

GUJARAT TECHNOLOGICAL UNIVERSITY
B.E. SEMESTER : V
CHEMICAL TECHNOLOGY

Subject Name: Technology of Polymeric & Rubber Materials – I

Subject Code: 153602

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
3	0	2	5	70	0	30	50

Sr. No.	Course contents
1.	Manufacturing technology for various polymers & rubbers such as:
2.	Polyethylene – LLDPE, LDPE, HDPE, ULDPE; Polypropylene & copolymer of propylene with ethylene, including ethylene – propylene – rubber, polyisobutylene, modified polyethylene.
3.	Polyvinyl chloride, copolymers with vinyl acetate, vinyl alcohol, maleic anhydride etc.; polyvinylidene chloride.
4.	Styrene polymers - polystyrene, HIPS, SAN, ABS, important copolymers of styrene with maleic anhydride & acrylics. Toughening of thermoplastics & mechanism of the same. Thermoplastic elastomers
5.	Polyesters such as PET, PBT, PTT.
6.	Polymamides – Nylon 6, Nylon6.6, Nylon11, aromatic polyamide such as Kevlar, Polycarbonates, polyoxymethylene i.e. Polyacetal. Acrylic polymers-polyacrylic acid, polyacrylamide, PMMA, ASA, Polyacrylonitrile etc.
7.	Liquid crystalline polymers, specialty plastics- PES, PAES,PEEK,PEAK etc.

Reference Books:

1. Text book of Polymer Science , Billmeyers, ,John Wiley & Sons 1984.
2. Encyclopedia of Polymer Science & Technology, John Wiley & Sons, Inc 1965
3. Encyclopedia of Polymer Science & Engineering, John Wiley & Sons, Inc 1988
4. Polymer Chemistry Oxford University Press, Malcolm P. Stevens, Inc, 1990
5. Introduction to Polymer Science & Technology H.S.Kaufman & J.J.Falcetta, Wiley – Interscience Publication, 1977
6. Handbook of Polyethylene, A.J.Peacock, Marcel Dakker Inc, 2000
7. PVC Technology, A.S.Athalye & Prakash Trivedi, Multi-Tech Publishing Co, 1994
8. Engineering Thermoplastics Polycarbonates Polyacetals Cellulose Esters, L. Bottenbruch, Hanser Publishers, 1996
9. Composite Polymeric Material, R.P.Sheldon, Applied Science Publishers, 1982
10. Composites: Design Guide, Industrial Press Inc, 1987.
11. Composite Material Handbook, M.M.Schwartz, McGraw-Hill company, 1984
12. Biopolymers, Wiley,VCH Verlag, 2003
13. Handbook of Thermoplastics, O.Olabisi, Marcel Dekker, 1997

14. Plastics Materials, Butterworth Scientific, J.A.Brydson, 2006
15. Polymer chemistry, Seymour & Carraher, Marcel Dekker, 2003
16. Their Chemistry & Chemical Engg. Brage Golding, Polymer & Resins, D.Van Nostran Company Inc, 1959
17. Structures of Cellulose, American Chemical society, Atlla, 2003
18. Styrene Based Plastics & their Modifications Svec, Ellis Harwood,1991
19. Handbook of Rubber Technology, S Blow, Galgotia Publications Pvt. Ltd, 1998
20. Rubber Technology, Morell S H, Applied Science Publication, 1981
21. Plastics and Rubber, E W Duck, Butterworth, 1971
22. Tyre and Vehical Dynamics, Hans B Pacejka, SAE International, 2nd Ed, 2005
23. Introduction to Rubber Technology, Andrew Ciesielski,RAPRA Publications, 2000
24. Rubber Technology, Maurice Morton, Springer, 1st Ed, 1987
25. The Science and Technology of Rubber, Mark and Erman, Academic Press,3rd Ed,2005
26. Rubber Processing, Robert Johnson, Hanser Publications, 2001
27. Rubber Compounding, Barlow, CRC Press, 2nd Ed, 1993
28. Rubber Compounding : Chemistry and Applications , Brendan Rodgers, CRC, 1st Ed, 2004
29. Rubber Compounding 2E: Compounding and Testing for Performance, John Dick, Hanser Publications, 1st Ed.,2009
30. The Mixing of Rubber, R F Grossman, Springer, 1st Ed.,1997