GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE ENGINEERING (25)
ADVANCED TOPICS IN TEXTILE MANUFACTURE
SUBJECT CODE: 2742501
M.E. 4TH SEMESTER

Type of course: Elective

Prerequisite: Basic knowledge of process & quality control at BE Level

Rationale:
The globalization of trade now demands that products marketed around the world met certain basic quality and performance requirements. The manufacturers must be diligent as well as expert in placing products in the market that are well-made and that meet the expectations of the industry.

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

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	New generation fibres – artificial fibres by biomemetics, super fibres, high functionality fibres, health, comfort and nutrition fibres, nano fibres.	7	10
2	Design of Apparel fabrics: role of fiber, yarn and fabric parameters on its functional attributes. Designs based on structure and material properties. Concept of an over all designing procedures.	4	10
3	Introduction to Science of Clothing Comfort, Psychology and Comfort, Neuro physiological Processes of Clothing Comfort, Transmission: Thermoregulatory Mechanisms of human body, Heat Transfer Theories, Thermal Conductivity of Fibrous Transient heat transfer mechanism: the warm-cool feeling, Moisture Transmission : Liquid and Vapour, Liquid Moisture transfer through fibrous materials	8	20
4	Introduction to plasma processing – The potential of plasma technology in the textile industry, Plasma reactors, Low-pressure plasmas, Atmospheric pressure plasmas, Effect of plasma on fibres and polymers, Plasma finishing of textiles	7	20
5	Shape memory polymers - Concepts, SMAs, SMPs, Principle of temperature dependent shape memory polymers, Applications of shape memory polymers. Introduction to Intelligent textile for personal protection, safety, environment protection etc.	8	20
6	Smart technology for textiles and clothing – a brief introduction and overview. Smart clothing technology – interface technology, communication etc., applications like body monitoring, entertainment etc.	8	20

Reference Books:

1. New millennium fibers by Tatsuya Hongu, Glyn O. Phillips and Machiko Takigami
2. The Design Logic of Textile Products by T. Matsuo & M. N. Suresh
3. Science of Clothing Comfort by Apurva Das
4. Plasma Technologies for Textiles by R L Shishoo
5. Shape memory polymers and textiles by Jinlian HU
6. Smart Clothing: Technology and Applications by Gilshoo Cho

Course Outcome:
After learning the course the students should be able to understand the latest developments in textile material science, properties, end use. He should also know newer applications of textiles in smart and intelligent textiles.

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.