Materials Science and Engineering—MSE

481 Spectroscopic and Diffraction Analysis of Materials
Spring. 3(2-3) P: PHY 184 or PHY 184B or PHY 234B or PHY 294H or LB 274 RB: MSE 260 and MSE 381 R: Open to juniors or seniors in the Materials Science and Engineering Major or in the Materials Science and Engineering Minor. SA: MSE 451, MSM 451

490 Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to seniors. Approval of department. SA: MSM 490

491 Selected Topics
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Open to students in the Department of Chemical Engineering and Materials Science or in the College of Engineering. SA: MSM 491

499 Senior Research and Design Project (W)
Fall, Spring, Summer. 2 to 4 credits. A student may earn a maximum of 6 credits in all enrollments for this course. P: Completion of Tier I writing requirement. R: Open to students in the Department of Chemical Engineering and Materials Science or in the Materials Science and Engineering Major. Approval of department. SA: MSM 499

801 Foundations of Materials Science and Engineering
Summer. 3(3-0) RB: Undergraduate degree in science or engineering related to Materials Science.

802 Research Methods
Fall. 3(3-0) Interdepartmental with Chemical Engineering. Administered by Chemical Engineering.

810 Materials for Energy Applications
Fall. 3(3-0) RB: ME 802 or MSE 851 or CHE 821 R: Open to graduate students in the Department of Chemical Engineering and Materials Science. Not open to students with credit in MSE 410.

851 Thermodynamics of Solids
Fall. 3(3-0) SA: MSM 851

855 Advanced Rate Theory and Diffusion

860 Advanced Theory of Solids

862 Dislocation Theory
Fall. 3(3-0) SA: MSM 862

870 Electron Microscopy in Materials Science
Fall. 3(2-3) R: Open to graduate students in the Materials Science and Engineering major or approval of department. SA: MSM 870

875 Engineering Ceramics
Fall of odd years. 3(3-0) Interdepartmental with Chemical Engineering. Administered by Materials Science and Engineering. RB: CEM 392 or CEM 434 or MSE 351 R: Open only to graduate students in the Department of Chemical Engineering and Materials Science or Department of Chemistry or School of Packaging. SA: MSM 871

881 Advanced Spectroscopy and Diffraction Analysis of Materials
Spring. 3(2-3) RB: PHY 184 or PHY 184B or PHY 234B R: Open to graduate students in the College of Engineering. SA: MSE 841 Not open to students with credit in MSE 481. Physical basis for properties, generation, and detection of x-ray interaction with solids. Crystallography, reciprocal space, diffraction analysis, and techniques. Single crystal methods. Stereographic projection. X-ray microanalysis.

890 Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department. SA: MSM 890

891 Selected Topics
Fall, Spring. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department. SA: MSM 891

892 Seminar
Fall, Spring. 1(0-2) A student may earn a maximum of 4 credits in all enrollments for this course. Interdepartmental with Chemical Engineering. Administered by Chemical Engineering. R: Open only to Chemical Engineering majors.

899 Master’s Thesis Research
Fall, Spring, Summer. 1 to 8 credits. A student may earn a maximum of 24 credits in all enrollments for this course. SA: MSM 899

964A Anisotropic Crystalline Properties

990 Independent Study
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. SA: MSM 990

991 Selected Topics
Fall, Spring, Summer. 1 to 3 credits. A student may earn a maximum of 6 credits in all enrollments for this course. R: Approval of department. SA: MSM 991

999 Doctoral Dissertation Research
Fall, Spring, Summer. 1 to 24 credits. A student may earn a maximum of 4 credits in all enrollments for this course. SA: MSE 999

Doctoral dissertation research.