



SARVAJANIK UNIVERSITY
Sarvajnik College of Engineering and
Technology
Bachelor of Engineering



B E II Textile Technology: Semester – IV

Subject Name: FABRIC FORMATION -I

Subject Code: BTTT13402

Type of course: ~~BSC/ESC/HSM/PCC/PEC/OEC/MD~~ Professional Core Course

Prerequisite (if any): Students should have knowledge of basics of textile and preparatory processes for warp and weft yarns meant for weaving.

List of Courses where this course will be prerequisite: Yarn preparation

Rationale: (should also include Description of the relevance of this course in the Program)

Students of Textile Technology are supposed to have knowledge and skill regarding Plain Power Loom and Automatic loom and their principle of working to produce good quality of fabric.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks			Practical Marks		Total
L	T	P	C	TEE	CA1	CA2	TEP	CA3	
4	0	2	5	60	25	15	30	20	150

CA1: Continuous Assessment (assignments/projects/open book tests/closed book tests CA2: Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems TEE: Term End Examination TEP: Term End Practical Exam (Performance and viva on practical skills learned in course) CA3: Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course

Content:

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Sr. No.	Content	Total Hrs
1	<p>Plain Power Loom: Classification of looms, Passage of yarn through loom. Idea about cycle of loom and various motions, Loom drives, Loom timing. Primary Motions Shedding: Types of sheds, types of shedding, Tappet shedding – Positive and negative tappets, Reversing mechanisms, limitations of tappet shedding, heald staggering, geometry of the shed, depth of the shed, Designing of shedding tappet. Picking: Introduction to shuttle picking, classification, shuttle timing, cone under pick mechanism, advantages and limitations, shuttle checking, relation between shuttle velocity and loom speed, loom width and rate of weft insertion, expression for power required for picking, Beat Up: Movement of sley, beat up, sley eccentricity and the factors influencing it, timing available for shuttle flight, Beat up force Secondary Motions: Take up motion: Objectives, negative and positive take up systems, seven wheel take up mechanism with change wheel and pick wheel calculation. Let off motions: Negative and positive let off motions, tension variations factors Auxiliary Motions: Temples, Weft stop - side fork and center fork motions, Type of drop wires, castellated bars, mechanical and modern electrical warp stop motion, loose reed and fast reed - warp protector motions. Calculation for production and efficiency related to weaving. Drop Box Motions: Introduction and importance, Types of Multiple box motion, 4x1, Eccle's drop box motion, box plan and pattern card for box change</p>	20
2	<p>Automatic Loom Classification of Automatic Shuttle Looms, Classification of Weft Feelers, Object, construction, working and important settings of midget, 2- prong electrical and</p>	15

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w.e.f. AY 2021-22



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	photoelectric weft feelers, automatic cop change mechanism – Its object, construction, working and requirements for efficient working, temple cutter and shuttle eye cutter, changes required to convert plain loom to semi-automatic power loom	
3	Dobby shedding: Introduction and importance, Classification, Detail study of Keighley, Cam, Positive, Rotary & Electronic dobbies, Preparation of chain for different kinds of design used in dobbie, advantages of papers card over wooden leg pattern card Jacquard shedding: Introduction and importance, Classification, Scope of jacquard and functions of different parts like hooks, needle, harness, comber board etc., Double lift double cylinder & electronic jacquard., Harness ties, Casting out Concept of E-shedding	25

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	25	30	5	0	0

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:

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Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1.	Weaving Mechanism	K.T. Aswani			
2	Principles of weaving	Marks A.T.C. & Robinson	The Textile Institute	1976	
3	Weaving: Machines, mechanisms, management	Prof. D. B. Ajgaonkar, Prof. Sriramalu & Prof. M. K. Talukdar	Mahajan Publishers Private Ltd., Ahmedabad,.	1998	
4	Principles of Woven Fabric Manufacturing	Abhijit Majumdar	CRC Press ISBN-13 978-1498759113	2016	
5	Handbook of Weaving	Adanur Sabit	CRC Press 9780429135828	2020	
6	Weaving Technology and Operations	A Ormerod and W S Sondhelm.	The Textile Institute,	1998	

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			ISBN-13: 978-1870812764		
7	Textile Mathematics:	J. E. Booth	The Textile Institute	1977	(Volume III)

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Understand basic concepts and process of weaving process.	20
CO-2	Explain various motions of a plain loom, production and fabric weight calculations	30
CO-3	Explain the objectives and operating principle of automatic loom, dobby and jacquard.	30
CO-4	Understand working of drop box. Explore areas of application of drop box.	10
CO-5	Calculate the production and efficiency of weaving process.	10

Mapping with POs:

	P O 1	P O 2	P O 3	P O 4	P O 5	P O 6	P O 7	P O 8	P O 9	P O 10	P O 11	P O 12	P S 1	P S 2	P S 3
CO-1	3	2	0	1	0	0	0	0	1	1	1	1	1	3	3

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CO-2	3	2	0	1	0	0	0	0	2	2	3	3	3	3
CO-3	3	2	0	1	0	0	0	0	2	2	3	3	3	3
CO-4	3	2	1	2	1	1	1	1	2	2	3	3	3	3
CO-5	3	2	2	2	1	1	1	1	2	2	3	3	3	3
Rationale*														

Rationale* : Explaining why it is matching this particular program outcome

List of Open learning website: <https://nptel.ac.in>, brochures and manuals of machine manufacturer, World Wide Web, Google Search Engine etc.

FOR LAB SESSIONS:

List of Experiments:

1. Study of different parts and passage of warp sheet through plain power and automatic shuttle loom.
2. Study of loom drive and timing diagram of shuttle loom.
3. Study of tappet and cam shedding mechanism of shuttle loom.
4. Study of picking mechanism of shuttle loom.
5. Study of sley and cam beat-up motion and calculation of sley eccentricity.
6. Study of positive and negative let-off motion.
7. Study of different temples and take up motion, calculation of loom take up dividend.
8. Study of loose reed and fast reed warp protection motion.
9. Study of mechanical and electrical type warp stop motion.
10. Study of side and centre weft fork mechanism.

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11. Study of multiple drop box motion.
12. Study of mechanical and electronic dobby.
13. Study of mechanical and electronic jacquard.
14. Study of different weft feelers.
15. Study of cop change mechanism and important timing & settings.
16. Report of the Industrial - Mill visit.

Major Equipment Needed: Plain power loom, automatic shuttle loom. Drop box, dobby and jacquard attached loom etc.

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