GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE TECHNOLOGY (29)
WEAVING TECHNOLOGY II
SUBJECT CODE: 2152908
B.E. 5th SEMESTER

Type of course: Engineering

Prerequisite: Students should have knowledge of Weaving Technology – I.

Rationale: Weaving Technology II covers the basics of fabric formation using plain power loom and dobby.

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	2	6	70	20	10	20	10	20	150

Contents:

Sr. No.	Content	Total Hrs	% Weightage
1.	Introduction to plain power loom. Timing diagram of loom. Drawing –in of beam for loom.	2	3.57
2.	Mechanisms, working and settings of primary motions of plain power loom viz. shedding – types of shed, design of shedding tappet etc., picking and beat-up mechanisms	14	25.00
3.	Mechanisms, working and settings of secondary motions of plain power loom viz. different types of let-off and take-up mechanisms	8	14.29
4.	Mechanisms, working and settings of auxiliary motions of plain power loom viz. warp protector motion, weft protector motion, warp stop motion etc.	10	17.86
5.	Multiple box motion, Ecles drop box motion, Pick and pick loom, Pick at will motion	6	10.71

6.	Introduction to Dobby. • Different types of dobbies - Keighly, Climax, Cross border dobby, Cam dobby etc. • Preparation of chain for different kinds of design used in dobbies. • Negative and positive dobbies with settings • Introduction to Electronic dobby • Timings and Settings of dobbies	12	21.43
7.	Calculations pertaining to above mechanisms, average production, efficiency etc.	4	7.14

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
16	16	16	12	5	5

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. Principles of Weaving, Mark R, Robinson A T C, The Textile Institute, Manchester, 1986.
2. Weaving – Machine, Mechanism and Management, Talukdar M K, Srirammulu P K and Ajgaokar D B, Mahajan Publisher Private Ltd., Ahmedabad, India, 1998.
3. Textile Mathematics, Booth J E, Part III, Textile Institute, Manchester, 1977.
4. Modern Preparation & Weaving Machines by A. Ormerod.

Course Outcome:

After learning the course the students should be able to:

1. Select and set the primary motions for different types of fabric qualities.
2. Select and set the secondary motions for different types of fabric qualities.
3. Select and set the auxiliary motions for different types of fabric qualities.
4. Calculate the production of plain power loom.
5. Calculate the efficiency of plain power loom and loom shed.

List of Experiments:

1. Passage of material through different parts of plain power loom.
2. To select the proper reed and heald for a weaver's beam keeping in mind the beam, loom size and fabric construction.
3. Study of shedding mechanism of shuttle loom and cam positioning with respect to loom cycle.
4. Study of picking mechanism. Picker movement in relation with crank shaft rotation and calculation of average velocity of shuttle.
5. Study of beat-up motion, construction and calculation of sley eccentricity.

6. Study of let-off motion, construction and settings.
7. Study of take up motion and calculation of loom take up constant.
8. Study of Warp protection motion (both loose reed and fast reed).
9. Study of warp stop motion.
10. Study of temple motions.
11. Study of side/centre weft fork mechanism.
12. Study of multiple box motion.
13. Study of different types of dobbies and their important settings.

Design based Problems (DP)/Open Ended Problem: Apart from above experiments a group of students has to undertake one open ended problem/design problem. Few examples of the same are given below.

1. Develop a prototype of shedding mechanism.

2. Develop a prototype of picking mechanism.

3. Develop a prototype of driving arrangement of dobby.

Major Equipment:

Plain power loom
Dobbies

List of Open Source Software/learning website: http://nptel.iitm.ac.in, World Wide Web, Google Search Engine etc.

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.