



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering
Subject Code: 3142907
Semester – IV
Subject Name: Textile Processing

Type of course: Professional Core Course

Prerequisite: Basic knowledge of chemistry and textile raw material.

Rationale: This subject covers fundamentals of the textile wet processing as well as coloration of textiles. This subject also includes the study of printing and finishing of textile materials. Both these processes lead to improve aesthetic and functional properties of fabric.

Teaching and Examination Scheme:

Teaching Scheme			Credits C	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
4	0	2	5	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Introduction to textile processing and its importance. Flow of material for different processes and its objectives. Fabric inspection, idea about chemicals and auxiliaries.	4
2	Singeing, Shearing and cropping: Objectives and its importance, Types of singeing machine and its parameters- plate, roller and gas singeing machines. Desizing: Objects, classification, desizing technique - rot steeping, acid steeping, and enzymatic desizing, different desizing agents, Continuous desizing machine. Scouring: Objects, chemicals used, continuous scouring with J-Box. Scouring recipe for cotton, wool, silk and manmade fibers.	10
3	Bleaching and mercerization: Objects, Importance, Oxidative and reductive bleaching agents, methods and machinery used, various ingredients used, effect of various process parameter- time, temp and pH, Optical whitening agents and their use.	10
4	Dyeing Introduction to dyeing of yarns and fabrics, various classes of dye - Direct, Basic, Acid, Vat, Reactive and Disperse and its applications. Different machines used for dyeing processes.	10
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	10
6	Finishing Introduction to finishing, Classifications of various finishes, Permanent and semi permanent	10



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3142907

finishes, silicon softening, milling, crease resistant, anti shrink, water repellent, water proof, flame proofing, setting of synthetic fiber fabrics, antistatic and soil release finishes. Mangles drying ranges, IR drying, stenter, calendars, raising and milling machines.
--

Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	30	20	20	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:

1. Bleaching, Mercerising and Dyeing of Cotton Materials–R.S.Prayag
2. Textile Finishing –R.S.Prayag
3. Scoring and Bleaching – V.A. Shennai
4. Dyeing – V.A. Shennai
5. Textile Scouring & Bleaching - Trotman
6. Cellulosic Dyeing - John Shore
7. Technology of printing Vol. IV Shennai
8. Technology textile finishing Vol. X Shennai
9. Principles of Textile Finishing A K Roy Chaudhary
10. A Glimpse of the Chemical Technology of Textile Fibres R.R. Chakraverty

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	20
CO-5	Know different finished fabric according to their application	15



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3142907

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 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:

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

List of Open Source Software/learning website:

<http://nptel.iitm.ac.in>, World Wide Web, Google Search Engine etc.