5th Semester	RPL5D003	Biomedical Plastics	L-T-P 3-0-0	3 Credits

Biomedical Plastics

Module I:BIOMATERIALS & BIOMEDICAL POLYMERS
BIOMATERIALS: Biocompatibility, Stabilization, Inflammation and Wound Healing, Blood Clotting System, Biological response to Implants, Implant Design and Applications.
BIOMEDICAL POLYMERS: Criteria for The selection of biomedical polymers, physico-chemical aspects of the blood compatibility of polymeric surface. **(8 Hours)**

Module II: BIOMEDICAL POLYMERS FROM BIOLOGICAL SOURCES
Biomedical polymers from biological source, poly hydroxy alkanoic acids microbial polysaccharides, silk, collagen. Microbial cellulose, hyaluronic acid, synthetic polymers such as PMMA, silicon rubber, polyethylene, natural rubber, hydrogels. **(8 Hours)**

Module III: BIOMEDICAL APPLICATIONS OF POLYMERS
Permanent Implants For Function Orthopaedics, Cardio Vascular, Respiratory Patches And Tubes, Digestive System, Genitourinary System, Nervous System, Orbital (Corneal And Lens Prosthesis) – Permanent Implant For Cosmoses, Other Applications Of Engineered Material In Clinical Practices, Silicone Implants. Polymer Membranes, Polymer Skin, Polymeric Blood. **(10 Hours)**

Module IV: POLYMERIC LENSES
Contact Lenses, Hard Lenses, Gas Permeable Lenses, Flexible Lenses, Soft Lenses, Hydrogels, Equilibrium Swelling, Absorption and Desorption, Oxygen Permeability, Types of Soft**.** **(6Hours)**

Module V: DENTAL POLYMERS
Dental applications, denture bases, dentate reliners, crown and bridge resins, plastic teeth, mouth protectors, maxillofacial prosthetic materials, restorative material, polyelectrolyte based restoratives, sealants, adhesives, dental impression and duplicating materials, agar, algmater elastomers**. (8 Hours)**

Books:
[1] J B Park, Bio-materials, An Introduction, Pleneum Press
[2] H.F. Mark (Ed), Encyclopedia of polymer science and engineering, John Wiley and Sons New York, 1989.
[3] Plastics Materials – J S Brydson.