UCH845 POLYMER TECHNOLOGY

L	Т	Р	Cr
3	1	0	3.5

Introduction: Basic concepts of polymer science, Classification of polymers, Average molecular weight and molecular weight distribution.

Polymerization: Mechanism and kinetics of: Free radical addition polymerization, Ionic addition polymerizations, Coordination polymerization, Step growth or condensation polymerization.

Structure and Properties: Thermal transitions, Crystallinity, Molecular weight and their characterization.

Plastic Technology: Introduction, Rheology, Mixing and Compounding, Extrusion, Compression molding, Transfer molding, Injection molding, Blow molding, Calendering, Coating, Casting, Thermoforming, Lamination, Encapsulation & Potting, Welding & Joining, Finishing operations.

Fiber Technology: Introduction, Spinning, Fiber treatment, Properties.

Elastomer Technology: Vulcanization, Reinfocement, Properties.

Manufacture: Brief description of manufacture, Properties and uses of Polyethylene (HDPE&LDPE), Poly propylene, Polyvinylchloride, Polystyrene, Nylon, Polyethylene terephthalate.

Polymer Blends: Compatibility, Types, Properties, Glass transition temperature.

Polymer Composites: Types, Properties, Preparation.

Polymer Nanocomposites: Basic concepts, Preparation, Characterization.

Text Books:

- 1. Billmeyer, F.W. Jr., Text Book of Polymer Science, Wiley & Sons (2005).
- 2. Tadmo, Z; Gogos, C.G., Principles of polymer processing, Wiley Interscience (2006).

Reference Books:

- 1. Kumar, A., Gupta, R. K., Fundamentals of Polymers, McGraw Hill (1998).
- 2. Williams, D. J., Polymer Science and Engineering, Prentice Hall of India (1971).