

The Master of Materials Science and Engineering degree is awarded after successful completion of 10 one-term courses within five years. All students are required to take either 515.401 Structure and Properties of Materials or 510.601 Structure of Materials; in addition all students must take 515.402 Thermodynamics and Kinetics of Materials or 510.602 Thermodynamics of Materials and 510.603 Phase Transformations in Materials. Of the remaining seven electives at least one must be 600-level or higher. Courses offered by the Department of Materials Science and Engineering are acceptable as electives. Students interested in taking the 515.730-731 Materials Science and Engineering Project must get prior approval from the departmental coordinator and be assigned an advisor.

#### Materials Science and Engineering Course List

510.407 Biomaterials II  
510.422 Mico-and Nano-Structured Materials  
510.601 Structure of Materials  
510.602 Thermodynamics of Materials  
510.603 Phase Transformation in Materials  
510.604 Mechanical Properties of Materials  
510.605 Electronic, Optical and Magnetic Properties of Materials  
510.606 Chemical and Biological Properties of Materials  
510.607 Biomaterials II  
510.608 Electrochemistry  
510.609 Electrochemistry Lab  
510.610 Chemistry and Physics of Semiconductor Surfaces  
510.611-612 Solid State Physics  
610.616 Applications of X-Ray Diffraction  
510.620 Metallic Glasses  
510.622 Mico-and Nano-Structured Devices  
510.624 Theory of X-ray Diffraction  
510.636 Electronic Materials Science  
510.650 Principles of Quantum Physical Interactions  
510.657 Materials Science of Thin Films  
510.661 Alloy Stability and Phase Diagrams  
510.665 Advanced Topics in Thermodynamics of Materials  
515.401 Structure and Properties of Materials  
515.402 Thermodynamics and Kinetics of Materials  
515.410 Fiber Reinforced Composites  
515.414 Alloy Selection for Engineering Design  
515.416 Introduction to Nanotechnology  
515.417 Nanomaterials  
515.706 Introduction to Composites  
515.730-731 Materials Science and Engineering Project

Below is a list of acceptable course electives offered by other departments. Students wishing to take a course not on the list to satisfy the degree requirements must get prior approval from the departmental coordinator.

- 525 . 406 - Electronic Materials
- 525 . 407 - Introduction to Electronic Packaging
- 530 . 753 - Fatigue
- 535 . 406 - Advanced Strength of Materials
- 535 . 413 - Structural Engineering Applications
- 535 . 720 - Analysis and Design of Composite Structures
- 540 . 426 - Introduction to Biomacromolecules
- 540 . 427 - Introduction to Polymer Science
- 540 . 438 - Interfacial Phenomena in Nanotechnology
- 540 . 439 - Polymer Nanocomposites
- 540 . 627 - Microscopic and Macroscopic Analyses of Polymer Solution
- 585 . 409 - Mathematical Methods for Applied Biomedical Engineering
- 585 . 608 - Biomaterials
- 585 . 609 - Cell Mechanics
- 585 . 618 - Biological Fluid and Solid Mechanics
- 615 . 441 - Mathematical Methods for Physics and Engineering
- 615 . 746 - Nanoelectronics: Physics and Devices
- 615 . 757 - Solid State Physics
- 615 . 760 - Physics of Semiconductor Devices
- 615 . 768 - Superlattices and Heterostructure Devices