

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. SEMESTER: V

PLASTIC TECHNOLOGY

Subject Name: **Plastic Recycling and Waste Treatment**

Subject Code: **152303**

Teaching Scheme				Evaluation Scheme		
Theory	Tutorial	Practical	Total	University Exam (Theory) (E)	Mid Sem Exam (Theory) (M)	Practical (I)
3	0	3	6	70	30	50

Sr. No.	Course content
1.	Introduction to Plastic Waste.
2.	Sources of Plastic Wastes: <ul style="list-style-type: none"> • Generation of industrial plastic wastes. • Plastics in solid wastes. • Future of waste disposal.
3.	Separation of Component of Municipal Refuse: <ul style="list-style-type: none"> • Separation processes.
4.	Primary Recycling: <ul style="list-style-type: none"> • Degradation of thermoplastics. • Industrial practices.
5.	Secondary Recycling: <ul style="list-style-type: none"> • Approaches to secondary recycling. • Chemical modification of mixed plastic waste • Secondary recycling by Co extrusion & Injection molding.
6.	Use of Waste Plastic as Filler.
7.	Tertiary Recycling: <ul style="list-style-type: none"> • Chemicals from waste: <ol style="list-style-type: none"> 1. Pyrolysis 2. Chemical decomposition.

8.	Quaternary Recycling: <ul style="list-style-type: none"> Energy from plastic waste: <ol style="list-style-type: none"> 1. Introduction 2. Incinerator 3. Energy recovery from municipal refuse. 4. Its effect on reuse. 5. Treatment of predominantly plastics waste.
9.	Disposal of Waste Plastics without Recovery of Value: <ol style="list-style-type: none"> 1. Incineration without recovery of energy. 2. Plastic in land filled.
10.	Recycling of Various Plastics: <ol style="list-style-type: none"> 1. HDPE 2. Acrylics 3. PET 4. PVC 5. Engg. Plastics 6. Medical Plastics
11.	Emerging Trends in Recycling.
12.	Instrumentations and Control Used for Recycled Products.
13.	Biodegradation of Plastics: <ol style="list-style-type: none"> 1. Application of biodegraded plastics. 2. Classification, preparation and utilities of degradable plastics. 3. Studies in starch filled plastics, 4. Studies in jute & other natural fiber filled plastics. 5. Collection and segregation of biodegradable plastics.
14.	Plastics and Environment: <ol style="list-style-type: none"> 1. Environment consciousness. 2. Environment education & awareness programmers. 3. Environmental policies, legislation & code of protection.
15.	Recycling of Co- extruded film.
16.	Recycling of Medical Waste.

Practical and Term Work:

Based as per the syllabus prescribed.

Reference Books:

1. Plastic waste, Recovery of Economic Value by Jacob Leidner.
2. Plastics Waste as Potential Source of Energy by O.P. Ratra.
3. Recycling of PVC & PVC Rich fractions from Mix plastics. By M. Sender, Institute of materials publication.

