



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3722517

Semester – II

Subject Name: Technical Textile

Type of course : Elective

Prerequisite : Basic knowledge of Technical Textiles at BE level.

Rationale : Technical Textile has witnessed maximum growth rates in India and elsewhere. The application areas are widening every year due to efforts of research activity throughout the globe. Recent developments taken place in some of the important segments of technical textiles are covered in this course.

Teaching and Examination Scheme:

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

Content:

Sr. No.	Content	Total Hrs
1	Introduction to technical textiles. Basic idea about various uses. Brief introduction to woven, knitted and nonwoven fabrics.	4
2	Introduction to nonwoven manufacturing. Advances in various methods for web formation and bonding. Characteristics and properties of various nonwoven structures.	6
3	Textile and other filter media for dry and wet filtration. Mechanisms of separation. Requirements for good filter media and filtration and their performance assessment.	6
4	Selection of textile raw materials for various geotextiles applications. Design and development of various textile structures used for geotextiles applications.	6
5	Application of textile in medical. Quality assurance and compliances for different forms of medical textiles in line with international standards.	6
6	Design and development of textile reinforced plastics (Composites) for various applications in transportation.	4
7	Application of textile for protection. Intelligent textiles for protection. Sensor function, actuators, communication, wearable motherboards, data processing etc.	6
8	Design and development of coated textiles for different end use applications.	4



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Reference Books:

1. Horrocks A.R. & Anand S. C., “Handbook of Technical Textile Part I & II”, The Textile Institute, 2nd Edition
2. Richard A. Scott, “Textiles for Protection”, The Textile Institute, 2005.
3. Sen A.K., “Coated Textiles: Principles and Applications”, CRC Press, 2008.
4. Journals: Textile Research Journal, Princeton, USA and Journal of Textile Institute, Manchester, UK.
5. Adanur S., “Wellington Sears Handbook of Industrial Textiles”, The Textile Institute, 1995

Course Outcome:

Sr. No.	CO statement	Marks % weightage
CO-1	Establish relationships amongst various fibre, yarn and fabric with the properties and product design of technical textiles.	15
CO-2	Acquire more knowledge in fundamental concepts of production of nonwoven fabric manufacturing.	25
CO-3	Acquire advanced understanding about various areas of application of technical textiles including composites.	30
CO-4	Learn advanced aspects of coating on technical textile materials.	15
CO-5	Analyse methods of characterization of technical textile materials along with standards if any.	15

List of experiments:

1. Production methods of non-woven fabrics
2. Characterization of non-woven fabrics.
3. Fiber and fabric selection for filtration fabrics.
4. Mechanics of reinforcement, filtration and drainage by geotextiles.
5. Application of textile in medical.
6. Study of various newer requirements of technical textiles for application in transportation.
7. Analyzing products for smart and intelligent textiles.
8. Coating methods.

Major Equipment:

Nonwoven fabric production systems like needle punching, spun lacing, etc., Coating machine, Characterization equipment like air permeability tester, porosity etc.

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