

## MSE-241 Polymer Science

**Credit Hours:** 3-0

**Pre-requisites:** None

### Course Objectives

#### Students will learn about

- Chains of ordinary Polymers
- States of polymers; viscous, Elastic and Viscoelastic
- Maxwell and Voigts Model
- Crystallization and growth of polymers and their kinetics
- addition or chain growth polymerization
- microstructure of polymers
- solution and other properties of polymers

### Course Contents

- Chains of ordinary Polymers, viscous state, Elastic and Viscoelastic states
- Maxwell and Voigts Model
- Crystallizations and Growth
- Kinetics of crystallization, addition or chain growth polymerization
- Polymers with microstructure, copolymers and stereo polymers, properties of polymer solutions, frictional properties, light and radiation scattering by polymers photosensitive polymers.

### Course Outcome

- Would be able to understand the polymer structure-property relationship
- Understand elastic and visco elastic properties of polymers
- Correlate the concepts of diffusion and microstructure evolution and solve real time problems

### Suggested Books:

- Paul C. Hiemenz, Timothy P. Lodge *Polymer Chemistry, Marcel Dekker Publishers, 2<sup>nd</sup> Edition.*
- Joel Fried, *Polymer Science and Technology, 3<sup>rd</sup> Edition Prentice Hall Publishing 2013.*