

19TT203

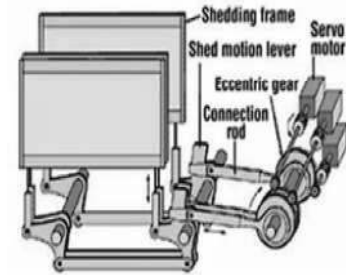
FABRIC MANUFACTURING

Hours Per Week :

L	T	P	C
3	1	-	4

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	15	-	10	45	-	-	-	-



SOURCE:
Sulzer Textil.

COURSE DESCRIPTION AND OBJECTIVES:

This course offers the basics of weaving preparatory and fabric manufacturing processes such as shuttle and shuttle-less weaving technologies. The objective of this course is to make the students familiar with woven fabric manufacturing using various machines in present scenario.

COURSE OUTCOMES:

Upon completion of the course, the student will be able to achieve the following outcomes:

COs	Course Outcomes	POs
1	Apply the fundamental concepts in winding to meet the yarn quality requirements for further processes.	1
2	Analyze the process parameters of various weaving machinery to improve productivity.	2
3	Review the technical specifications of various modern weaving machinery for desired quality of fabric.	2,3
4	Demonstrate various control systems used in modern weaving machines to minimize energy consumption for an operation and increase productivity.	3,5,7

SKILLS:

- ✓ Able to prepare size paste preparation for given yarn.
- ✓ Setup a weaving preparatory process for given quality.
- ✓ By comparing two different fabrics can able to tell the manufacturing process route.
- ✓ Identify the different fabric defects and causes & remedies of particular fault.

UNIT - I **L-10**

WINDING & WARPING : Introduction to fabric manufacture; Need for weaving preparatory process.

WARP WINDING : Drum and precision winding, essential features of drum winders, tensioner, yarn clearers, splicing, common package faults, production calculations.

PRIN WINDING : Principles, types of machines, working and production calculations.

WARPING : Classification, elements & working of beam and sectional warping machine, calculations for production, features of modern warping machines.

UNIT - II **L- 8**

SIZING : Objects, types of sizing, sizing materials, size recipes for different yarns, size paste preparation, two and multi cylinder sizing machine, construction of sow box, concept of drying, splitting and types of splitting, beam winding, functions of comb; Sizing faults and remedies; Calculations in sizing; Post sizing operations.

UNIT - III **L- 9**

SHUTTLE WEAVING : Introduction to weaving, classification of loom motions, shedding mechanisms and types of sheds; Cone under pick, over pick; Beat-up mechanism, 7-wheel take-up, negative and positive let-off, auxiliary motions, warp stop motions, temples, weft stop motion, warp protector motion; Loom production calculations.

UNIT - IV **L- 9**

PROJECTILE & RAPIER WEAVING : Limitations of ordinary looms, classification of shuttle-less weaving machines.

Projectile: Projectile picking motion, picking phases, torsion rod details, receiving unit, selvedge unit, sley drive, multi color weft insertion.

Rapier: Principle of rapier weft insertion through various mechanisms such as single rapier, double rapier, rigid and flexible, rapier heads, rapier drives, selvedge formation.

UNIT - V **L- 9**

JET & NARROW WEAVING: Air jet: Stages of weft insertion, types of air jet weaving machines, main nozzles designs, relay nozzle designs, quality of air.

Water Jet: Weft Insertion, picking mechanism, weft insertion elements, loom settings, influence of yarn characteristics, features of water jet looms.

Introduction to multiphase & circular Weaving; Fabric defects & remedies; Introduction to narrow fabric weaving.

TEXT BOOKS:

1. A.T.C Marks, Robinson, "Principles of Weaving", The Textile Institute, 2011.
2. M. K. Talukdar, D. B. Ajgonkar, "Weaving Machines, Materials & Methods", Textile Institute, 1998.

REFERENCE BOOKS:

1. S.C Adanur, "Handbook of Weaving", CRC publications, 2008.
2. A. Ormerod, "Modern Preparation & Weaving Machines", BWE Publications, 1983.
3. K. T. Aswani, "Plain Weaving Motions", M/S Mahajan book publishers, Ahmedabad, Gujarat, 2007.