GUJARAT TECHNOLOGICAL UNIVERSITY

RUBBER TECHNOLOGY (26)
LATEX PROCESSING & ITS APPLICATION
SUBJECT CODE: 2152606
B.E. 5th SEMESTER

Type of course: B. E. Rubber Technology

Prerequisite: NA

Rationale: NA

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	0	4	7	70	20	10	20	10	20	150

Content:

Sr. No	Topics	Teaching Hrs.	Module Weightage
1.	Latex Dipped Goods: Introduction, the principle latex dipping processes, production of articles by latex dipping processes, Design of latex compound for latex dipping processes, Quality assurance for thin walled latex dipped rubber products, permeability of thin latex dipped rubber films.	7	10
2.	Latex Foam Rubber: Introduction, General Principles, underline formulation of latex compounds for manufacture of latex foam rubber, The Dunlop Process, Production of Latex foam rubber from heat sensitized latices, The talalay process, The dow process, The crown rubber process, The revertex process, Physical properties of latex foam rubber.	7	15
3.	Latex Thread: Compounding, Formulations. Manufacturing process.	7	10
4.	Latex & Textiles: Introduction, Latex spreading, combining and doubling, Lattices as binders for non woven fabrics, Latex Carpet Backing, Lattices in Carpet underlay materials.	7	15
5.	Latex Based Surface Coatings: Introduction, Surface coatings based upon Vinyl Acetate Homoploymer & Copolymer Lattices, Surface coating based upon :polystyrene latex, Polytetrafloro ethylene latex, Vinyl choloride-vinylidene chloride copolymer lattices.	7	15
6.	Latex & Paper: Introduction, Beater or wet-end addition of lattices to paper pulp, Paper saturation using lattices, Paper coating using latex containing compounds.	6	10

7.	Latex Based Adhesives: Introduction, Formulattery principles for latex based adhesives, Latex based adhesives for Paper, Leather & wood, metal, ceramics, plastics & glass. Latex based rubber to textile bonding adhesives, effect of nature of adherend surface upon nature of surface of films derived from latex adhesives. Effect of high humidity and liquid water upon strength of adhesive bonds produced from latex based adhesives.	7	15
8.	Latex & Cement: General Considerations, advantages of latex- cement compositions over conventional concrete in flooring application, Typical latex cement compositions, effect of various factors upon behaviour of latex – cement compositions, implications for mechanism of setting, use of latex-cement compositions for repair of damage concrete.	6	10

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
14	14	14	14	14	-

Reference Books:

1. Polymer Latices Vol. 2, by D. C Blackley.
2. Polymer Latices Vol. 3, by D. C Blackley.
3. Hand book of Rubber Projects, Tech. & Product Formulary. By: SBP Consultants & Engineers (P) Ltd.

Course Outcome:

After learning the course the students should be able to

1. Understand the principle latex dipping processes.
2. Know about different processes for latex foam rubber manufacturing..
3. Learn about manufacturing process of latex thread..
4. Study about latex based surface coating.
5. Compare between different type of latex & paper incorporation process.
6. Learn about the Formulattery principles for latex based adhesives.
7. Understand the importance of latex in textile industry.
8. Learn about the effect of various factors upon behaviour of latex – cement compositions.
9. Able to develop various latex products.

List of Experiments:

Tutorials/Presentation/Practicals based on above topics

Design based Problems (DP)/Open Ended Problem:

1. Process control in latex operations.
2. Reduction of Defects in Latex Dipping Production .
3. Latex products in medical industry

Major Equipments:

Planetary Mixer, Flex resistance tester, Compression Set Tester for Foam Rubber, Ph meter & Dipping Assembly etc.

List of Open Source Software/learning website:

- http://www.ardl.com/
- http://www.theijes.com/
- http://www.chemionics.com/natlatex.html

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.