SARVAJANIK UNIVERSITY
Sarvajanik College of Engineering and Technology
Bachelor of Engineering

B E III Textile Technology: Semester – VI

Subject Name: Fundamentals of Textile Processing **Subject Code: BTTT15602**

Type of course: Open Elective Course II

Prerequisite (if any): Basic knowledge of Chemistry, Chemical Engineering and different Textile materials

List of Courses where this course will be prerequisite: Useful for study of Dyes and Chemicals used in Textile wet Processing.

Rationale: The subject covers fundamentals of the wet processing and Chemical treatment of Textiles. This subject also deals with the study of printing and finishing of different textile materials along with dyes and chemical used in this process. These processes lead to improvement in 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	0	3	60	25	15	-	-	100

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

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

Content:

Sr. No.	Content	Total Hrs
1	Introduction to Textile processing and its importance. Flow chart of material for different wet processes. Fabric inspection, basic idea about chemicals and auxiliaries.	3
2	Singeing, Shearing and Cropping: Objects, Construction and working of different types of singeing machines like Plate, roller and gas singeing machines and its process parameters Desizing: Objects, Different types of desizing techniques - rot steeping, acid steeping, and enzymatic desizing, different desizing agents, Continuous desizing machine and chemicals used for the same. 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 and chemicals used for the same.	8
3	Bleaching and mercerization: Objects and its importance and types of bleaching. Various ingredients and chemicals used, effect of various process parameter- time, temp and pH, Optical whitening agents and their use. Types of Mercerization – Slack and chain mercerization and its chemical process	8
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. Basic idea of different machines used for dyeing processes. Dyeing of Denim Fabrics	8
5	Printing: Introduction to Printing, different methods and styles of printing. Basic idea of different types of printing machines- Preparation of Printing paste using various chemicals and dyes for different styles and different fabrics, After treatment and its importance	8
6	Finishing:	8

	Introduction to finishing, classifications of various finishes, permanent and semi permanent finishes, silicon softening, Basic idea of various finishing process like milling, crease resistant, anti shrink, water repellent, water proof, flame proofing, setting of synthetic fiber fabrics, antistatic and soil release finishes etc. and chemicals used for it Basic idea of different finishing machines - Mangles, Drying ranges, Infra red drying, stenter, calendars, raising and milling machines.	
7	Overview of Emerging Technologies in Wet processing – Nano technology, Microencapsulation, Plasma technology and pollution control in 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	
2	Bleaching, Mercerizing and Dyeing of Cotton Materials	Prayag, R.S	Pune	1996, 2000	3rd
3	Textile Finishing	Murphy, W. S.	Abhishek Publications, Chandigadh	2003, 2007	

4	Textile Processing: Printing Dyeing Finishing	Smith, J.L .	Abhishek Publications, Chandigadh	2006,2009	
5	Technology of Textile Processing Vol. - II: Chemistry of Dyes and Principles of Dyeing	Shenai V.A.	Sevak pubs, Mumbai	1997	
6	Technology of Textile Processing Vol.-3: Technology of Bleaching and Mercerising	Shenai V.A.	Sevak pubs, Mumbai	1996	
7	Technology Of Textile Processing Vol.-4: Technology of Printing	Shenai V.A.	Sevak pubs, Mumbai	1996	3rd
8	Technology of Textile Processing Vol. - VI: Technology of Dyeing	Shenai V.A.	Sevak pubs, Mumbai	1999	1
9	Textile Scouring and Bleaching	Trotman E.R	B.I.pubs New Delhi	1993	
10	Technology of Textile Finishing: Technology of Textile Processing Vol.-10	Saraf Naresh.M	Sevak pubs, Mumbai	1999	3rd

11	A Novel Green Treatment for Textiles Plasma Treatment as a Sustainable Technology	Chi-wai Kan	CRC Pres, Taylor & Francis, London, Newyork ISBN - 978143983944 7, 1439839441	2014	
12	Pollution Control in Textile Industry	Bhatia S.C.	Woodhead Pub.Ltd , India ISBN - 978-93-85059-22-3	2017	
13	Nanotechnology in Textiles Theory and Application	Rajesh Mishra, Jiri Militky	Elsevier Science ISBN - 978008102627 4, 0081026277	2018	
14	Denim-A fabric for All: Dyeing, Weaving Finishing.	Parmar M.S	NITRA , Ghaziabad	1996	

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Understand the basic principles and mechanisms of textile processing, material flow and chemicals used	10
CO-2	To study and differentiate various chemicals used in the preparatory, Dyeing and Printing processes and utilize them according to end use.	20

CO-3	To study the various finishing process like Singeing, Shearing, Cropping, Desizing, Scouring, Bleaching and Mercerization along with machines used, chemical agents used and process parameters.	20
CO-4	To study the process of Dyeing and Printing for different types of fabrics, Use of various types of dyes, types of printing, various process parameters and chemical agents used.	20
CO-5	Study of different types of finishing process and study chemicals used for applying various finishes.	20
CO-6	Study emerging technologies in wet processing and pollution control in wet processing.	10