



GOVERNMENT OF TAMILNADU
DIRECTORATE OF TECHNICAL EDUCATION, CHENNAI

STATE PROJECT COORDINATION UNIT
(Established under Canada India Institutional Cooperation Project)

CURRICULUM

Course Name	Technical Textile
Course Code	TEX/2020/008
Course Duration	50 Hours
Minimum Eligibility Criteria and Pre-requisites (if any)	10 th /+2/Diploma/Graduates
Course Objectives	Training module has been designed to provide the participants <ul style="list-style-type: none"> • Understanding of Technical Textile • Understanding of Medical, Industrial and Geo textile • Learning of Non-woven and Filter fabrics • Learning of Insulation and Agro textile
Course Outcomes	At the end of training, the participants will be able to <ul style="list-style-type: none"> • Gain knowledge of Technical textile • Manufacturing of Tyre cord fabric • Knows about Needle punching, Chemical bond techniques
Expected Job Roles	Technical assistant

TEACHING AND SCHEME OF EXAMINATION					
Course Code	Course Name	Hours	Assessment Marks		Duration of Examination
			Min	Max	
TEX/2020/008	Technical Textile	Theory	34	10	3 Hours
		Practical	16	40	
		Total	50	50	

TEX/2020/008- TECHNICAL TEXTILE

DETAILED SYLLABUS

Unit No	Modules	No. of Hours	
		Theory	Practical
I	Introduction to Technical Textile	3 Hours	
1.1	Functions and Applications of Technical Textile	2	1
1.2	Brief study of Specialty fibres and yarns for technical textiles		
II	Medical textiles	11 Hours	
2.1	Applications-Hernia Mesh, Urinary Incontinence Sling, Pelvic Organ Prolapse Suspender, Skin Closure Tape, Orthopaedic Suture, Orthopaedic Fixation Devices, Tissue Collection System Pouch, Chest Wall Closure, Elastomeric Device Reinforcement, Wound Dressing, Suture Pledget, Vascular Anastomosis Reinforcement, Catheter and Cannula Cuffs, Allograft Skin Tissue Processing	8	3
2.1	Cotton and surgical cloth material used for medical purpose		
2.2	Desirable properties of surgical cotton cloth, suture thread (natural and synthetic)		
2.3	Different types used- PTFE suture, operation theatre cloth like theatre drapes, gowns for operation staffs, theatre mask, surgical covers, sanitary pad		
2.4	F Cellulosic hollow fibres as membrane – PVA membrane		
2.5	H Cardio vascular textiles-woven, knitted-Requirements for artificial blood vessels		
III	Industrial and Insulation textile	12 Hours	
3.1	B Tyre cord- requirements- material used- flow chart for tyre cord manufacturing, physical and mechanical requirements of tyre cord fabrics	8	4
3.2	B Hoses – Importance of reinforcement and its constructions – industrial hoses and different types of industrial hoses		
3.3	SjBelts- Materials used- characteristics of conveyor belts- brief idea of manufacturing process of conveyor belts, transmission belts, flat belts & V belt		
3.4	D Insulation textile – Electrical insulation – Classification of electrical insulation materials – Textiles fibres - cotton, jute, glass and nylon		
IV	Geo and Agro textile	12 hours	
4.1	Definition of geo textiles – Basic functions of geo textiles – Types of geo textiles, Biodegradable geo textiles – advantages, materials used – composites and its uses	8	4
4.2	Geo textile requirements for separation, filtration, drainage, reinforcement, protection and water proofing		
4.3	Geo textiles in temporary and permanent road construction, railway stabilization – fibres and fabrics used for above application		

4.4	Agro Textiles – Brief study of textile for seed bed protection, crop covers, insect and bird netting and shade fabrics – fibres used and fabric particulars for these applications. Tarpaulins – requirement for agricultural purposes		
V	Non woven and filter fabric	12 Hours	
5.1	Introduction to Non woven – classification – production of non-woven fabric – fibre web production	8	4
5.2	Rando feeder – Rando Webber – Needle punching – chemical bonding – different types of non woven and its application		
5.3	Filter Fabrics – Introduction, Dust filtration, Protective masks and High temperature filtration – purification and separation of gases – cigarette filters – liquid filtration – solid liquid filtration, liquid – liquid separation		
5.4	Textile used for the above applications and their features – applications of hollow fibres for paper making machine clothes		
Total Theory and Practical Hours		34	16
Total hours		50	

HARDWARE REQUIREMENT

S.NO	LIST OF TOOLS /EQUIPMENTS
1	Surgical cloth, Gowns, Mask, Gloves, Sutures, Bandages
2	Tyre cord, Belts
3	Composites, Tarpaulins
4	Needle punched fabrics, Filter fabrics

SOFTWARE REQUIREMENT

Nil

REFERENCE WEBSITE / BOOKS

1. www.innovationintextiles.com
2. www.technicaltextile.net
3. textilelearner.blogspot.com
4. nptel.ac.in

S.NO	NAME OF THE BOOK	AUTHOR	PUBLISHER
1	Fibre Materials For Advanced Technical Textile	T. Matsuo	CRC Publication
2	Industrial Application of Textiles for Filtration and Coated Fabrics	Pushpa V., and Sengupta A.K	Textile Progress, Vol. 14
3	Handbook of Technical textiles	A R Horrocks., and S C Anand	The Textile Institute, Manchester, UK., Woodhead Publishing Ltd., Cambridge, England
4	Handbook of Industrial Textiles	SabitAdanur, Wellington sears	Technomic Publishing Company, Inc, Lancaster, U.S.A
5	Geotextiles	N.M John	Blackie, London

ASSESSMENT AND CERTIFICATION

S.No	Criteria for assessment
1.	A trainee will be assessed based on the performance in End Examination for Theory and Practical conducted internally in the Project Polytechnic College for a duration of 3 hours
2.	A trainee must have 75% of attendance to appear for End examination in Theory and Practical.
3.	The assessment for theory part will be based on the marks scored in the end examination on the knowledge bank of questions (1 word/objective type questions)
4.	The assessment for practical part will be based on the marks scored in the end examination conducted by the Project Polytechnic and assessed by the Examiners approved by Strategic Plan Implementation Committee (SPIC) of the project polytechnic.
5.	The passing criteria for successful completion of training is every trainee should score 50% of marks in theory and practical examination.
6.	On successful completion of training, Certificate will be issued to the participants by the Directorate of Technical Education through the Project Polytechnics.

END EXAMINATION

ALLOCATION OF MARKS

S.NO	DESCRIPTION	Max.Marks
1.	Theory Examination	20
2.	Practical Examination	
	a)Write up/Diagram	15
	b)Experiment	35
	c)Result	10
	d)Record	20
Total Marks		100

THEORY MODEL QUESTION PAPER

TEX/2020/008 - TECHNICAL TEXTILE

(Maximum Marks : 20)

(N.B: Answer any twenty questions)

20 x 1 = 20 Marks

1. What is the meaning of technical textile?
2. Write the function of technical textile.
3. What is the application of technical textile?
4. What are the types of technical textile?
5. What is meant by medical textile?
6. What are the textile materials suitable for medical purpose?
7. Write the application of wound dressing.
8. Which textile material is used for artificial blood vessel?
9. What are the desirable properties of surgical mask?
10. What is meant by industrial textile?
11. Draw the flow chart for tyre cord manufacturing.
12. What are the different types of industrial hoses available?
13. What is meant by insulation textile?
14. Write the classification of electrical insulation material.
15. What is meant by geo textile?
16. What is meant by water proofing fabric?
17. Give example for permanent Geo textile.
18. What do you mean by agro textile?
19. Write about Non-woven fabric.
20. Write the classification of Non-woven fabrics.
21. What is needle punching?
22. What is meant by web production needle punching?
23. What is the application of Non-woven fabrics?
24. What is filter cloth?
25. What is the use of filter cloth?