

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. SEMESTER : VI

MANUFACTURING ENGINEERING

Subject Name: COMPOSITE TECHNOLOGY

Subject Code:163406

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam(E)	Mid Sem Exam(Theory) (M)	Practical (Internal)
4	0	0	4	70	30	50

Sr No	Course Contents
1	Introduction – Resins for composites – polyester resins – epoxy resin – phenolic resins – vinyl ester resins – alkyd resins.
2	Reinforcements for composites – Natural fibers – jute, sisal – synthetic fibers – glass fibers – types and different forms – carbon fibers – classification - graphite fibers – polyethylene fibers – silicon carbide and boron fibers.
3	Additives for composites – catalysts – room temperature and elevated temperature – accelerators – coupling agents – fillers – flame retardants – toughening agents – UV stabilizers.
4	Processing of composites – Important processes like hand lay-up, spray-up, resin transfer moulding, vacuum bag, pressure bag moulding, centrifugal casting, pultrusion, filament winding, moulding compounds – SMC, DMC, BMC, TMC.
5	Testing Quality control & end use of plastics – Testing for mechanical, electrical, thermal, optical and chemical properties, Determination of shelf life and gel time – Non-destructive testing methods. Application of FRP products - in marine, chemical, railways, electrical and electronic industry, space structures – Robotics.

References:

1. P.K. Mallic, Fiber Reinforced composites, Morcal Dekker Inc. 1988.
 2. Sidney H. Goodman, Handbook of Thermoset Plastics, John Wiley & Sons, 1984.
 3. T.G. Gutowski, Advanced Composites Manufacturing, John Wiley & Sons, 1997.
- S.M. Lee, Reference Book for Composite Technology I, II & III, Technomic Publishing