GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE TECHNOLOGY (29)
WEAVING TECHNOLOGY III
SUBJECT CODE: 2162907
B.E. 6th SEMESTER

Type of course: Engineering

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

Rationale: Weaving Technology III covers the mechanisms of automatic shuttle weaving machines in detail, fancy weaving mechanisms using attachments to weaving machines and different types of jacquards in detail.

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	2	5	70	20	10	20	10	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1.	**Automatic Shuttle Weaving Machines** • Classification of Automatic Shuttle Looms • Comparison between Cop Change & Shuttle Change looms • Classification of Weft Feelers • Object, construction, working and important settings of all the types of weft feelers • Cop Change mechanism – Its object, construction, working and requirements for efficient working, temple cutter and shuttle eye cutter etc. • Brief study of Bobbin Loader • Loom Winder • Brief study of Unifill Loom Winder • Introduction to Multi-shuttle weft replenishment	9	21.43
2.	• Shuttle Change Automatic Looms : o Stop Type o Non Stop Type	3	7.14
3.	Let-off mechanisms : o Ruti C o Bartlet o Toyoda o Hatersley	8	19.05
4.	Automatic warp stop motions : o Electrical Type : C & K and Mathers and Platts	2	4.76

5.	Essential requirements for weaving of blended and filament yarns	2	4.76
6.	Fancy Weaving : Requirements , construction and working of weaving machines used for production of following varieties of fabrics • Madras Muslin Fabric • Lappet fabric • Brief idea of Swivel Fabric • Brief idea of Warp & Weft Ondule fabric	6	14.29
7.	Leno Mechanism – Different types, requirements, construction, working and important settings.	2	4.76
8.	Terry Mechanism - Different types, requirements, construction, working and important settings.	2	4.76
9.	**Jacquards** • Scope of jacquard , important parts and their functions, • Different types of jacquard such as single lift single cylinder, double lift single cylinder, double lift double cylinder, cross border, jacquard, Open Shed (V-shed and parallel), Fine pitch jacquards (Vincenzi & Verdol). • Harness ties, Casting out ,Card cutting, Jacquard card punching systems as per fabric design • Introduction of electronic jacquard and use of plastic pattern cards	7	16.67
10.	Brief introduction to Special Jacquards • Self twilling - Sectional - Inverted hook - Border - Compound jacquards. • Handloom silk weaving	1	2.38

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	20	20	5	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, Marks & Robinson.
2. Automatic Weaving, A. S. Wagh.
3. Weaving Machine Mechanism &Mgt., Talukdar & Ajgaonkar.
4. Auto Looms, TAIRO.
5. Automatic Weaving, J. B. Atiken.
6. The Mechanism of Weaving, Thomas W. Fox.
7. Weaving – I, P. A. Khatwani & A. K. Gupta, NCUTE

8. Woven fabric production –I , NCUTE

Course Outcome:

After learning the course the students should be able to:

1. Select the suitable type of feeler mechanism for the given type of textile material.
2. Select the type of automatic weaving machine for the given textile material.
3. Set the weaving machine for the production of quality fabrics.
4. Set the weaving machine for production of different types of textile materials.
5. Select the suitable type of jacquard for the production of given type of fabrics.
6. Describe the remedial measures to be taken for different quality related problems at different machines.
7. Calculate the production and efficiency of all the machines.

List of Experiments:

1. General study of auto loom. Passage of warp threads through different parts of automatic weaving machine.
2. Study of weft feelers and important settings.
3. Study of cop change mechanism and important settings.
4. Study of shuttle change loom and important settings.
5. Study of let-off motion & important settings.
6. Study of take up motion, important settings and calculation of loom take up constant.
7. Study of Warp protection motion (both loose reed and fast reed).
8. Study of centre weft fork mechanism and important settings.
9. Study of warp stop motion on various looms and setting of Ruti warp stop motion.
10. Study of Single Lift Single Cylinder Jacquard.
11. Study of Double Lift Single Cylinder & Double Cylinder Jacquard.
12. Study of Cross-Border Jacquard.
13. Study of All-Over Jacquard and Card cutting & Lacing for the same.
14. Study of Double Cloth & Leno Jacquard.
15. Practice of Drawing-in on Jacquard loom and Card cutting.

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 driving arrangement of back rest of let-off mechanism..
2. Develop a driving arrangement for rotation of magazine.
3. Develop a driving arrangement for rotation of pattern cylinder of jacquard.

Major Equipment:

Automatic shuttle weaving machine
Jacquard

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.

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