



SARVAJANIK UNIVERSITY
Sarvajani College of Engineering and
Technology
Bachelor of Engineering



B E III Textile Technology: Semester –V

Subject Name: Textile Processing

Subject Code: BTTT14503

Type of course: Professional Elective Course 1

Prerequisite (if any): Basic knowledge of Chemistry and different Textile materials.

List of Courses where this course will be prerequisite:

Rationale:

The subject covers fundamentals of the textile wet processing and coloration of textiles. This subject also deals with the study of printing and finishing of different textile materials. These processes lead to improve aesthetic and functional properties of fabric and also help in value addition.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
3	0	2	4	60	25	15	30	20	150

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests CA2: Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

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BSC: basic science course /ESC: Engineering Science Course /HSM: Humanities and management /PCC: Professional Core course /PEC: professional Elective course /OEC: Open Elective course/ MD: mandatory non-credit course



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Content:

Sr. No.	Content	Total Hrs
1	Introduction to Textile processing and its importance. Flow chart of material for different wet processes. Fabric inspection, idea about chemicals and auxiliaries.	2
2	Singeing, Shearing and Cropping: Objects and its importance, Construction and working of different types of singeing machines and its process parameters- Plate, roller and gas singeing machines. Desizing: Objects, Different types of desizing techniques - rot steeping, acid steeping, and enzymatic desizing, different desizing agents, Continuous desizing machine. Scouring: Objects, chemicals used for scouring, continuous scouring with J-Box, Solvent scouring Scouring recipe for different materials like cotton, wool, silk and manmade fibers.	8
3	Bleaching and mercerization: Objects and its importance Types of Bleaching - Oxidative and reductive bleaching, methods and machinery used, various ingredients used, effect of various process parameter- time, temp and pH, Optical whitening agents and their use. Types of Mercerization – Slack and chain mercerization.	6
4	Dyeing Introduction to dyeing of yarns and fabrics, Classification of various types of dyes - Direct, Basic, Acid, Vat, Reactive and Disperse and its applications. Different machines used for dyeing processes. Dyeing of Denim Fabrics	8
5	Printing Introduction to Printing, different methods and styles of printing. Type of printing machines- block, flat screen, roller, rotary screen printing & Digital printing. Preparation of Printing paste for different dyes, After treatment and its importance	9
6	Finishing Introduction to finishing, classifications of various finishes, permanent and semi permanent finishes, silicon softening, milling, crease resistant, anti shrink, water	10

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	repellent, water proof, Flame proofing, setting of synthetic fiber fabrics, antistatic and soil release finishes etc. Different finishing machines - Mangles, Drying ranges, Infra red drying, stenter, calendars, raising and milling machines.	
7	Pollution control in Textile wet Processing	2

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	15	10	5	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Textile Finishing	Prayag, R.S	Pune	1996,2000	
	Bleaching, Mercerising and Dyeing of Cotton Materials	Prayag, R.S	Pune	1996,2000	3rd
2	Textile Finishing	Murphy, W. S.	Abhishek Publications, Chandigadh	2003,2007	
3	Textile Processing: Printing Dyeing Finishing	Smith, J.L .	Abhishek Publications, Chandigadh	2006,2009	

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4	Technology of Textile Processing Vol. - II: Chemistry of Dyes and Principles of Dyeing	Shenai V.A.	Sevak pubs, Mumbai	1997	
5	Technology of Textile Processing Vol.-3: Technology of Bleaching and Mercerising	Shenai V.A.	Sevak pubs, Mumbai	1996	
6	Technology Of Textile Processing Vol.-4: Technology of Printing	Shenai V.A.	Sevak pubs, Mumbai	1996	3rd
7	Technology of Textile Processing Vol. - VI: Technology of Dyeing	Shenai V.A.	Sevak pubs, Mumbai	1999	1
8	Textile Scouring and Bleaching	Trotman E.R	B.I.pubs New Delhi	1993	
9	Batchwise dyeing of woven cellulosic fabrics: A practical guide.	Parish, G.J. Shore, J	Society of Dyers and Colourists. England ISBN – 0-901956-55-4	1993	

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10	Technology of Textile Finishing: Technology of Textile Processing Vol.-10	Saraf Naresh.M	Sevak pubs, Mumbai	1999	3 rd
11	Cellulosic Dyeing	John Shore	Society of Dyers and Colourists west yorkshire. England ISBN – 0-901956-68-6	1995	
12	A Novel Green Treatment for Textiles Plasma Treatment as a Sustainable Technology	Chi-wai Kan	CRC Pres, Taylor & Francis, London, Newyork ISBN - 9781439839447, 1439839441	2014	
13	Pollution Control in Textile Industry	Bhatia S.C.	Woodhead Pub.Ltd, India ISBN - 978-93-85059-22-3	2017	
14	Nanotechnology in Textiles Theory and Application	Rajesh Mishra, Jiri Militky	Elsevier Science	2018	

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			ISBN - 978008102627 4, 0081026277		
15	Denim-A fabric for All: Dyeing, Weaving Finishing.	Parmar M.S	NITRA , Ghaziabad	1996	
16	Nano materials in the wet processing of the textiles	Shahid Ul-Islam (Editor), B. S. Butola (Editor)	Scrivener Publications (Wiley) ISBN-978-1-119-45984-2.	2018	

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Understand the basic principles and mechanisms of textile processing.	25
CO-2	Differentiate the various chemicals used in the preparatory and Dyeing processes and utilize them according to end use	20
CO-3	Know different methods and style of printing on natural and synthetic fiber fabric and blends.	20
CO-4	Understand various types of dyeing, printing and finishing processes and know applications of different finished fabrics	25
CO-5	Know pollution control in wet processing.	10

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Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO-1	3	2	1	2	1	0	1	0	1	1	2	2	2	3	2
CO-2	3	3	2	2	3	1	1	1	1	1	2	2	3	3	3
CO-3	2	3	2	2	2	1	1	0	1	1	2	1	3	3	3
CO-4	3	3	3	3	3	1	1	0	1	1	2	1	3	2	3
C0-5	3	2	3	3	3	2	2	1	1	1	1	2	3	2	3
Rationale*	3	3	2	2	3	1	1	0	1	1	2	2	3	3	3

Rationale*:

The knowledge of Textile Processing is essential to produce variety of textile product of with different finishes leading to variety of applications. Hence the course outcome matches significantly with the program outcome.

List of Open learning website:

List of Open Source Software: : <https://nptel.ac.in>

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FOR LAB SESSIONS:

List of Experiments:

1. Desizing of cotton fabric.
2. Scouring of cotton hank and fabric.
3. Bleaching of cotton with hypochlorite, and Hydrogen peroxide.
4. Mercerization of cotton fabric.
5. Dyeing of cotton by direct dye.
6. Dyeing of cotton by reactive dyes.
7. Dyeing of cotton by vat dyes.
8. Dyeing of polyester by Disperse dyes
9. Dyeing of Nylon , wool
10. Determination of different fastness properties of dyed samples
11. Printing with different dyestuff on cotton,
12. Printing with different dyestuff on silk and polyester
13. Develop water proof fabric.
14. Develop fire resistant fabric.
15. Develop crease resistant fabric.

Major Equipment Needed:

Water heating bath, Kier, Padding Mangle, HTHP beaker dyeing machine, Oven, High temperature steamer, High pressure steamer, etc.

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