

**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 9 credits of the additional coursework must be at the graduate level.
  - At most 6 credits of MSE 601: Independent Study may be taken.

#### **Fall course offerings:**

MS&E 401	Special Topics (by instructor consent)	1-3 cr.
MS&E 434	Introduction to Thin-Film Deposition Processes	3 cr.
MS&E 448	Crystallography and X-Ray Diffraction	3 cr.
MS&E 456	Electronic, Optical, and Magnetic Properties of Materials	3 cr.
MS&E 521	Advanced Polymer Materials	3 cr.
MS&E 530	Thermodynamics of Solids	3 cr.
MS&E 570	Properties of Solid Surfaces	3 cr.
MS&E 752	Advanced Materials Science: Phase Transformations	3 cr.
MS&E 756	Structure and Properties of Advanced Electronic Materials	3 cr.
MS&E 601	Independent Study	1-3 cr.
MS&E 803	Special Topics in Materials Science (by instructor consent)	1-3 cr.

#### **Spring course offerings:**

MS&E 401	Special Topics (by instructor consent)	1-3 cr.
MS&E 421	Polymeric Materials	3 cr.
MS&E 551	Structure of Materials	3 cr.
MS&E 553	Nanomaterials and Nanotechnology	3 cr.

MS&E 560	Fundamentals of Atomistic Modeling	3 cr.
MS&E 601	Independent Study	1-3 cr.
MS&E 748	Structural Analysis of Materials	3 cr.
MS&E 760	Molecular Dynamics and Monte Carlo Simulations in Materials Science	3 cr.
MS&E 803	Special Topics in Materials Science (by instructor consent)	1-3 cr.

**Summer course offerings:**

MS&E 350	Introduction to Materials Science	3 cr.
MS&E 601	Independent Study	1-3 cr.

## Example Course Schedules

### Example 1: Starting in a Fall semester

Fall semester:

MSE 350: Introduction to Materials Science	3 cr
MSE 900: Materials Research Seminar	1 cr
Selected course #1	3 cr
Selected course #2	3 cr
Selected course #3	3 cr
Total credits	13 cr

Spring semester:

MSE 900: Materials Research Seminar	1 cr
MSE 553: Nanomaterials and Nanotechnology	3 cr
Selected course #4	3 cr
Selected course #5	3 cr
Selected course #6	3 cr
Total credits	13 cr

Summer term:

MSE 601: Independent Study	4 cr
Total credits	4 cr

### Example 2: Starting in a Summer semester

Summer term:

MSE 350: Introduction to Materials Research	3 cr
MSE 601: Independent Study	4 cr
Total credits	7 cr

Fall semester:

MSE 900: Materials Research Seminar	1 cr
Selected course #1	3 cr
Selected course #2	3 cr
Selected course #3	3 cr
Total credits	10 cr

Spring semester:

MSE 900: Materials Research Seminar	1 cr
MSE 553: Nanomaterials and Nanotechnology	3 cr
Selected course #4	3 cr
Selected course #5	3 cr
Selected course #6	3 cr
Total credits	13 cr

**Example 3: Continuing UW-Madison MSE undergraduate**

Count credits from undergraduate coursework:

MSE 351: Materials Science – Structure and Property Relations in Solids	3 cr
MSE 330: Thermodynamics of Materials	4 cr
Total credits	7 cr

Fall semester:

MSE 900: Materials Research Seminar	1 cr
Selected course #1	3 cr
Selected course #2	3 cr
Selected course #3	3 cr
Total credits	10 cr

Spring semester:

MSE 900: Materials Research Seminar	1 cr
MSE 553: Nanomaterials and Nanotechnology	3 cr
Selected course #4	3 cr
Selected course #5	3 cr
Selected course #6	3 cr
Total credits	13 cr