SUBJECT NO-MS41004, SUBJECT NAME- POLYMER TECHNOLOGY

LTP- 3-0-0,CRD- 3

SYLLABUS :-

Polymer as a material: Basic concepts. Classification of polymers, molecular structure, polymeric isomerism, tacticity, polymer morphology, etc. Raw materials for polymer manufacture. Outline principles of polymer synthesis: Kinetics of polymerization (step and chain). Control of polymer structure and molecular weight. Multicomponent polymeric materials (polymer miscibility, polymer blends and alloys). Polymer solution and polymer melt, crystallinity and inter-chain forces in polymers. Polymer testing and characterization. Correlation of polymer structure and properties. Polymerization techniques with little reference to industrial manufacture: mass, solution, suspension, emulsion, solid state, gas phase. Solid state properties of polymers: Glassy state, high elastic rubbery state, mechanical/thermal/elastic and optical properties of polymers. Polymer products: Compounding, processing and fabrication of rubber, plastic and fiber products. Polymer composites. Frontiers of polymer materials: (Engineering and commodity polymers, biodegradable polymers, biomedical polymers, conducting polymers, stimuli responsive polymers, polymers for space, etc.). Problems of polymers: (Thermooxidative degradation, fire hazards, environmental hazards, toxicity, etc.). Polymer applications in different fields.