

# 16TF203 FABRIC MANUFACTURING

Hours Per Week :

L	T	P	C
3	-	-	3

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	-	-	10	20	-	-	5	10



## Course Description and Objectives:

This course offers the basics of fabric manufacturing and their preparatory processes includes winding, warping, sizing and post sizing operations. The objective of this course is to make students familiar with the process of fabric manufacturing.

## Course Outcomes:

The student will be able to:

- distinguish the needs of weaving preparatory processes such as winding, warping, sizing and post sizing operations.
- explain the formation of continuous length of fabric in shuttle looms.
- understand the basic concepts in shuttle-less weaving machines.

## SKILLS:

- ✓ *Distinguish the weaving preparatory machines.*
- ✓ *Prepare size recipe for given yarn.*
- ✓ *Optimize weaving process parameters.*
- ✓ *Identify yarn faults in yarn before and after winding.*
- ✓ *Distinguish sized and un-sized yarns.*
- ✓ *Selection of looms based on end product.*

**ACTIVITIES:**

- *Observing weaving parameters by visiting weaving mill.*
- *Collection of technical specifications of winding, warping, sizing machines.*
- *Drawing and denting of warp in hand loom.*
- *Comparison of shuttle-less looms technical specifications.*
- *Preparation of peg plan for given design.*

**UNIT - 1****L-8**

**WINDING & WARPING** : Introduction to Fabric Manufacture - Need for Weaving preparatory process. Drum and precision Winding, Essentials features of drum winders, Tensioner, Yarn clearers, Splicing, Common package faults, Production calculations.

*Warping* - Classification, Working of beam and sectional warping machine, Calculations for production, Features of modern warping machines.

**UNIT - 2****L-9**

**YARN SIZING** - Objects, Types of sizing, Sizing materials, Size recipes for different yarns, Size paste preparation, Multi-cylinder Sizing Machine, Different zones, Construction of Sow box, Concept of drying - Wet splitting, Brief note on Beam winding, Types of combs, Sizing faults and remedies; Calculations in sizing, Post sizing operations.

**UNIT - 3****L-9**

**SHUTTLE WEAVING** : Introduction to weaving, Classification of loom motions, Shedding, Picking - Cone under pick, Over pick; Beat-up mechanism, 7 wheel Take-up, Negative and positive Let-off, Auxillary motions - Warp stop motions, Temples, Weft stop motion; Introduction to dobby and jacquard shedding, Loom production calculations.

**UNIT - 4****L-10**

**PROJECTILE & RAPIER WEAVING** : Limitations of ordinary looms, Classification of shuttle-less weaving machines. Projectile picking motion , picking phases, Torsion rod details, Receiving unit , Selvedge weaves, Sley drive, Multi color weft insertion.

Principle of rapier weft insertion through various mechanisms such as single rapier, Double rapier, rigid and flexible, Rapier heads, Rapier drive, Selvedge formation, Field of application & commercial viability.

**UNIT - 5****L-9**

**JET & NARROW WEAVING** : Air Jet weft Insertion, Stages of weft insertion, 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, Comparison with air jet. Introduction to Multiphase 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.