



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Structure-Property Relationships of Polymers

MATSCEN 5641

Credit Hours:

3.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

Course Components:

Lecture

Course Description:

An understanding of the structure/property relationships that drive the continued expansion of polymers into a wide array of applications.

Prerequisites and Co-requisites:

Prereq: 2010, CPHR 2.0 or higher, and rank 3 or 4 in Engineering; or Grad standing; or permission of instructor.

Course Goals / Objectives:

- Survey the broad field of polymer science and engineering associated with the behavior of plastics
 - Introduce the student to important concepts that distinguish plastics from inorganic materials (e.g., ceramics, metals) and govern their behavior as solids
 - Learn about crystallization and crystallization phenomena important in determining polymer 'architecture'
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Course Topics:

- Introduction to bonding in polymers
 - Polymer architecture and microstructure – crystallization/thermal analysis
 - Recycling and the “Big 6”
 - Mechanical properties and additives
 - Unit operations and properties
 - Case studies and fracture; diffusion
 - Polymer synthesis and chain structure
 - Polymer solutions
 - Polymer blends
 - Polymer surfaces and interfaces
 - Modern polymer topics
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Designation:

Elective