

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

**COURSE CURRICULUM
COURSE TITLE: TECHNOLOGY OF TECHNICAL TEXTILES
(COURSE CODE: 3362801)**

Diploma Program in which this course is offered	Semester in which offered
Textile Processing Technology	SIXTH

1. RATIONALE

Various kinds of textiles are finding places in various industries as engineering products. The polytechnic students are required to be aware of such Technical Textiles. They should have basic knowledge and skills to understand the technology of various Technical Textiles used in various fields. The course on Technology of Technical Textiles has been designed to provide some idea of non-conventional textiles.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competency:

- Use different technical textiles in various fields.

3. COURSE OUTCOMES

- I. Use different forms of Technical Textiles technical textiles.
- II. Apply appropriate construction for technical textiles as per requirement.
- III. Apply functional finishes to technical textiles as per need.
- IV. Use functional textiles as per need.
- V. Use High performance textiles.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
L	T	P		Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	100
4	-	-	4	70	30	-	-	

Legends: L-Lecture; T – Tutorial/Teacher Guided Student Activity; P -Practical; C – Credit; ESE -End Semester Examination; PA - Progressive Assessment.

5. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I Introduction to Technical Textiles	1a. Explain Technical Textiles 1b. Explain different forms of Technical Textiles	1.1 Definition and salient features of Technical Textiles. 1.2 Woven, Non-woven, Knitted Technical Textiles 1.3 Share of various fibres in Technical Textiles products. 1.4 Scope of Technical Textiles
Unit– II Technical Textiles	2a. Explain different Technical textiles 2b. Explain application and end uses of different Technical textiles	2.1 Hometech 2.2 Agrotech 2.3 Meditech. 2.4 Geo textiles. 2.5 Clothtech. 2.6 Mobitech 2.7 Sporttech 2.8 Induteh 2.9 Buildtech 2.10 Pechtech 2.11 Protech 2.12 Oekotech
Unit– III Functional Finishes	3a. Explain various functional finishes 3b. Explain different polymers used for functional finishes 3c. Explain various methods of Functional finishes	3.1 Principle of coating, bonding and lamination, flame retardant, flame proof, water repellant, water proof etc. for technical textiles. 3.2 Polymers commonly used for coating, bonding and lamination, flame retardant, flame proof, water repellant, water proof etc. 3.3 Different technologies of coating, bonding and lamination, flame retardant, flame proof, water repellant, water proof etc.
Unit– IV Functional Textiles	4a. Explain specific Functional Textiles 4b. Explain application of functional textiles	4.1 Smart Textile 4.2 Medical Textile 4.3 Geo Textile 4.4 Protective Textile
Unit– V High performance Textiles	5a. Explain general properties of high performance textiles 5b. Describe importance of High performance textiles 5c. Explain application of High performance textiles	5.1 General properties, Importance and application of various High performance textiles (a) Carbon fibres (b) Poly-Propylene (c) Aramide fibres (d) Ceramic fibres (e) Silicon carbide fibres.

Unit	Major Learning Outcomes	Topics and Sub-topics
		(f) Glass Fibre (g) Jute Fibre (h) Bamboo Fibre

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
I.	Introduction to Technical Textiles	06	4	4	4	12
II.	Technical Textiles	12	6	6	4	16
III.	Functional Finishes	14	4	10	8	22
IV.	Functional Textiles	14	4	4	4	12
V.	High performance Textiles	10	2	4	2	08
	Total	56	20	28	22	70

Legends:

R = Remembrance; U = Understanding; A = Application and above levels (Revised Bloom's taxonomy)

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the proposed list of students activities like:

- I. Literature survey of different Technical Textiles.
- II. Collection of different technical and non-conventional textiles.
- III. Chart preparation of properties and application of various technical textiles.

8. SPECIAL INSTRUCTIONAL STRATEGY

- I. Guest lecturers from industry experts.
- II. Video clips of manufacturing process of various technical textiles.
- III. Industrial visit for manufacturing and processing of technical textiles.

9. SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No.	Title of Books	Authors	Publication
1	Handbook of Technical Textiles	Hrrocks A.R. Annand S. C.	Textile Institute Pub., Edi.-2000
2	Man-Made fibres	Moncrieff R. W.	Heywood Books, London
3	Industrial Textiles	Adanur Sabit	Wellington Series, Edi.-1995

Sr. No.	Title of Books	Authors	Publication
4	Textile Terms & Definitions		Textile Institute Pub., Edi.-1994
5	Manufactured Fiber Technology	Guptha V. B. Kothari V. K.	Chapman Hall, London, Edi.-1997
6	Technical Literature : (a) World Textiles – (U.K.), (b) Malimo – (Germany), (c) Technical Textiles & Polymer innovation unit – (Netherdale –Scotland)	-----	
7	Articles from “Colourage” – Technical Textiles (Part 1 to 10)	-----	Color Publication Pvt. Ltd, Mumbai

**B. List of Major Equipment / Instruments
Not Applicable**

C. List of Software/Learning Website

- I. www.technicaltextiles.com
- II. www.fibre2fashion.com
- III. <http://www.sasmira.org/an%20article.pdf>
- IV. http://www.imacs.in/store/corp_adv/Technical%20Textiles%20in%20India%20-%20Current%20and%20Future%20Market%20Scenario,%20ICTN%202010,%20IIT%20Delhi.pdf

10. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- Prof. R. M. Pandya, Lecturer, Textile Processing Dept., Dr. S. & S. S. Ghandhy College of Engineering & Technology, Surat.
- Prof. J. H. Thakker, I/c. Head, Textile Processing Dept., R. C. Technical Institute, Ahmedabad
- Prof. R. D. Joshi, Lecturer, Textile Processing Dept., R. C. Technical Institute, Ahmedabad.
- Prof. J. N. Shah, Assistant Lecturer, Textile Processing Dept., R. C. Technical Institute, Ahmedabad

Coordinator & Faculties from NITTTR Bhopal

- **Dr. C. K. Chugh**, Professor DME
- **Prof. S. K. Gupta**, Professor and coordinator for state of Gujarat