

# MATERIALS SCIENCE AND ENGINEERING PHD

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## Degree Requirements

The following requirements are in addition to, or further elaborate upon, those requirements outlined in The Graduate School Policy Guide (<https://catalogs.northwestern.edu/tgs/academic-policies-procedures/>).

### PhD

**Total Units Required: 12**

**(Up to 6 units credit is given for the MS degree; see departmental guide.)**

Course	Title
MAT_SCI 401-0	Chemical & Statistical Thermodynamics of Materials
MAT_SCI 402-0	Structure of Crystalline and Noncrystalline Materials
MAT_SCI 404-0	Imperfections in Materials
MAT_SCI 405-0	Physics of Solids
MAT_SCI 406-0	Mechanical Properties of Materials
MAT_SCI 408-0	Phase Transformations in Materials
GEN_ENG 519-0	Responsible Conduct for Research Training
Departmental Electives (2 units) <sup>1</sup>	
Electives (4 units) <sup>2</sup>	

<sup>1</sup> 400 level, excluding MAT\_SCI 499-0 Projects

<sup>2</sup> excluding MAT\_SCI 499-0 Projects

### Other PhD Degree Requirements

- **Examinations:** preliminary evaluation based on research progress and coursework; qualifying examination emphasizing proposed dissertation research
- **Research/Projects:** see departmental guide
- **PhD Dissertation:** materials and results from supported research programs may be used for dissertation
- **Final Evaluations:** public oral defense of dissertation
- **Departmental Seminar:** attendance of research seminars
- **Teaching:** a minimum of two quarters (to total 20 hrs/week) as a teaching assistant or grader