

**SARDAR PATEL UNIVERSITY**  
**Programme & Subject: M.Sc (Polymer Science & Technology)**  
**Semester: III**  
**Syllabus with Effect from: June-2015**

<b>Paper Code: PS03CPST10</b>	<b>Total Credit: 4</b>
<b>Title Of Paper: Polymer Composites and Fibre Technology</b>	

Unit	Description in detail	Weightage (%)
I	<b>Composites:</b> Introduction to composite materials, definitions, classifications, applications, advantage and disadvantages of composites. Types of reinforcements, short fiber reinforcement, matrix material, types of mold for composites and preparation of molds, release agents, core materials, coupling agents, fillers and pigments, gel coats. Spinning & Finishing of fiber: Introduction, Melt spinning, Solution spinning, Dry spinning, Gel spinning, Wet spinning	25%
II	<b>Reinforcing materials:</b> Definition of fibres, Classification and nomenclature of fibres, Definition of various textiles terms, structure principles of fibre forming polymers. Natural & Synthetic fiber: Introduction, Cotton, Rayon, Cellulose acetate, Wool, Polyamide, Acrylic fibre, Polyethylene terephthalate, Polyolefines, Spandex, Glass, Asbestos, Carbon, Steel fibres preparation, properties and applications.	25%
III	<b>Polymer matrix materials:</b> Important thermosetting materials viz. Polyester, Epoxy and Phenolics and their curing systems. Thermoplastics and elastomeric materials, properties and applications of composites.	25%
IV	<b>Processing of composites:</b> Sheet moulding compounds (SMC), Dough moulding compounds (DMC) and Prepregs. Composites processes like Hand lay up, Spray lay up, Vacuum bag, Pressure bag, Autoclave moulding, Cold press, Hot press moulding, Resin injection, Resin transfer moulding, Foam reservoir, Filament winding, Centrifugal casting, Pultrusion, continuous laminations, Injection moulding, Compression and transfer moulding of composites. Troubleshooting and remedies for composite processing.	25%

**Basic Text & Reference Books:-**

- Polymer blends and Composites, L.H. Sperling, Published by Plenum Press.
- Handbook of Plastics Elastomers and Composites, Charles A Harper, McGraw Hill, New York.
- FRP technology- Fiber reinforced Resin systems, Weatherhead, Applied Science, and London.
- Handbook of Polymer Composites for Engineer's, Leonard Holloway, Jaico, India.
- Handbook of Reinforcements for plastics, Milewski Katz, Van Nostrand Reinhold, New York.
- Polymer Engineering Composites, M.C. W Richardson, Published by Applied science, London.
- Modern Textiles by Dorothy Lyle
- Essentials of Textiles by M.J. Joseph
- Textile fibres and their use by K.P. Hess

