

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. SEMESTER : VIII

RUBBER TECHNOLOGY

Subject Name: **POLYURETHANE TECHNOLOGY**

Sr. No.	Course Contents	Total Hrs
1.	Introduction: The development of the Polyurethanes, The Market of the Polyurethanes.	4
2.	Chemical and Physical-Chemical Principles of Polyurethane Chemistry: Chemical Principles, Important Building blocks for Polyurethanes, Preparation methods for Polyurethanes, Recent developments, Perceptions on the physical chemistry of the structure of Polyurethanes.	8
3.	Raw Materials: Introduction, Polyols: Polyether & Polyester, Isocyanates, Conversion Products of Raw Materials, Additives and Auxiliary Materials, Industrial Hygiene of PU Raw Materials, Additives.	8
4.	Polyurethane Processing: Basics, Design Principles for Polyurethane Processing Equipments, Steps of the Polyurethane Processing like Delivery and storage of the raw materials, Preparation of components, Metering, Mixing, Pouring, Process Controls.	6
5.	Flexible Foams: Introduction, Slabstock Foams, Carpet Backing, Flexible Polyurethane Molded Foam, Semi-rigid Polyurethane Molded Foam.	6
6.	PU Rigid Foam: Introduction, Chemistry and Raw Materials, Manufacturing, Properties, Relationship between Production Methods and Properties, Applications, Consolidation of Coal and surrounding Strata.	6
7.	Determination of the Composition and Properties of Polyurethanes: Introduction, Determination of the Chemical Composition, Determination of Material Properties, Suitability Determination through End-Product Testing, Combustibility Testing and Rating.	8
8.	Polyurethane and the Environment: Introduction, Industrial Hygiene in Manufacturing and Processing, Ecology of Polyurethanes, Polyurethanes as Foodstuffs-Commodities, Flammability and Flammability Risk etc.	8

Practical and Term Work:

It should be based on theories

Textbooks:

- Polyurethane Handbook By: Dr. Gunter Oertel
- Handbook of Thermoplastic Elastomer, Edited by Benjamin M. Walker

Reference Books:

- Thermoplastic Elastomers: A Comprehensive Review, Edited by N. R. Legge, G. Holden, H. E. Schroeder
- Rubber Materials & Their Compounds, by J. A. Brydson