GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE PROCESSING (28)
SCOURING AND BLEACHING - II
SUBJECT CODE: 2152808
B.E. 5thSEMESTER

Type of course: Textile Processing Engineering

Prerequisite: Zeal to learn the subject

Rationale: Various textile fibres and their blends require different processing conditions during their preparation. This subject includes the cleaning and preparation of all the fibres other than cotton. It also majorly includes one of the important preparatory process i.e. Mercerization given to cotton textiles.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		ESE (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	0	3	6	70	20	10	20	10	20	150

Content:

Sr. No.	Course Content	Total Hrs	% Weightage
1	Mercerisation: • Objectives and historical background • Process, additives and important parameters • Characterization and changes in physical and chemical properties in fibre, yarn and/or fabric • Machineries and recent developments • Mercerisation of blended fabrics • Causticisation/Semi mercerisation, Hot mercerisation, Liquid ammonia treatment • Caustic recovery plant	 02 04 03 02 03 02 02	 5 9 7 5 7 5 5
2	Scouring and bleaching of woollen and worsted goods	04	9.5
3	Preparation of Silk goods: Degumming, Scouring and Bleaching	03	7
4	Scouring and Bleaching of other natural fibres i.e. Jute, Linen, Sisal, etc.	03	7
5	Scouring and Bleaching of Man-made fibres such as Polyester, Nylon, Acrylics, etc. and regenerated fibres such as i.e. Viscose Rayon, Cupraamonium Rayon, Tensel/Lyocell etc.	06	14
6	Weight reduction of polyester: Types, Chemistry, Process, Properties and advantages	04	9.5
7	Sodium chlorite bleaching: Mechanism, methods, ecological aspects and merits and demerits	02	5
8	Recent developments in preparatory processes and machineries of man-made fibres	02	5

Suggested specification table with marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
17	19	22	04	04	04

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. An Introduction to Textile Bleaching - Marsh J. T.
2. Technology of Bleaching - Shenai V. A.
3. Textile Scouring and Bleaching - Trotman E. R.
4. Textile Chemistry Vol. II - Peters R. H.
5. Mercerisation - Marsh J. T.

Course outcome:

After learning the content of the subject the students will be able to:

1. Study cleaning/preparation of different textile fibres other than cotton.
2. Study various processing conditions for fibre blends.
3. Compare severity of processing conditions when present in blends.
4. Understand significance of mercerization of cotton at different stages.
5. Various parameters involved in mercerization of cotton textiles.
6. Study different machineries available for mercerization.
7. Understand significance and effect of weight reduction of polyester fabrics.

List of Experiments:

1. To carry out mercerization (Tight & Slack) of given scoured cotton fabric.
2. To carry out degumming of silk fabric.
3. To carry out carbonization of wool.
4. To carry out scouring of polyester fabric.
5. To carry out bleaching of polyester fabric.
6. To carry out optical brightening of polyester fabric.
7. To carry out combined scouring & bleaching of lurex polyester fabric.
8. To carry out optical brightening of lurex polyester fabric.
9. To carry out combined scouring & bleaching of Nylon fabric.
10. To carry out optical brightening of Nylon fabric.
11. To carry out combined scouring & bleaching of CDPET fabric.

Design based Problems (DP)/Open Ended Problem:

1. To study various parameters to get reproducible result.
2. To analyse the best stage of mercerization by varying the parameters of the same.
3. To compare the processing criteria for linen or other cellulosic fibres with that of cotton.
4. To find alternate methods for weight reduction of polyester fibre over conventional NaOH method.

Major Equipments:

Water heating bath, Weighing balance, HTHP beaker dyeing m/c, Oven, Padding mangle, etc.

List of Open Source Software/learning website:

1. http://www.wto.org/
2. http://www.wtin.com/
3. http://textileinformation.blogspot.in/
4. http://www.fibre2fashion.com/
5. http://textilelearner.blogspot.in/
6. http://www.fashion-era.com/

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.