GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: PG

Branch: Plastic Engineering

Course/Subject Code: ME01084051

Course / Subject Name: Plastic Waste Management

w.e.f. Academic Year:	2024-25
Semester:	1st Semester
Category of the Course:	PEC

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+(PR/2)	Assessment Pattern and Marks				Total Marks
				Theory		Tutorial/ Practical		
L	T	PR	C	ESE (E)	PA/ CA (M)	PA/CA(I)	ESE (V)	
3	0	2	4	70	30	20	30	150

Course Content:

Unit No.	Content	No.of Hours	%of Weightage
1.	Introduction to Plastic Waste Sources of Plastic Waste, Plastics Cycle- concept of 4R	4	5
2.	Separation of Plastic waste Separation techniques, like Sorting, Separation of Paper/Plastics mixture, Separation of plastics from Plastic-coated fabric, Separation of mixtures of Plastics, Separation using Recycling Codes	10	20
3.	Primary Recycling: Advantages and disadvantages of Primary Recycling. Granulators used in Primary recycling, Recycling of granulating difficult materials, In-line Automatic Recycling Systems Secondary Recycling: Techniques for secondary recycling. Equipment used for secondary recycling, Secondary Recycling by Co-extrusion and Co-injection Molding,	12	30

	Use of Plastic waste as fillers		
4.	Tertiary Recycling: Definition, advantages and disadvantages of Pyrolysis , Pyrolysis systems for Municipal solid refuse, Pyrolysis of Plastics waste- Reactors for Pyrolysis of Plastics, Chemical decomposition of plastics waste Quaternary Recycling: Construction and working of Incinerators, Problems associated with incineration of pure plastic waste, Incinerators suitable for Plastics waste Landfill-Open Dumping & Sanitary Landfill, Plastics in Landfill	13	30
5.	Recycling of commonly used Plastics such as, PET, PVC, Polyethylene, Environmental Implications of Recycling & Polymer Degradation	6	15
	Total	**45**	**100**

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
15	15	20	10	5	5

WhereR:Remember;U:Understanding;A:Application,N:AnalyzeandE:EvaluateC:Create(asper Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

Books:

1. Plastics Waste by Jacob Leidner
2. Plastics Fabrication and Recycling by Manas Chanda & Salil Roy
3. Introduction to Plastics recycling by Vannessa Goodship
4. Plastics Waste Management, Disposal Recycling and Reuse by Nabil Mustafa (Marcel Dekker, Inc. New York)

Suggested Course Practical List: : As per the above syllabus topics

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