Materials Science & Engineering Program

Master of Science Program (MS)

The requirements for the degree include a total of 30 credits, typically 24 credits of courses plus six credits of thesis. For students opting not to write a thesis, 30 credits of courses must be taken. A majority of these courses must be MSE courses. The student must maintain at least an overall B average (GPA 3.0/4.0 or better) for his or her graduate work to be eligible for the MS degree.

MS requirement course requirements include:

1. At least one course in materials structure and properties (MSE 544, MSE 562 or MSE 572);
2. At least one course in the thermodynamics, phase equilibria and reactivity of materials (MSE 560 or MSE 566)
3. One general course in characterization techniques in materials science (MSE 511)
4. One specialized course in experimental techniques in materials science (MSE 565, MSE 569, or MSE 570)
5. One semester of Materials Communications and Seminar (MSE 590).
6. One semester of Frontiers in Materials (MSE 593).
7. Two or more elective courses, half of which must be MSE courses. Highly recommended are MSE 560, MSE 562, (if not used to fulfill above requirements), ME 535 or courses covering specific materials (like polymers), materials applications, or theory/modeling of materials.

Either a) an acceptable research project and report (at least four credits of courses 597 and/or 598), or b) an acceptable research project and thesis (at least six credits of 598 and/or 599. (The research report will typically be 30-40 pages; the thesis will typically be 60-80 pages. Paper copies of the research report will reside with the program and the research advisor. Paper and electronic copies of the thesis will be published as for a PhD dissertation.) Public presentation of a seminar on the subject of the research project or thesis, and its oral defense. Students may petition to request an all-course option (30 credits) for the MS degree.

The examining committee for each candidate consists of three to five members appointed from the MSE faculty by the graduate program committee and will include faculty members from at least two departments. The student’s advisor and committee chair will normally come from different departments.

Five-Year Program in Chemistry and Materials Science and Engineering

The five-year program leading to a BS in chemistry and an MS in materials science and engineering in five years is planned to give all students a strong research background combined with a strong foundation in chemistry and materials science. It requires completion of all components of the BS in chemistry, with emphasis in materials. Participation in three semesters of laboratory/research work from CHEM 397, 445, 497 or 598 must be included within the existing BS requirements. In order to complete the five-year option, students are also required to complete all requirements of the MS degree in materials science, including a thesis. Twelve credits taken in the fourth year at the graduate level may be applied to both degree programs. Students in the combined program receive their BS degree after completing their undergraduate requirements.

Students are admitted to the combined program at any time up to the beginning of their senior year. Admission to the combined program is limited to students who have a cumulative grade-point average of at least 3.0 in both the major and in all subjects. Students need to maintain this GPA to stay in the program. In order to complete this program within five years, three courses for the BS in chemistry (with materials emphasis) are replaced by the more rigorous graduate course equivalents — e.g., CHEM 411, 444 and 498 are replaced by CHEM 511, 544 and 598 and count toward both degree requirements.

Five-Year Program in Physics and Materials Science and Engineering

The five-year program leading to a BS in physics and an MS in materials science and engineering is planned to give all students a strong research background combined with a strong foundation in physics and materials science. It requires completion of all components of the BS in physics. In order to complete the five-year option, students are also required to complete all requirements of the MS degree in materials science, including a thesis. Twelve credits taken in the fourth year at the graduate level may be applied to both degree programs. Students in the combined program receive their BS degree after completing their undergraduate requirements.

Students are admitted to the combined program at any time up to the beginning of their senior year. Admission to the combined program is limited to students who have a cumulative grade-point average of at least 3.0 in both the major and in all subjects. Students need to maintain this GPA to stay in the program. In order to complete this program within five years, three courses for the BS in physics are replaced by the more rigorous graduate course equivalents — e.g., PHYS 411, 472 and 498 by 511, 572 and 598 and count toward both degree requirements.