

GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE PROCESSING (28) ANALYTICAL TEXTILE CHEMISTRY-II SUBJECT CODE: 2162802 B.E. 6th SEMESTER

Type of course: Textile Processing Engineering

Prerequisite: Zeal to learn the subject

Rationale: This subject covers the test methods to evaluate all the textile processing auxiliaries like dispersing agents, levelling agents, reducing agents, etc. It also includes the test methods to get the purity of dyes which the heart of the coloration of textiles. It further involves the analysis of printing thickeners, sizing agents, etc. Analysis of various finishing ingredients is also covered in this course.

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)		
				PA	ALA	ESE	OEP			
3	0	2	5	70	20	10	20	10	20	150

Content:

Sr. No.	Course content	Total Hrs.	% Weightage
1	Analysis of sizing chemicals.	03	7
2	Analysis of Desizing agents, scouring agents and bleaching agents.	04	9.5
3	Analysis of chemicals such as Acids, Alkalis, Oxidizing agents, Reducing agents and their effects on various fibres.	07	16.5
4	Analysis of surfactants: Qualitative and quantitative.	04	9.5
5	Analysis of auxiliaries such as detergents, wetting agents, levelling agents, dispersing agents, softeners, printing auxiliaries, defoamer etc.	07	16.5
6	Analysis of printing thickeners.	04	9.5
7	Identification & Analysis of various finishing agents such as stiffeners, softeners, cross linking agents, flame retarding agents, water repellants etc.	07	16.5
8	Purification methods of different dyes.	01	2
9	Analysis of dyes: Qualitative and quantitative.	05	12

Suggested specification table with marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
08	12	10	16	16	08

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. Evaluation of Textile Chemicals - Shenai V. A.
2. Process House Laboratory - A Hand Book – Girish Luthra
3. Treatment of Textile Processing Effluents Including Analysis - Manivasakam
4. Profiles in analysis of chemicals - N. F. Desai

Course outcome:

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

1. Analyse sizing additives such that the formulation of desizing recipe can be done.
2. Analyse various textile processing auxiliaries like dispersing agents, levelling agents, etc.
3. Study test methods to obtain purity of dyes by different techniques.
4. Analyse various printing thickeners.
5. Evaluate various finishing auxiliaries for phosphorous content, nitrogen content, etc.

List of Experiments:

1. Identification of given dyestuff. (Soluble Group)
2. Identification of given dyestuff. (Insoluble Group)
3. Identification of dye on given dyed yarn/fabric. (Soluble Group)
4. Identification of dye on given dyed yarn/fabric. (Insoluble Group)
5. To determine % purity of given dyestuff. (Dyeing Method)
6. To determine % purity of given dyestuff. (Spectrophotometric Method)
7. To carry out purification of the dyestuff using Soxhlet Extractor.

Design based Problems (DP)/Open Ended Problem:

1. To develop the dye extraction method producing highest purity of dyes.
2. To define remedial actions depending on impurity present in the dyestuffs for their removal.
3. To standardize the N content & P content for a particular finishing technique depending on the fabric composition to be applied on.
4. To compare various printing thickeners defining their suitability for a particular printing.
5. To suggest the best combinations of dyes for combination of shades.

Major Equipments:

Water heating bath, HTHP beaker dyeing m/c, padding mangle, spectrophotometer, distillation unit, extractors, hot plate, oven, scientific balance 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.