

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD.

ELEMENTS OF TEXTILE PROCESSING

1. RATIONALE :

This subject provides knowledge regarding different types of wet processes with their basic principles and applications. The student of manufacturing has to co-relate fabric construction with its end uses as well as decorative aspects included in wet process. This will provide wide range of creativity in fabric designing and newer types of fabric construction to create variety, with knowledge of subsequent wet processing essentials.

2. SCHEME OF TEACHING :

TOPIC NO.	NAME OF TOPIC	NO OF HOURS		
		LECT.	PRACT.	TOTAL
1.	Introduction and sequence of wet processing	02	-	02
2.	Scouring & Bleaching	12	10	22
3.	Dyeing	12	10	22
4.	Printing	08	06	14
5.	Finishing	08	02	10
	TOTAL	42	28	70

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3. TECHNOLOGY RELATED SKILLS(TRS) AND ENABLING OBJECTIVES :

TRS 1.0 : SELECT AND USE APPROPRIATE METHODS FOR SCOURING AND BLEACHING FOR VARIOUS FABRICS (TOPIC NO.2)

EO's

- 1.1 Understand the object and importance of grey inspection.
- 1.2 Know object of singeing and state importance of singeing.
- 1.3 Enlist singeing methods and understand gas singeing method.
- 1.4 Understand object and importance of desizing
- 1.5 Classify and explain desizing processes.
- 1.6 State the objects and importance of scouring processes of various fibre fabrics.
- 1.7 Classify bleaching agents, with their merits and demerits.
- 1.8 Explain bleaching process for different fibre fabrics.
- 1.9 State object and importance of optical whitening.
- 1.10 Explain optical whitening process for different fabrics.

TRS 2.0 : SELECT AND USE APPROPRIATE MEHTODS FOR DYEING OF VARIOUS FIBRE FABRICS. (TOPIC NO.3)

EO'S.

- 2.1 Know general classification of dyes and their properties.
- 2.2 Explain dyeing process of cotton / viscose rayon using direct, reactive, vat, azoic solubilised vat, dyes.
- 2.3 State dyeing process for Nylon Wool, and Silk with acid, metal complex acid and reactive dyes.
- 2.4 Carryout dyeing of polyester with disperse dyes using various mehtods.
- 2.5 Carryout dyeing of acrylic with modified basic dyes.
- 2.6 Carryout dyeing of acetate with disperse dyes.

TRS 3.0 : SELECT AND USE APPROPRIATE MEHTODS FOR PRINTING OF VARIOUS FIBRE FABRICS. (TOPIC NO.4)

EO'S.

- 3.1 Define printing and understand stages of printing.
- 3.2 Carryout printing of cotton/viscose rayon fabrics with direct, reactive, vat, azoic, solubilised vat dyes.
- 3.3 Explain printing of nylon, wool and silk with acid dyes.
- 3.4 Understand printing of polyester with disperse dyes.

TRS. 4.0 SELECT AND USE APPROPRIATE MEHTODS FOR FINISHING OF VARIOUS FIBRE FABRICS. (TOPIC NO.5)

- 4.1 Know object and importance of finishing.
- 4.2 Classify temporary and permanant finishing.
- 4.3 Carryout delustering, creping, heat setting of different fabrics.
- 4.4 Understand resin finishing process.

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4 COMMUNICATION SKILLS :

1. Explain basic features of wet process.
2. Follow oral instructions and interpret them to others.
3. Face interviews confidently.
4. Counsel people in work situations.
5. Establish relationship between manufacturing of textile cloth with its wet process.

5. TOPICS AND SUBTOPICS :

TOPIC-1. Introduction and sequence of wet processing.

- 1.1 Nature of grey inspection
- 1.2 Process of improving fabric appearance

TOPIC-2. Scouring bleaching.

- 2.1 Role of desizing and enzymatic desizing.
- 2.2 Working principle, equipment used and application of scouring process, bleaching process, optical whitening process.

TOPIC-3. Dyeing

- 3.1 Types of dyes and their general properties.
- 3.2 Stages of dyeing.
- 3.3 Application of direct, dyes, reactive dyes, vat dyes, azoic dyes.
- 3.4 Application of acid dyes.
- 3.5 Application of disperse dyes.
- 3.6 Brief study of fibre dyeing.

TOPIC-4. Printing

- 4.1 Methods of printing
- 4.2 Styles of printing
- 4.3 Application of direct, reactive, vat, azoic solubilised vat dye on cotton / viscose rayon.
- 4.4 Application of acid dyes.
- 4.5 Application of disperse dyes.

TOPIC-5. Finishing

- 5.1 Types of finishing
- 5.2 External & internal delustering
- 5.3 Creping by drum washing
- 5.4 Crease resistant finish
- 5.5 Wash n wear finish
- 5.6 Heat setting conditions of synthetic fabrics

6. LABORATORY EXPERIENCES :

	Hrs.
1. Carryout desizing of given sized fabric.	01
2. Scour cotton / viscose-rayon fabric, nylon, polyester and acrylic fabric.	04
3. Bleach cotton / viscose rayon fabric, nylon, polyester and acrylic fabric.	04
4. Optical whiteing of different fabrics.	01
5. Dye cotton / viscose rayon fabric with direct/reactive/vat/solubilised vat, dyes.	04

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6.	Carry out dyeing of nylon/wool/silk with acid dyes.	02
7.	Dye polyester fabric with disperse dyes.	02
8.	Dye acrylic with modified basic dyes.	02
9.	Print cotton / viscose fabric with direct / reactive / vat / solubilised vat dyes.	04
10.	Print nylon fabric with acid dyes.	02
11.	Carry out delustering / resin finishing / stiffening of cotton / viscose fabric.	02

7. SUGGESTIVE INSTRUCTIONAL STRATEGIES :

Sr. No.	TRS No.	EO's No.	Instructional Strategies	Key resources needed
1	1.	1.1 1.2	Classroom Instructions. Demonstrations.	Charts Transperances Video-Cassettes etc..
2		1.2	----do----	----do----
3		1.3	----do----	----do----
4		1.4	----do----	----do----
5		1.5	----do----	----do----
6		1.6	----do----	----do----
7		1.7	----do----	----do----
8		1.8	----do----	----do----
9		1.9	----do----	----do----
10		1.10	----do----	----do----
11	2	2.1	Classroom instructions Demenonstrations.	Model - Charts
12		2.2	----do----	----do----
13		2.3	----do----	----do----
14		2.4	----do---	----do----
15		2.5	----do---	----do----
16		2.6	----do----	----do----
17	3	3.1	----do----	----do----
18		3.2	----do----	----do----
19		3.3	----do----	----do----
20		3.4	----do----	----do----
21		3.5	----do----	----do----
22		3.6	----do----	----do----
23	4	4.1	----do----	----do----
24		4.2	----do----	----do----
25		4.3	----do----	----do----
26		4.4	Workshop practice	----do----

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8. REFERENCES :

Sr. No.	Name of Books	Anthors
1.	A glimpse of chemical processing of Textile	R.R.Chakravorty
2.	Processing of Fibrous materials	F.Sadov
3.	Textile Finishing	A.J.Hall
4.	Scouring, Bleaching	E.R.Trotmann
5.	Technology of Dyeing	V.A.Shenai
6.	Technology. of Printing	V.A.Shenai

9. ASSESSMENT SCHEME :

Sr. No.	Name of Topic	Percentage Weightage
1.	Introduction and sequence of wet Processing	05
2.	Scouring & Bleaching	40
3.	Dyeing	30
4.	Printing	20
5.	Finishing	05
TOTAL		100