GUJARAT TECHNOLOGICAL UNIVERSITY

BRANCH NAME: TEXTILE PROCESSING
SUBJECT NAME: QUALITY CONTROL IN WET PROCESSING
SUBJECT CODE: 2182804
B.E. 8th SEMESTER

Type of course: Textile Processing Engineering

Prerequisite: Zeal to learn the subject

Rationale: This subject defines overall quality of textiles. It involves in process control at various stages of wet processing. It also includes after process control to get quality product. A study of various quality standards by different organizations is also a part of this subject.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA(M)		PA (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	0	2	5	70	20	10	20	10	20	150

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment; OEP-Open Ended problem; AL-Active learning.

Content:

Sr. No.	Content	Total Hrs.	Weightage (%)
1	Object of Process Control: Importance, Advantages and Functions of Process Control. Process Control Measure in Bleaching, Dyeing, Printing and Finishing. Important Tests to Control the Processing Parameters.	12	21.5
2	Object of Quality Control: Difference between Quality Control and Process Control, Control Staff with Management and Fellow Technicians in Production Department, Quality Control Organization and Expansion, Responsibilities and Relation of Quality, Major Areas and Important Key Part in Wet Processing W. R. T. Quality Control, Important Tests and Consumption Norms at Various Stages of Processing W. R. T. Quality Control.	12	21.5
3	Elements of Instrumentation, Various Instruments to Measure Pressure, Temperature, Flow and Other Process Controlling Operations.	10	17.75
4	Inspection and Analysis of Finished Goods. Inspection of Faults & Damages. Causes and Classification of Faults & Damages, Precautions & Remedies	10	17.75
5	Fastness Properties of Dyed and Printed Fabrics: Different Types like Washing Fastness, Light Fastness, Rubbing Fastness, Perspiration Fastness, Scrubbing Fastness, etc.	12	21.5

Suggested specification table with marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	14	22	10	10	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. Process House Laboratory – Girish Luthra & Bapu Deshpande
2. Textile Mills in the Changing Environment - Gulrajani
3. Towards Zero Defects - Amubhai Patel
4. Process & Quality Control in Chemical Processing of Textiles - S.V. Gokhle & J.R. Modi

Course outcome:

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

1. Understand the direct relation of quality with customer and cost.
2. Identify parameter for better sustainability in market.
3. Understand the importance of quality at each stage of process.
4. Modify the process sequence for quality product development.
5. Adopt standard norms to develop overall quality of the product.

List of Experiments:

1. Assessment of washing fastness of Direct dyed fabric and to study the effect of after treatments on washing fastness.
2. Assessment of washing fastness of Reactive dyed fabric and to study the effect of after treatments on washing fastness.
3. Assessment of rubbing fastness of Azoic dyed cotton fabric and to study the effect of surfactant on rubbing fastness.
4. Assessment of rubbing fastness of pigment printed fabric and to study the effect of Binders & Fixers on rubbing fastness.
5. Assessment of Light fastness of different class of dyes such as Reactive dye, Direct Dye, Vat Dye, Acid Dye, Basic Dye, Disperse dye etc.
6. Assessment of Sublimation fastness of Disperse dye on polyester material.
7. Assessment of Perspiration fastness of Reactive & Direct dye on cotton fabric.
8. To evaluate the treated fabrics for Water repellency & Water proofing.
9. To evaluate the treated fabrics for Flame proofing & Flame retardancy.
10. To determine Ash Content of fabrics at various stages of pre-treatment.
11. To determine desizing efficiency of desizing process.
12. To study the effect of chlorine retention on bleached fabric.

Design based Problems (DP)/Open Ended Problem:

1. To design the process sequence for better utilization of inventory.
2. To modify process design to get higher production with reproducibility.
3. To develop the quality product at every stage through standardisation.
4. To improve the overall fastness properties of fabrics.

Major Equipments: Water heating bath, Laboratory H.T.H.P beaker dyeing machine, Laboratory Hank Dyeing machine, scientific weighing balance, Perspirometer, fadometer, laundrometer, sublimation fastness tester, crock meter, 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.