

SARDAR PATEL UNIVERSITY
Programme & Subject: M.Sc (Polymer Science & Technology)
Semester: III
Syllabus with Effect from: June-2013

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| Paper Code: PS03CPST07 | Total Credit: 4 |
| Title Of Paper: Polymer Composites, Blends & Adhesives | |

| Unit | Description in detail | Weightage (%) |
|------|---|---------------|
| I | Composites: Introduction to composite materials, definitions, classifications, applications, advantage and disadvantages of composites, types of mold for composites and preparation of molds, release agents, core materials, coupling agents, fillers and pigments, gel coats, equipments and tools used for preparation of composites, Sheet moulding compounds (SMC), Dough moulding compounds (DMC) and Prepregs | 25% |
| II | Processing of Composites: 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, Troubleshooting and remedies for composite processing. | 25% |
| III | Compatibilization: Practical compatibilization, factors affecting miscibility, compatibilization by Physical processes, Physical additives, polymer modifications for physical compatibilization, reactive compatibilizers and reaction mechanism. | 25% |
| IV | Adhesives: Concepts and terminology, Classification of adhesives, advantages and disadvantages of adhesives bonding, joint design, adhesive selection, adhesive properties surface preparation and bonding process. Solvent cementing of thermoplastics, cementing of thermosetting Polymer, Welding of thermoplastics, Ultrasonic assembly. | 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.
- Plastics Engineering, R.J. Crawford, Maxwell Macmillan International, New York.
- FRP technology- Fiber reinforced Resin systems, Weatherhead, Applied Science, and London.
- Handbook of Reinforcements for plastics, Milewski Katz, Van Nostrand Reinhold, New York.
- Polymer Engineering Composites, M.C. W Richardson, Published by Applied science, London.
- Multi component polymer systems, I.S. Miles and S. Rostami, Chapman & Hall, New York.
- Polymer blends and Alloys, G.O. Shonaike and G.P. Simon, Marcel Dekker Inc, New York.
- Polymer Blends, Vol 1& 2, D.R. Paul and Seymour Newman, Published by Academic Press, New York.
- Adhesives Handbook, Butterworth's, J. Shields.

