GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3172612
Semester – VII
Subject Name: BELT, HOSES & FOOTWEAR TECHNOLOGY

Type of course: Professional Elective Course -IV
Prerequisite:
Rationale:

Teaching and Examination Scheme:

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

Content:

Sr. No.	Content	Total Hrs
1	**Conveyer Belting:** Functions of Conveyer belting, Components, driving gear, idlers, Conveyer belt design, Choice of belt width & Spread, Elevator belt design.	08
2	**Belt Construction:** Cover, Carcass & insulation, effect of textile components of Performance, Belt selection, Belt joining, Care & maintenance of belting. Belt properties, applications, belt quality grades.	07
3	**Power Transmission Belts:** Flat belts v-belts-main types of power transmission belt- grouped v-forms, timing belts, out length belonging, flat belting, Belt tension, Cabled cord, Care & maintenance of power transmission belts. Materials in V-belt Composition, Outline of material processing, Main points in rubber processing for V-belts. Characteristics & control factors of SFRR practice of rubber processing, Preparation for determining vulcanizing conditions. Cord properties, cord processing, practice of cord processing, post processing, canvas processing. Methods for processing unwrapped v-belts: building, skiving, wrapping, vulcanization, marking. Methods Raw edged v-belts: building, vulcanization, and cutting. Methods for processing v-ribbed belts: Control factors of grinding resistance, practice of grinding.	08
4	**Hoses:** Hose design & construction, Mfg. Process, Hose fittings & Couplings, Hydraulic assemblies, Hose Standardization testing & specification, care & maintenance of hose. Different types of hoses and their manufacturing process.	12
5	**Footwear:** Various mfg. processes, types of adhesives, Preparation & testing of various adhesives like solvent based rubber, mfg. of various components like soles, insoles, foot bed, counter, toe, puff, stiffeners, finishers etc. specialty.	10

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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**
10	10	15	15	10	10

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:

- Hose Technology By Evans
- Rubber Products Manufacturing Technology By: Anil K. Bhowmick
- Rubber Technology By: C. M. Blow
- Recent Advances in Rubber Technology Conference book.

Course Outcome:

After learning this course students will be able to:

Sr. No.	CO statement	Marks % weightage
CO-1	Elaborate functions and components of conveyer belt	15
CO-2	Illustrate the detailed structure of belt	15
CO-3	Explain different types, constructions and manufacturing process of V-belts	15
CO-4	Summarize design, construction, manufacturing process and testing of Hoses.	15
CO-5	Compare different types of manufacturing process of footwear	10

List of Experiments:

Tutorials/Presentation/Practical/Industrial visit based on above topics.

Major Equipment:

Mixing Mill, Tensile Testing Machine, Oscillating Disc Rheometer, Universal Tensile Testing Machine etc**.**

List of Open Source Software/learning website:

- http://www.pentagonrubber.com/
- http://www.premierrubber.net/
- http://www.transflexconveyors.com