

# GUJARAT TECHNOLOGICAL UNIVERSITY

## TEXTILE ENGINEERING (25) PRODUCT DESIGN IN TEXTILE SUBJECT CODE: 2742502 M.E. 4<sup>TH</sup> SEMESTER

**Type of course:** Elective

**Prerequisite:** Basic knowledge of textile at BE Level

### **Rationale:**

Engineering design of products in textile is need of the hour. Textile was considered as craft based branch earlier. Now it takes in many scientific fundamentals for designing the product many a times with the help of software.

### **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)		
					ESE	OEP	PA	RP		
3	2#	0	4	70	30	30	0	10	10	150

### **Content:**

Sr. No.	Content	Total Hrs	% Weightage
1	Product Engineering – Scope and objectives, Product design procedure, Selection of raw material and product, Product analysis, Production aspect, Product design, Consideration of a good product design, Design specifications, Preliminary design, Maintainability, Reliability and Redundancy, Final design, Modular design, Computer aided design, Process selection, Product life cycle, Criteria for product success.	8	20
2	Market Research & Customer Requirement Analysis – Product Research – Market Research, Material Research, Equipment and process research, Benchmark analysis, Customer requirement analysis. Product Appraisal – Functional and aesthetic analysis, Manufacturing and economical analysis.	8	20
3	Textile Designs – Printed and constructed designs, range planning, Range development, Range presentation, Retailing business, Merchandising, Information generation. Design for quality, Essential, Desirable and undesirable properties of textiles, Effect of changes in fibre, yarn type and fabric construction and finishing on performance and serviceability of textile products.	8	20
4	Simulation of specified properties or structures leading to design – Special yarns, Woven fabrics, Non – woven fabrics, Simulation of material, Texture by using computer graphics, Concept of overall designing procedure.	8	20
5	Case studies related to following product development – Design of non – woven for filtration, Development of needle punched fabrics for geo technical applications, Design of Suture threads, twines & ropes, Geo	8	20

	textiles, Parachute etc.		
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**Reference Books:**

1. Hand book of Textile Design Principles, Process and Practice by Jacquie Wilson, Textile Institute Publication
2. The Design Logic of Textile Products, Textile progress vol. 27, No. 3, T Matuo and M. N. Suresh. The Textile Institute Publication
3. Engineering Design by George Dieter
4. Total Quality Management by Dale H. Besterfield
5. Proceedings of the Seminar – Non woven Technology, Market and Product Potential, IIT, New Delhi, December 2006

**Course Outcome:**

After learning the course the students should be able to:

1. Understand the important aspects of product design in general.
2. Analyze the parameters affecting the product design in textile along with set of properties.
3. Understand the role of material, process and machinery in product design.

**List of Open Source Software/learning website:** <http://nptel.iitm.ac.in>, World Wide Web, Google Search Engine etc.

**Review Presentation (RP):** The concerned faculty member shall provide the list of peer reviewed Journals and Tier-I and Tier-II Conferences relating to the subject (or relating to the area of thesis for seminar) to the students in the beginning of the semester. The same list will be uploaded on GTU website during the first two weeks of the start of the semester. Every student or a group of students shall critically study 2 papers, integrate the details and make presentation in the last two weeks of the semester. The GTU marks entry portal will allow entry of marks only after uploading of the best 3 presentations. A unique id number will be generated only after uploading the presentations. Thereafter the entry of marks will be allowed. The best 3 presentations of each college will be uploaded on GTU website.