

# GUJARAT TECHNOLOGICAL UNIVERSITY

## DIPLOMA IN PLASTICS ENGINEERING

### Semester: 4

**Subject Name POLYMER CHEMISRY-II**

Sr.No	Course content
1.	<b>STRUCTURE OF POLYMER</b> 1.1 Introduction 1.2 Molecular weight and distribution 1.3 Polydispersity 1.4 Polymer morphology 1.5 Crystalline and amorphous structure of polymer 1.6 Degree of crystallinity 1.7 Polymer crystallization and crystallinity 1.8 Effect of crystallinity on polymer properties 1.9 Chemical and geometric structure of polymer 1.9.1 Configuration and confirmation 1.9.2 Linear, branched and cross-linked structure 1.9.3 Random, alternating, block and graft polymers 1.9.4 Stereo regular polymer 1.10 Determination of molecular weight by capillary viscosity method
2.	<b>POLYMER DEGRADATION AND STABILITY</b> 2.1 Introduction 2.2 Types of degradation 2.3 Thermal Degradation 2.4 Mechanical Degradation 2.5 Ultrasonic wave Degradation 2.6 Photo (ageing) degradation
3.	<b>POLYMER REACTION AND POLYMER SOLUTIONS</b> 3.1 Introduction 3.2 Hydrolysis 3.3 Acidolysis 3.4 Aminolysis 3.5 Hydrogenation 3.6 Addition and substitution reactions 3.7 Cross-linked reactions 3.8 Polymer dissolution
4.	<b>POLYMER MANUFACTURING TECHNIQUES</b> 4.1 Introduction 4.2 Industrial (Commercial) manufacturing process of following polymers in detail 4.2.1 LDPE/HDPE 4.2.2 PP 4.2.3 PS 4.2.4 PVC 4.2.5 ABS 4.2.6 PA (Nylon) 4.2.7 Polyester (TP) 4.2.8 Polyacetal (POM)

	4.2.9 PMMA 4.2.10 PU 4.2.11 PF 4.2.12 UF 4.2.13 MF 4.2.14 Silicone 4.2.15 Epoxy 4.2.16 Polyester (TS)
5.	<b>SPECIALITY POLYMERS</b> 5.1 Introduction 5.2 Conductive and semi-conductive polymers 5.3 Liquid crystal polymers 5.4 Ion exchange polymers 5.5 Ladder polymers 5.6 Ionic polymers 5.7 Photosensitive polymers 5.8 Inorganic polymers

### Reference Books:

Sr. No.	Name of Reference	Author
1	Polymer Science	V. R. Govariker
2	Textbook of Polymer Science	Billmeyer Jr.
3	Polymer Science and Tech. of Plastic and Rubber	Premamoy Ghosh
4	Experimental Plastic and Synthetic	Resin G. F. Dalelo
5	Polymer Chemistry	Shymor
6	Polymer Chemistry	Cherr
7	Polymer Chemistry	Bruno Vollment
8	Fundamentals of Polymer Science and Engineering	Kumar A & Gupta
9	Plastic Technology	D. C. Miles
10	Polymer Manufacturing	Radian Corporation
11	Shreev's Chemical Engg. Process	Mcgraw Hill publication
12	Polymer Chemistry	Rave