

Materials Science & Engineering
Undergraduate Courses
Fall 2004

MSE 305 BONDING, CRYSTALLOGRAPHY, AND CRYSTAL DEFECTS (3-0-3)(F/S).

Bonding, atomic arrangements, and crystal structures of metals, ceramics, electronic materials and polymers; physical properties of solids; defects in solids; relationship between processing, microstructure and properties of materials. PREREQ: CHEM 112, ENGR 245 and **PHYS 309**.

MSE 310 ELECTRICAL PROPERTIES OF MATERIALS (3-0-3)(F/S).

Introduction to the physical principles underlying the electrical properties of modern solids. The effects of energy band structure, thermal properties and impurities on electrical conduction in solid. Concepts covered are applied to electrical device operation and performance. PREREQ: MATH 275, **MSE 305 and MSE 308**.

MSE 497 MICROELECTRONIC PACKAGING MATERIALS (3-0-3)

Packaging materials play a primary role in the success of an electronic assembly. Materials provide the foundation for design, reliability, and cradle to grave costs. The cost of manufacturing along with the cost of ownership is key to the success or failure of a product. Multiple materials properties and interactions impact the costs of an electronic product. This course provides an introduction to electronic packaging materials and how they impact: design, assembly, reliability, thermal management, shock and vibration survival, fatigue life, failure modes, and qualification test results. The course will review the selection process for packaging materials; the choice of manufacturing and assembly procedures; system interconnection hierarchy, and the evolution of single and multi-chip packaging assemblies.

PREREQ: ENGR 245

Th 6:00 – 9:00 pm MEC 113 Larry Moresco

If you are pursuing the B.S. in MSE, Please make an appointment with Bill Knowlton or Amy Moll

Recommended Course for Fall 2004

MSE 305 Bonding, Crystallography and Crystal Defects
MWF 2:40 – 3:30 pm MEC 309

Peter Müllner

MSE 310 Electrical Properties of Materials
MW 6:00 – 7:15 pm TBD

Bill Knowlton

CHEM 112 College Chemistry
MWF 8:40 – 9:30 am SN155

Henry Charlier

ENGR 210 Engineering Statics
MWF 10:40-11:30 am MEC 309
MW 6:00-7:15 pm ET 104

Joe Guarino
Stephen Affleck

OR

ENGR 240 Intro to Electric Circuits
MWF 9:40-10:30 am MEC 114

Sin Ming Loo