PCTX4205 Fabric Manufacture – I

Module – I **(15 hours)**

1. **Introduction:** a) The fabric, b) methods of fabric formation, c) phases in the formation of fabric by weaving, d) a technical introduction to weaving mechanism.

2. **Preparatory processes:** Introduction, sequence of processes. Objects of different processes.
3. **Winding and Warping:.**

Single –end Warp Winding**-**a) Winding machines-basic function - study of different parts of warp winding m/c-classification of winding machines, spindle and drum driven machines- driving the package e.g., constant surface speed, constant angular speed, varying angular speed. - Types of yarn clearers and their merits and demerits, yarn tensioner, anti patterning device etc.b) Different types of packages and package build-parallel, near parallel wind & cross wound packages, standard package formats (cop, cone, cheese, pineapple etc.) c) winding techniques-random, precision and combined, d) winding parameters: winding rate, wind and traverse ratio, gain, winding angle, e) winding faults; pattern formation, principles of pattern breaking.

Single –end Weft winding- a) Introduction b) need, c) shape and build of the pirn, c) basic requirements, d) elements of the pirn winding machines, e) concept of basic terms-pirn density, cohesion, consistency of pirn diameter, bunch building, chase, winding and binding coils, yarn tails and back wind, spindle speed, direction of rotation, f) degree of automation, g) description of features of a pirn winding machine with respect to a latest commercially available machine.

Module-II **(20 hours)**

Warping: a) Introduction, b) principal methods of warping, c) warping process, d) warping creels- continuous chain creel, truck creel, magazine creel, automatic creel, unrolling creel e) yarn tension in warping, f) stop motions and measuring motions, g) leasing and beaming, h) beam warping or direct warping- process, machines, i) section warping- process, machines, section building and relating drum storage capacity to beam flange diameter.

4. Sizing: a) Introduction, b) sizing process, c) size ingredients, d) factors which affect the properties of sized yarns, f) preparation of the size paste- formulation and equipments, g) techniques of sizing, h) types of sizing, i) concept of factors governing the pick up of size, j) principal machine elements- creel, size box, drying arrangements, head stock, tension control mechanisms, measuring and marking mechanisms etc., k) modern trends in sizing.

Reaching in and Drawing in : a) Introduction, b) need, c) process, d) modernization, e) related calculations.

Module –III **(10 hours)**

5. Basic mechanism of Loom (weaving) - a) Classification of looms, history of loom development b) Study of different parts of a Handloom and Powerloom c) Study of basic operations i.e Shedding – types of shedding - study of tappet shedding, Picking and checking mechanism, Beating up etc, Eccentricity of the sley, Timing and seeting.

Text Books and Reference Books:

1. Winding – Silver Jubilee Monograph by BTRA,
2. Sizing – Materials, Methods, Machinery Ajgoankar, Talukdar & Wadekar,
3. Weaving Conversion of Yarn to Fabric Lord & Mohammed,
4. Textile Maths Volume III J.E.Booth,
5. Cotton Weaving Gordeev, Volkov, Blinov & Svyantenko,
6. Weaving Mechanism – Pat-I & II N.N.Banerjee
7. Handbook of Weaving Preparation D.S. Verma,
8.
9. Plain Weaving Motion K.T Aswani