MATERIALS ENGINEERING, PH.D.

The requirements for the Ph.D. in materials engineering have been merged with materials science. See Materials Science and Engineering (http://guide.wisc.edu/graduate/materials-science-engineering). Admission to the program has been suspended. The information that appears in this entry is provided for the benefit of students currently admitted to the program.

Administrative Unit: Material Sciences and Engineering
College/School: College of Engineering
Admitting Plans: M.S., Ph.D.
Degrees Offered: M.S., M.Eng., Ph.D.
Minors and Certificates: Doctoral Minor

The department mission is to provide local, national, and international leadership in materials research and education. Graduate research in materials science and engineering covers a full range of cutting-edge technologies.

Department faculty run internationally recognized research programs which span the field to include computational materials science, biomaterials, nanomaterials, energy related materials, metals, polymers, electronic materials, ceramics, and composites. Of the 17 full-time faculty in the Department of Materials Science and Engineering, five senior faculty belong to the National Academy of Engineering and five assistant professors introduce expertise in exciting new areas. Faculty at all levels bring leadership in research and education.

The creation of advanced materials and devices requires the application of increasingly sophisticated concepts and tools. Tailored materials with desired properties can be engineered through control of the structure of solids at all length scales ranging from centimeters down to the atomic level. Students of materials are engaged in creating and understanding new materials and new materials phenomena. After they leave Wisconsin, materials graduates find careers in private industry, national laboratories, and academia.

The UW offers two graduate programs in materials: Materials Engineering (MS&E) and the Materials Science Program (MSP). Students who apply to one are usually considered by the other. Department faculty supervise the thesis work of students from both MS&E and MSP.

The vast majority of students receive financial aid in the form of fellowships, research or teaching assistantships, or advanced opportunity grants.

REQUIREMENTS

MINIMUM DEGREE REQUIREMENTS AND SATISFACTORY PROGRESS

To make progress toward a graduate degree, students must meet the Graduate School Minimum Degree Requirements and Satisfactory Progress (http://guide.wisc.edu/graduate/policiesandrequirementstext) in addition to the requirements of the program.

MINIMUM GRADUATE DEGREE CREDIT REQUIREMENT

51 credits

MINIMUM GRADUATE RESIDENCE CREDIT REQUIREMENT

32 credits

MINIMUM GRADUATE COURSEWORK (50%) REQUIREMENT

At least 26 of the required 51 credits must be in courses designed for graduate work, which may include graduate-level math—EP 547; graduate-level thermodynamics—MS&E 530; any courses taken at the 700 level or above (including classroom courses and master’s research, thesis, and seminar courses); and MS&E courses numbered 400 or higher that either have a graduate student enrollment >50% in any given semester—MS&E 448, 560, 570, or assess graduate students separately from undergraduate students—MS&E 553.

PRIOR COURSEWORK REQUIREMENTS: GRADUATE WORK FROM OTHER INSTITUTIONS

With program approval, students are allowed to count graduate coursework from other institutions toward the minimum graduate degree credit requirement and the minimum graduate coursework (50%) requirement. No credits from other institutions can be counted toward the minimum graduate residence credit requirement. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNDERGRADUATE

Up to 7 credits numbered 300 or above can be counted toward the minimum graduate degree credit requirement. Up to 7 credits of MS&E courses numbered 700 or above can be counted toward the minimum graduate coursework (50%) requirement. No credits can be counted toward the minimum graduate residence credit requirement. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

PRIOR COURSEWORK REQUIREMENTS: UW–MADISON UNIVERSITY SPECIAL

With program approval and payment of the difference in tuition (between Special and graduate tuition), students are allowed to count up to 15 credits of coursework numbered 300 or above taken as a UW–Madison Special student toward the minimum graduate residence credit requirement, and the minimum graduate degree credit requirement, if that coursework is numbered 700 or above it may satisfy the minimum graduate coursework (50%) requirement. Coursework earned ten or more years prior to admission to a doctoral degree is not allowed to satisfy requirements.

CREDITS PER TERM ALLOWED

15 credits

PROGRAM-SPECIFIC COURSES REQUIRED

Contact the program for information on any additional required courses.

DOCTORAL MINOR/BREADTH REQUIREMENTS

All doctoral students are required to complete a minor.
OVERALL GRADUATE GPA REQUIREMENT
3.00 GPA required

OTHER GRADE REQUIREMENTS
The Graduate School requires an average grade of B or better in all coursework (300 or above, not including research credits) taken as a graduate student unless conditions for probationary status require higher grades. Grades of Incomplete are considered to be unsatisfactory if they are not removed during the next enrolled semester.

PROBATION POLICY
The Graduate School regularly reviews the record of any student who earned grades of BC, C, D, F, or Incomplete in a graduate course (300 or above), or grade of U in research credits. This review could result in academic probation with a hold on future enrollment or in being suspended from the Graduate School.

ADVISOR / COMMITTEE
Every graduate student is required to have an advisor. An advisor is a faculty member, or sometimes a committee, from the major department responsible for providing advice regarding graduate studies. An advisor generally serves as the thesis advisor. In many cases, an advisor is assigned to incoming students. Students can be suspended from the Graduate School if they do not have an advisor.

To ensure that students are making satisfactory progress toward a degree, the Graduate School expects them to meet with their advisor on a regular basis.

A committee often accomplishes advising for the students in the early stages of their studies.

ASSESSMENTS AND EXAMINATIONS
Doctoral students are required to take a comprehensive preliminary/oral examination after they have cleared their record of all Incomplete and Progress grades (other than research and thesis). Deposit of the doctoral dissertation in the Graduate School is required.

TIME CONSTRAINTS
Doctoral degree students who have been absent for ten or more consecutive years lose all credits that they have earned before their absence. Individual programs may count the coursework students completed prior to their absence for meeting program requirements; that coursework may not count toward Graduate School credit requirements.

A candidate for a doctoral degree who fails to take the final oral examination and deposit the dissertation within five years after passing the preliminary examination may by require to take another preliminary examination and to be admitted to candidacy a second time.

LANGUAGE REQUIREMENTS
Contact the program for information on any language requirements.

ADMISSIONS

Admission to the graduate program in the Department of Materials Science and Engineering is based on the student’s previous academic record, Graduate Record Exam (GRE) scores, letters of recommendation, and a personal statement. Admission is competitive.

For more information: Materials Science and Engineering, 1509 University Avenue #276A, Madison, WI 53706; msaegradquery@engr.wisc.edu; www.engr.wisc.edu/mse.

PEOPLE

Faculty: Professors Babcock (chair), Eom, Kou, Lagally, Peercy, Perepezko; Associate Professor Stone (associate chair); Assistant Professors Evans, Gildrie-Voyles, Gopalan, Morgan, Szlufarska

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