GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE PROCESSING (28)
TEXTILE MANUFACTURING II
SUBJECT CODE: 2142806
B.E. SEMESTER IV

Type of course: Engineering

Prerequisite: Students should have knowledge of Textile Manufacturing I.

Rationale: This course covers the basics of Yarn preparation processes and different fabric formation techniques.

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.	Topics	Teaching Hrs.	Module Weightage
1.	**Warping** Beam Warping; Slow speed warping; High speed warping; Modern warping pirn winders; Modern developments in Pirn winding; yarn traversing system; standard winding parameters; Calculations related to production; efficiency etc.	6	17 %
2.	**Sectional Warping** Old and Modern Machines	4	11 %
3.	**Sizing** Sizing Machines; Two cylinder sizing; Multi cylinder sizing	4	11 %
4.	**Preparation of size paste** for cotton, blended and Synthetic material	2	6 %
5.	**Yarn Production Calculation**	2	6 %
6.	**Plain power loom:** Primary, Secondary and Auxiliary motion; Types of Weaves	4	11 %
7.	**Introduction to dobby and jacquard**	3	8 %
8.	**Non-Woven Technologies**	3	8 %
9.	**Knitting Technologies**	3	8 %
10.	**Garment Manufacturing Process**	2	6 %
11.	**Different Weft insertion Method** (Shuttle, Airjet, Waterjet, Sulzer, Rapier etc..)	2	6 %
12.	**Recent Developments**	1	2 %

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks				
R Level	U Level	A Level	N Level	E Level
15	23	22	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate 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 Warp Sizing – Sydel
2. Winding / Warping & Sizing / Loom Shed – BTRA
3. Preventive Maintenance Of Sizing Machines – BTRA
4. Cotton Warp Sizing Hand Book – Houghton
5. Plain Weaving Motions – Aswani
6. Watson's Textile Design & Colour - Grosicki
7. Weaving Productivity Standards & Methods of Evaluation – BTRA
8. Fancy Weaving Mechanisms – Aswini
9. Mechanisms Of Weaving – Fox
10. Weaving Mechanisms Vol. I & Vol. II – Banerjee
11. A Guide To Crimping / Texturising Technology - MANTRA

Course Outcome:

After learning the course the students should be able to

1. Know the basic requirements for formation of Warper's Beams suitable for Sizing process.
2. Know the preparation of size recipe suitable for different types of yarns.
3. Know the basic requirements for formation of Sized Beams suitable for subsequent processes like Drawing-in, Denting and weaving.
4. Understand different fabric manufacturing processes.
5. Calculate production and efficiency of various Machines.

List of Practical:
1. To study the objects and passage of material through Warping Machine.
2. To study the objects and passage of material through Sizing Machine.
3. To study the passage of warp on Plain power loom.
4. To study the primary, secondary and auxiliary motion on plain power loom.
5. To study the passage of material through Ruti C loom.
6. To study the passage of material through Airjet loom.
7. To study the passage of material through Waterjet loom.
8. To study the passage of material through Projectile Weaving Machine.
9. To study the passage of material through Rapier Weaving Machine.
10. To study the passage of material through Warp Knitting & Weft Knitting Machine.
11. To study the Garment Manufacturing Process.
12. To study different types of Stitches and Seams.
13. To study what is Non Woven and classification of Non woven.
14. To study recent developments.

Open Ended Problems/Design Oriented Problems: 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 winding drum of Sectional Warping Machine.
2. Develop a shedding mechanism of Plain Power Loom.
3. Develop a weft insertion system of Rapier Loom.

Major Equipments:
Warping Machine
Sizing Machine
Plain power Loom
Automatic shuttle loom
Rapier loom
Airjet loom

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.