GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE PROCESSING (28)
TECHNOLOGY OF PRINTING - I
SUBJECT CODE: 2162804
B.E. 6th SEMESTER

Type of course: Textile Processing Engineering

Prerequisite: Zeal to learn the subject

Rationale: This subject includes the basics of printing technology by which the decorative designs can be produced on the textiles. This course also includes in detail the conditions and parameters of printing cotton textiles with different classes of dyes. This involves various fixation methods of the applied print too.

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	**Introduction:** Necessity and definition of printing. Various stages involved in printing.	02	5
2	**Equipments and Methods Used for Block, Stencil & Roller Printing :** Engraving Process, Stencil cutting process, Methods of block & stencil printing, Engraving of copper rollers, Construction & Working of roller printing machine, Design setting mechanism in roller printing machine.	06	14
3	**Preparation of Print Paste & Thickening Agents :** Selection of dyes for print paste, Formulation & properties of printing paste, Classification, properties & functions of thickeners, Selection of suitable thickeners, Merits & demerits of various thickening agents.	04	9.5
4	**Styles of Printing:** Various styles of printing: Direct style, Dyed style, Raised style, Azoic style, Resist style, Discharge style, Batik style, Crimp style, Brasso style etc.	08	19
5	**Printing of Different Fabrics:** Printing of Cotton/Viscose fabric with Direct, Azoic, Vat, Indigosol, Aniline Black, Reactive & Pigment Dyes.	12	28.5
6	**Methods of Fixation:** Necessity of dye fixation. Working of different machines like Steamer, Ager, Polymeriser, etc. for fixation of dyes.	10	24

Suggested specification table with marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	12	14	14	12	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. Textile Printing - L. W. C. Miles
2. Technology of Printing. - V.A. Shenai
3. Printing on Textiles by direct and transfer techniques - Lee R.W.
4. An Introduction to textile printing - W. Clarke
5. Textile Printing - John Storey

Course outcome:

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

1. Understand the concept and significance of printing technology.
2. Differentiate between styles and methods of printing.
3. Understand the function of various printing ingredients.
4. Formulate the printing ingredients according to the styles and methods used.
5. Compare various styles and methods as per the need.
6. Decide the best style and method to obtain the required print.
7. Get utilization of printing machineries as per the fixation method used.

List of Experiments:

1. To create "bandhani" effect by tie & die style on cotton using cold brand reactive dyes.
2. To carry out vein like effect on cotton by batik style using cold brand reactive dye.
3. To carry out crimp style effect on cotton using hot brand reactive dye and development of tone in tone effect.
4. To carry out direct style printing of cotton using cold brand reactive dye.
5. To carry out direct style printing of cotton using hot brand reactive dye.
6. To study effect of hydroscopic agents in printing of hot brand reactive dyes on cotton using thermo fixation method.
7. To study printing of cotton by azoic dye using naphtholation/base printing method.
8. To study printing of cotton by azoic dye using naphthol printing method.
9. To carry out resist style of printing on cotton fabric using hot brand reactive dye.
10. To carry out mineral khakhi printing on given cotton fabric.

Design based Problems (DP)/Open Ended Problem:

1. To produce special effects by non conventional methods.
2. To develop inks for digital printing.
3. To construct a model printing m/c.
4. To develop after washing aids for printed fabric.
5. To develop accelerator for prints.

Major Equipments:

Water heating bath, padding mangle, spectrophotometer, Oven, High Temperature steamer, High pressure steamer, 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.