GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE PROCESSING (28)
CHEMISTRY & APPLICATIONS OF TEXTILE AUXILIARIES
SUBJECT CODE: 2152806
B.E. 5thSEMESTER

Type of course: Textile Processing Engineering

Prerequisite: Zeal to learn the subject

Rationale: This subject includes the technochemical aspects of various surface active agents used in textile wet processing industries i.e. detergents, wetting agents, mercerizing wetting agents, stain removers, dyeing, printing and finishing auxiliaries, etc. It also involves the chemistry and application of speciality surfactants like fluorosurfactants, silicone surfactants, etc.

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		
4	0	0	4	70	20	10	30	0	20	150

Content:

Sr. No.	Course content	Total Hrs	% Weightage
1	Theory of Surface Activity - Surface tension, HLB, Critical micelle concentration, Solubility and Kraft point, Angle of contact, etc.	10	18
2	Classification, Chemistry and properties of surface active agents	05	9
3	Technology and applications of preparatory process auxiliaries such as detergents, wetting agents, mercerizing wetting agents, stain removers, etc.	09	16
4	Dyeing auxiliaries such as dispersing agents, levelling agents, rubbing fastness improvers, dye fixing agents, defoaming agents, carriers, etc.	09	16
5	Printing auxiliaries such as accelerators, hygroscopic agents, wetting agents, antifoaming agents, etc.	08	14
6	Finishing auxiliaries: Principle of emulsification- emulsion & microemulsion, softeners, etc.	09	16
7	Specialty surfactants such as fluorosurfactants, silicone surfactants, etc.	04	7
8	Biodegradability of different surface active agents	02	4

Suggested specification table with marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
18	22	19	03	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. Chemistry of Organic Textile Chemicals - Shenai V. A.
2. Chemistry of Textile Auxiliaries - Shenai V. A.
3. Handbook of Surfactants - Porter
4. Emulsion & Emulsion Stability - Sjoblom
5. Chemistry of Textile Auxiliaries - Trivedi S. S.
6. Industrial Applications of Surfactants - Karsa D. R.
7. Textile auxiliaries and finishing chemicals - Vaidya A. A.

Course outcome:

After learning the course the students should be able to:

1. Select the type of auxiliary for various types of wet processing applications.
2. Understand the chemistry of various auxiliaries used in wet processing.
3. Know the formulation of various classes of auxiliaries.
4. Know the recent developments in Textile auxiliaries i.e. specialty surfactants, silicon surfactants. 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.