

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

Subject Name: Product Design Concepts: Structure & Additives
Subject Code: 173607

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	University Exam(E)	University Exam(P)	Mid Sem Exam(Theory) (M)	Practical (Internal)
4	0	3	7	70	30	30	20

Sr. No	Course contents
1.	Structure of polymers & rubbers
2.	General structural features of polymers: Chemical & Physical structure, Thermal behaviour, Glass Transition Temperature, Chain Flexibility, Crystallinity, Spherulites, Degradation & similar effects
3.	The influence of processing parameters on the structure & properties of polymers & rubbers.
4.	Importance of additives in product design

Reference Books:

1. Polymer Structure, Properties & application, R.D. Deanin, American Chemical Society, 1974
2. Properties of Polymer; Correlations with Chemical Structures & their numerical Estimation & Predication from Additive Group Contribution Van Drevelen,, Elsevier Publication Company, 1990.
3. Relating Materials Properties to structure, D. J. David, Technical Publishing Company Inc, 1999.
4. Raw Materials for Industrial Polymers , H Ulrich, Hanser Publication ,1989
5. Principles of Polymer Science, Bahadur & Sastry, Narosa Publishing Houses, 2002
6. Polymer Science , Gowarikar, John Wiley & Sons ,1986
7. Encyclopedia of Polymer Science & Technology, John Wiley & Sons, Inc ,1965
8. Encyclopedia of Polymer Science & Engineering, John Wiley & Sons, Inc, 1988
9. Polymer Chemistry , Malcolm P. Stevens, Oxford University Press Inc ., 1990
10. Textbook of Polymer Science, Billmeyer, John Wiley & Sons, 1984.
11. 11) Polymer Science and Technology: Plastics, Rubbers, Blends and Composites, P Ghosh, Mc
12. Graw Hill, 2nd ed., 1990
13. Principles of Polymer Systems, Rodriguez, Hemisphere Publishing Corpn, 5th Ed., 2007
14. Textbook of Polymer Science, P Nayak and S Lenka, Kalyani Publishers, 1986
15. Polymer Chemistry, Seymour and Carraher, Marcel Dekker, 2003
16. Handbook of Rubber Technology, S Blow, Galgotia Publications Pvt. Ltd, 1998
17. Rubber Technology, Morell S H, Applied Science Publication, 1981
18. Plastics and Rubber, E W Duck, Butterworth, 1971

19. Tyre and Vehical Dynamics, Hans B Pacejka, SAE International, 2nd Ed, 2005
20. Introduction to Rubber Technology, Andrew Ciesielski,RAPRA Publications, 2000
21. Rubber Technology, Maurice Morton, Springer, 1st Ed, 1987
22. The Science and Technology of Rubber, Mark and Erman, Academic Press,3rd Ed,2005
23. Rubber Processing, Robert Johnson, Hanser Publications, 2001
24. Rubber Compounding, Barlow, CRC Press, 2nd Ed, 1993
25. Rubber Compounding : Chemistry and Applications , Brendan Rodgers, CRC, 1st Ed, 2004
26. Rubber Compounding 2E: Compounding and Testing for Performance, John Dick, Hanser Publications, 1st Ed.,2009