সিলেবাস

Subject Code	Subject Name	Class (1 period) per Week		Credit
21231	**FABRIC MANUFACTURING- I**	T	P	C
		3	3	4

Rationale	Fabric manufacturing is one of the core areas of study in textile engineering. Fabric manufacturing involves the conversion fibres and yarns to the fabric. There are various types of fabrics e.g. woven, knitted, nonwoven and braids, etc. are used for various purposes such as dress materials, shopping bags, mosquito nets and bandages used by doctors etc. The whole fabric manufacturing studies have been covered in four courses e.g Fabric manufacturing-1, 2, and 3. The present course Fabric manufacturing-1 will deal with basic information about fabric formation that will help to build up a career in this sector as well as to study the subsequent courses of fabric manufacturing specialization.
Learning Outcome (Theoretical)	**After completion of the subject, students will be able to:** - Classify & explain the different types of fabrics and properties of yarn for weaving and knitting. - Describe the winding process with the working principles of the cone, pirn, and cop winding machine. - Explain the warping process with working principles of sectional warping, beam, and ball warping. - Explain sizing, size ingredients & sizing process in slasher sizing machine. - Define drafting, and denting along with drafting denting procedure. Describe knit fabric and different knitting elements of the knitting machine.
Learning Outcome (Practical)	**After completion of the subject, students will be able to :** - Identify different types of fabric. - Identify different yarn packages used in winding in cone, spool, Pirn & cop winding machines. - Demonstrate the working procedure of cone, spool, pirn, & cop winding machine - Observe the warping process involved in the industry. - Demonstrate the working procedure of the sectional, beam, and ball warping machine. - Choose different size materials and organize yarn in slasher sizing machine for sizing. - Observe the procedure of drafting and denting involved in the industry. - Point out the different knitted fabrics and knitting elements used in the knitting machine.

Detailed Syllabus (Theory)

SL No.	Topics with Contents	Class (1 Period)	Final Marks
1	**Basic Concepts of Weaving** 1.1 Classify the fabric. 1.2 Describe the characteristics of different types of fabrics. 1.3 Define weaving, warp, and weft yarns. 1.4 Mention the flow chart of the conventional and modern weaving process. 1.5 Describe the properties of yarn used for weaving. 1.6 Discussion Chronological development of looms. 1.7 Define primitive Loom, hand loom, power loom and shuttleless loom.	5	7

2	**Winding Process** 2.1 Define winding. 2.2 List the objectives of winding. 2.3 Classify the winding. 2.4 Illustrate the different types of yarn packages. 2.5 Describe different types of traversing motion. 2.6 Describe the different types of yarn guides & Tensioning devices. 2.7 Discuss the faults and remedies of winding.	2	5
3	**Winding Machine** 3.1 Describe the working principle of cone winding machine. 3.2 Describe the working principle of pirn winding machine. 3.3 Discuss the working principle of cop winding machine. 3.4 Describe the working principle of auto-coner.	2	5
4	**Warping Process** 4.1 Define warping. 4.2 Mention objectives of warping. 4.3 Classify the warping processes. 4.4 Prepare warping plan for 10000 (ten thousand) meters of grey and plain-woven fabric 20 × 20, 60 × 60, width 60 inch. 4.5 Calculate the production and efficiency of warping processes. 4.6 Describe the consequences of end breakage during warping. 4.7 Discuss the methods of improving quality of warping. 4.8 Discuss the faults and remedies in warping process.	5	10
5	**Sectional Warping Machines** 5.1 List the objectives of sectional warping. 5.2 Describe the functions of different parts of sectional warping machine. 5.3 Describe the working principle of sectional warping machine. 5.4 Discuss the purpose of tapering of warp beam. 5.5 Prepare warping plan for 1000 (one thousand) meters of a plainwoven fabric having 5 different colors in warp direction. 5.6 Discuss the faults and remedies in sectional warping process.	3	6
6	**Beam & Ball Warping Machines** 6.1 List the objectives of beam warping machine. 6.2 Mention the functions of different parts of beam warping machine. 6.3 Describe the working principle of beam warping machine. 6.4 List the objectives of ball warping machine. 6.5 Mention the functions of different parts of ball warping machine. 6.6 Describe the working principle of ball warping machine.	3	8
7	**Sizing Process** 7.1 Define sizing. 7.2 List the objectives of sizing. 7.3 Mention the different types of size ingredients. 7.4 Mention the functions of size ingredients. 7.5 Point out the factors to be considered for selection of size ingredients. 7.6 Mention the various size recipe for different types and count of yarn.	4	8

8	**Size Preparation for Warp** 8.1 Describe the size mixing and preparation procedure. 8.2 Explain the size pick-up percentage. 8.3 Describe the factors needs to be considered for size pick up. 8.4 Describe the different size recipe for different yarn count. 8.5 Mention the different types of faults & remedies of sizing. 8.6 Describe the relation between pick up percentage & weaving efficiency.	4	6
9	**Sizing Machine** 9.1 Describe different types of sizing machine. 9.2 Describe different parts and functions of sizing machine. 9.3 Describe the controlling parameters of a sizing machine. 9.4 Describe the features of modern sizing machines. 9.5 Describe the drying methods of sized yarn. 9.6 Calculate the production and efficiency of sizing machine.	3	6
10	**Drafting & Denting** 10.1 Define drafting. 10.2 Classify drafting. 10.3 Define denting. 10.4 Classify denting. 10.5 Discuss the procedure of drafting. 10.6 Discuss the procedure of denting. 10.7 Discuss the faults and remedies of drafting. 10.8 Discuss the faults and remedies of denting. 10.9 Define reed count & heald count. 10.10 Calculate the drafting & denting related problems.	4	6
11	**Warp Knotting** 11.1 Define warp knotting process. 11.2 Classify knotting process. 11.3 Describe the tie up and auto knotting. 11.4 Describe the working principle and controlling points of auto knotting machine. 11.5 Describe the quick style change.	2	3
12	**Basic Concepts Of knitting** 12.1 Define knitting. 12.2 Distinguish between weaving and knitting. 12.3 Discuss the history of knitting. 12.4 Classify the knitting process. 12.5 Classify the knitting machine. 12.6 Distinguish between warp and weft knitting. 12.7 Discuss the characteristics of knitting fabric. 12.8 Discuss the characteristics of knitting yarn.	3	7
13	**Knitting Machine** 13.1 Define hand knitting and power knitting. 13.2 Distinguish between circular and flat knitting machine. 13.3 Discuss the single jersey fabric. 13.4 Discuss the double jersey fabric. 13.5 Distinguish between single jersey and double jersey fabric. 13.6 Define the single jersey machine. 13.7 Define the double jersey machine.	4	6
14	**Elements of Knitting Machine** 14.1 Describe needle, sinker, cam, needle gauge, cylinder, dial, and jack of knitting machine. 14.2 Classify sinker. 14.3 Describe the function of sinker. 14.4 Mention the types of needles. 14.5 Describe the function of different types of needle. 14.6 Illustrate the types of cams. 14.7 Mention the function of cam. 14.8 Describe the knit, miss and tuck loops.	4	7
	Total	48	90

Detailed Syllabus (Practical)

SL No.	Topics with Contents	Class (3 Period)	Continuous Marks
1	**Observe Different Types Fabrics from the Swatch** 1.1 Identify & point out the characteristic of woven fabric. 1.2 Identify & point out the characteristic of knitted fabric. 1.3 Identify & point out the characteristic of non-woven fabric. 1.4 Maintain the record of performed experiment.	1	3
2	**Observe The Different Packages used in Winding Process** 2.1 Identify and draw the cone package. 2.2 Identify and draw the pirn package. 2.3 Identify and draw the cop package. 2.4 Maintain the record of performed experiment.	1	2
3	**Observe Different Types of Yarn Guides and Tensioning Devices in Winding Process** 3.1 Identify the different type of yarn guides and tensioning devices. 3.2 Draw the different types of yarn guides and tensioning devices. 3.3 Maintain the record of performed experiment.	1	2
4	**Observe The Yarn Path of Different Winding Machine** 4.1 Observe the yarn path of cone winding machine. 4.2 Observe the yarn path of pirn winding machine. 4.3 Maintain the record of performed experiment.	1	2
5	**Observe Yarn Path Diagram in Warping Machine** 5.1 Observe the yarn path diagram of Sectional warping machine. 5.2 Observe the yarn path diagram of Beam warping machine. 5.3 Observe the yarn path diagram of Ball warping machine. 5.4 Maintain the record of performed experiment.	3	3
6	**Draw The Driving Diagram of Different Warping Machine** 6.1 Draw the driving diagram of sectional warping machine. 6.2 Draw the driving diagram of beam warping machine. 6.3 Draw the driving diagram of ball warping machine. 6.4 Maintain the record of performed experiment.	1	2
7	**Draw Diagram of Slasher Sizing Machine** 7.1 Identify the different parts of slasher sizing machine. 7.2 Observe the yarn path through different parts of Sizing machine. 7.3 Maintain the record of performed experiment.	2	2
8	**Observe the process of Drafting, Denting & Warp Knotting machine** 8.1 Demonstrate the drafting process. 8.2 Demonstrate the denting process. 8.3 Demonstrate operation of warp knotting machine. 8.4 Maintain the record of performed experiment.	2	3
9	**Identify the Warp and Weft Knitted Fabric from Swatch** 9.1 Identify the warp knitted fabric from swatch. 9.2 Identify the weft knitted fabric rom swatch. 9.3 Draw the looping diagram of warp knitted fabric. 9.4 Draw the looping diagram of weft knitted fabric. 9.5 Maintain the record of performed experiment.	2	3
10	**Observe Different Elements of Knitting Machine** 10.1 Observe and point out different elements of knitting machine. 10.2 Sketch of different elements of knitting machine. 10.3 Observe and point out the function of different elements of knitting machine. 10.4 Maintain the record of performed experiment.	2	3
	Total	**16**	**25**