



# GUJARAT TECHNOLOGICAL UNIVERSITY

**Bachelor of Engineering**

**Subject Code: 3172319**

**Semester – VII**

**Subject Name: Sectorwise Applications of Plastics**

**Type of course: Professional Elective Course**

**Prerequisite: NA**

**Rationale:** At the end of the course, the student will understand various Sectorwise Applications of Plastics. They will be able to identify the plastics and its importance for use in specific applications. They can apply this knowledge in selection of plastics in specific sectorwise application.

**Teaching and Examination Scheme:**

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
3	0	2	4	70	30	30	20	150

**Content:**

Sr. No.	Content	Total Hrs
1.	<b>PLASTICS IN BUILDING &amp; CONSTRUCTION</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Building &amp; Construction Industry</li><li>- Use of Plastics in applications like roofing, flooring, windows, pipes, insulation, polymer concrete composites, wood plastic composites</li><li>- Properties and applications of plastics used in building &amp; construction</li></ul>	6
2.	<b>Plastics in Automotive Applications</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Automotive Applications</li><li>- Use of Plastics in applications like Exterior Body Parts, Interior components, load bearing parts, Under the bonnet hood,</li><li>- Polymer nanocomposites, Green composites in automotive applications</li><li>- Properties and applications of plastics used in Automotive Applications</li></ul>	6
3.	<b>Plastics in Electrical and Electronic Applications</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Electrical and Electronic Applications</li><li>- Use of Plastics in applications like Wire and Cable Insulation, Polymer Insulators, Printed Circuit Boards, Connectors, Enclosures, Optical Fibers, Information Storage Discs, Polymeric FET and LED</li><li>- Properties and applications of plastics used in Electrical and Electronic Applications</li></ul>	7



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4.	<b>Plastics in Medical and Biomedical Applications</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Medical and Biomedical Applications</li><li>- Use of Plastics in applications like Medical Packaging, Nontoxic Sterilizable Items, Tissue engineering using Biodegradable Polymers, Conducting Polymer Nanotubes, Biomimetic Actuators, Dental Resin Composites, Appliances, Disposables</li><li>- Properties and applications of plastics used in Medical and Biomedical Applications</li></ul>	7
5.	<b>Plastics in Agriculture and Horticulture</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Agriculture and Horticulture</li><li>- Use of Plastics in applications like Plastic Film, Plastic Crates, Building, Pipes and Hoses, Greenhouses,</li><li>- Properties and applications of plastics used in Agriculture and Horticulture</li></ul>	6
6.	<b>Plastics in Domestic Appliances and Business Machines</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Domestic Appliances and Business Machines</li><li>- Use of Plastics in applications like Large Appliances, Small Appliances, Business Equipment, Air Filters, Solar Systems,</li><li>- Properties and applications of plastics used in Domestic Appliances and Business Machines</li></ul>	5
7.	<b>Plastics in Marine and Offshore Applications</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Domestic Appliances and Business Machines</li><li>- Use of Plastics in applications like Cables, Coatings, Other Applications in Marine &amp; Offshore applications</li><li>- Properties and applications of plastics used in Marine and Offshore Applications</li></ul>	5
8.	<b>Plastics in Sports</b> <ul style="list-style-type: none"><li>- Requirements and Selection Criteria of plastics in Domestic Appliances and Business Machines</li><li>- Use of Plastics in applications like Synthetic Surfaces, Footwear, Equipment,</li><li>- Properties and applications of plastics used in Sports</li></ul>	4



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## Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	25	10	10	3	2

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)**

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

### Reference Books:

1. Plastic Technology Handbook by Manas Chanda
2. Plastic Materials by J.A.Brydson
3. [Plastics in Medical Devices: Properties, Requirements and Applications](#) by Vinny Sastri
4. Plastics: Materials and Processing by A.Brent Strong

### Course Outcomes:

The theory should be taught and practical should be carried out in such a manner that students are able to acquire required learning out comes in cognitive, psychomotor and affective domain to demonstrate following course outcomes.

Sr. No.	CO statement	Marks % weightage
CO-1	Identify various sectorwise applications of plastic materials	10
CO-2	List the properties and applications of plastics used in sectorwise applications and	20
CO-3	Describe the requirements and selection criteria of plastics for various applications	30
CO-4	Explain the importance of plastics for their use in sectorwise applications	20



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CO-5	Apply the knowledge of plastic materials in different areas of applications.	20
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**List of Experiments: - As per the syllabus topics**

**Major Equipment:**

**List of Open Source Software/learning website:**

1. [nptel.ac.in](http://nptel.ac.in)
2. [bpf.co.uk](http://bpf.co.uk)