MSEN6383 - Modern Physical Metallurgy

MSEN 6383 (MECH 6359) Modern Physical Metallurgy (3 semester credit hours) This course provides a basic understanding of the underlying principles that determine microstructural evolution in bulk materials and thin films during processing, and how microstructure determines their properties and performance in service. The course covers fundamental crystallography, including atomistic crystal structures and defect structures; thermodynamics and phase diagrams; kinetics of phase transformations; alloy and micro-structural engineering; and structure-property relationships that determine mechanical and electrical performance. Additionally, metallization and the reliability of multilevel interconnection and packaging for semiconductor and electronic devices are discussed. Prerequisites: (MECH 5300 and MSEN 5310) or equivalents. (3-0) T