



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3732507

Semester – III

Subject Name: Product Design

Type of course: Elective

Prerequisite: Basic Textile manufacturing at BE level. Testing of fibre, yarn and fabric at BE level.

Rationale: It is very important to impart knowledge related to structured method followed for designing and developing textile products and developing design logic for apparel, home & technical textile products.

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	0	3	70	30	0	0	100

Content:

Sr. No.	Content	Total Hrs
1	Introduction Introduction to product development, challenges in development process, distinguishing features in textile products, textile product classification Generic development process, process flow chart, identifying customer need and its analysis, Specification for technical and apparel products, specification of fibre, yarn and fabrics, development of specification, need to metric conversion, Concept generation methodology, concept selection	10
2	Material selection Material data bank, comparative analysis, Criterion for material selection, types of fibres, yarns, fabrics and their characteristics Role of fibre, yarn and fabric parameters on product performance, Various finishing treatments and its role on fabric performance, Qualitative and quantitative relationship between fibre, yarn and fabric properties	12
3	Industrial design Industrial design, ergonomics and aesthetics, Product architecture, Ergonomics in textile product design, Anthropometric principles, fit Types of prototype, principles of prototyping, 3D computer modeling, free form fabrication, planning for prototype Design options for improving wrinkling, pilling, bagging, durability, flammability, water proofing, UV protection of fabrics Analysis of few products (Jacket, medical gown, compression garment, etc.)	10



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4	Design logic Design logic in developing selected products: sportswear, cold weather clothing, sleeping bags, fire fighters uniform, work wear, carpets, rope & braids, filter fabrics etc. Calculation of design parameters for a given end use, industrial woven fabric, filter fabrics, towel, winter clothing, ropes, braid etc.) developing detail specification for each structural element	10
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Reference Books:

1. Product design and development, Karl T. Ulrich and Steven D. Eppinger, Tata McGraw-Hill, 3rd edition 2003
2. Successful Product Design, Bill Hollins & Stuart Pugh, Butterworth & Co. 1990
3. Engineering textiles, Integrating the design and manufacture of textile products, Y E Mogahzy, Wood Head publishing Ltd. Cambridge, England 2009
4. The design logic of textile products, T Matsuo & M. N. Suresh, Textile progress, Vol. 27, No.3, Textile Institute
5. Handbook of textile design, principle, processes and practice, Jacquie Wilson, The Textile institute, CRC Press, Wood Head publishing ltd, Cambridge, England, 2001

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	To understand the basic concept of product design in terms of textile material specifications, material selection and application	30
CO-2	To establish relationship amongst various parameters of product design.	30
CO-3	To apply the knowledge of product design in real life examples	20
CO-4	To develop detailed specifications of at least three textile products with actual end use	20

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