE 499 – Senior Project 2</td>
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<td>MSE 491 – Material Design I</td>
<td>MSE 492 – Material Design II</td>
<td>MSE Technical Elective 3</td>
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<td>MSE 499 – Senior Project</td>
<td>MSE 499 – Senior Project</td>
<td>MSE Technical Elective 3</td>
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<tr>
<td>MSE Technical Elective</td>
<td>Engineering Elective 4</td>
<td>VLPA/I&amp;S 5</td>
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<td>Quarter Total 13</td>
<td>Quarter Total 13</td>
<td>Quarter Total 16</td>
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*Bold face* courses are required for upper-division admission

**For students completing the NME option, they must enroll in NME 220+221

Spring Sophomore year, NME 321 Spring Junior year, and NME 421 Spring Senior year

Please see MSE web site for the MSE technical elective list, NME Option major requirements, and all updates to this content.

### Early Admission Requirements
- Early Admission is an option for Autumn Quarter only.
- Applicants must be current first year students enrolled at UW Seattle
- Admission requirements are Math 124, 125 & 126 or equivalent; 10 credits of physical sciences courses plus the accompanying lab at the level of CHEM 142, 152; PHYS 121, 122, 123; 5 credits of English Composition; 15 credits must have been completed at the UW.

### Application Deadlines
- Early admission- July 1st
- Upper Admission- July 1st

### For more information contact:
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  - Email: askmse@uw.edu

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