Curriculum for UW Master of Science Degree Program
Department of Materials Science and Engineering

Credits Requirement: 30

Suggested Course Credit Allocation:

- Summer Session 4 Credits
- Fall Semester 13 Credits
- Spring Semester 13 Credits

Degree/Major: M.S. Materials Science and Engineering

Named Option: Nanomaterials and Nanoengineering
Proposed Curriculum for Department of Materials Science and Engineering

Named Option: Nanomaterials and Nanoengineering

Course Requirements:

- 30 total credits
- MSE 350: Introduction to Materials Science, taken during first semester of enrollment (3 cr).
- MSE 900: Materials Research Seminar in both of the Fall and Spring semesters (1 cr. each, 2 cr. total)
- MSE 553: Nanomaterials and Nanotechnology (3 cr.)
- A minimum of 22 additional credits from the courses listed below.
  - At least 10 credits of the additional coursework must be at the graduate level.
  - At most 4 credits of MSE 699: Independent Study may be taken.

**Fall course offerings:**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS&amp;E 401</td>
<td>Special Topics (by instructor consent)</td>
<td>1-3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 434</td>
<td>Introduction to Thin-Film Deposition Processes</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 448</td>
<td>Crystallography and X-Ray Diffraction</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 456</td>
<td>Electronic, Optical, and Magnetic Properties of Materials</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 521</td>
<td>Advanced Polymer Materials</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 530</td>
<td>Thermodynamics of Solids</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 570</td>
<td>Properties of Solid Surfaces</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 752</td>
<td>Advanced Materials Science: Phase Transformations</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 756</td>
<td>Structure and Properties of Advanced Electronic Materials</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 699</td>
<td>Independent Study</td>
<td>1-3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 803</td>
<td>Special Topics in Materials Science (by instructor consent)</td>
<td>1-3 cr.</td>
</tr>
</tbody>
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**Spring course offerings:**

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<tbody>
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<td>MS&amp;E 401</td>
<td>Special Topics (by instructor consent)</td>
<td>1-3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 421</td>
<td>Polymeric Materials</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 551</td>
<td>Structure of Materials</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 553</td>
<td>Nanomaterials and Nanotechnology</td>
<td>3 cr.</td>
</tr>
<tr>
<td>Course Code</td>
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<td>Credits</td>
</tr>
<tr>
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</tr>
<tr>
<td>MS&amp;E 560</td>
<td>Fundamentals of Atomistic Modeling</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 699</td>
<td>Independent Study</td>
<td>1-3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 748</td>
<td>Structural Analysis of Materials</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 760</td>
<td>Molecular Dynamics and Monte Carlo Simulations in Materials Science</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 803</td>
<td>Special Topics in Materials Science (by instructor consent)</td>
<td>1-3 cr.</td>
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**Summer course offerings:**

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<tbody>
<tr>
<td>MS&amp;E 350</td>
<td>Introduction to Materials Science</td>
<td>3 cr.</td>
</tr>
<tr>
<td>MS&amp;E 699</td>
<td>Independent Study</td>
<td>1-3 cr.</td>
</tr>
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</table>
Example Course Schedules

Example 1: Starting in a Fall semester

Fall semester:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
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<tbody>
<tr>
<td>MSE 350: Introduction to Materials Science</td>
<td>3 cr</td>
</tr>
<tr>
<td>MSE 900: Materials Research Seminar</td>
<td>1 cr</td>
</tr>
<tr>
<td>Selected course #1</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #2</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #3</td>
<td>3 cr</td>
</tr>
<tr>
<td><strong>Total credits</strong></td>
<td><strong>13 cr</strong></td>
</tr>
</tbody>
</table>

Spring semester:

<table>
<thead>
<tr>
<th>Course</th>
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<tbody>
<tr>
<td>MSE 900: Materials Research Seminar</td>
<td>1 cr</td>
</tr>
<tr>
<td>MSE 553: Nanomaterials and Nanotechnology</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #4</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #5</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #6</td>
<td>3 cr</td>
</tr>
<tr>
<td><strong>Total credits</strong></td>
<td><strong>13 cr</strong></td>
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</tbody>
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Summer term:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 601: Independent Study</td>
<td>4 cr</td>
</tr>
<tr>
<td><strong>Total credits</strong></td>
<td><strong>4 cr</strong></td>
</tr>
</tbody>
</table>

Example 2: Starting in a Summer semester

Summer term:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 350: Introduction to Materials Research</td>
<td>3 cr</td>
</tr>
<tr>
<td>MSE 699: Independent Study</td>
<td>4 cr</td>
</tr>
<tr>
<td><strong>Total credits</strong></td>
<td><strong>7 cr</strong></td>
</tr>
</tbody>
</table>

Fall semester:

<table>
<thead>
<tr>
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<th>Credits</th>
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<tbody>
<tr>
<td>MSE 900: Materials Research Seminar</td>
<td>1 cr</td>
</tr>
<tr>
<td>Selected course #1</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #2</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #3</td>
<td>3 cr</td>
</tr>
<tr>
<td><strong>Total credits</strong></td>
<td><strong>10 cr</strong></td>
</tr>
</tbody>
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Spring semester:

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<td>3 cr</td>
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<tr>
<td>Selected course #6</td>
<td>3 cr</td>
</tr>
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<td><strong>Total credits</strong></td>
<td><strong>13 cr</strong></td>
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**Example 3: Continuing UW-Madison MSE undergraduate**

Count credits from undergraduate coursework:

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSE 351: Materials Science – Structure and Property Relations in Solids</td>
<td>3 cr</td>
</tr>
<tr>
<td>MSE 330: Thermodynamics of Materials</td>
<td>4 cr</td>
</tr>
<tr>
<td><strong>Total credits</strong></td>
<td><strong>7 cr</strong></td>
</tr>
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Fall semester:

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<tr>
<td>Selected course #2</td>
<td>3 cr</td>
</tr>
<tr>
<td>Selected course #3</td>
<td>3 cr</td>
</tr>
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<td><strong>10 cr</strong></td>
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Spring semester:

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<td>Selected course #5</td>
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