GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE PROCESSING (28)

Textile Manufacturing - I
SUBJECT CODE: 2132806
B.E. SEMESTER III

Type of course: Engineering

Prerequisite: Zeal to learn the subject

Rationale: This course covers the basics of yarn formation processes and yarn preparation processes which are considered to be the most important processes for the fabric formation process.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		PA (V)		PA (I)	
					PA	ALA	ESE	OEP		
4	0	2	6	70	20	10	20	10	20	150

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	Blowroom, Card, Drawframe, Lap Former, Comber, Speed Frame, Ring Frame, Doubling & reeling. (Objects and Functional passages of Spinning Machines)	10	21 %
2.	Rotor, Dref Spinning and Airjet spinning systems. Comparisons of yarn properties produced by above systems. (Objects and Functional passages of Spinning Machines)	10	21 %
3.	Principles of Man-made yarn production methods; Principles of Twisting; Principles of Texturizing processes.	5	10 %
4.	Spinning Calculation	5	10 %
5.	Yarn Preparatory: Winding, Warp winding, Weft winding, Conventional & Modern. (Objects and Functional passages of Weaving Machines)	10	22 %
6.	Pirn Winding	4	8 %
7.	Yarn Preparatory Calculation	4	8 %

Reference Books:

1. Cotton spinning, Ahmedabad Textile Association.
2. Elements of practical cotton spinning, T. K. Pattabhiram & others.
3. New spinning systems Vol.-V –W. Klein.
4. Weaving Productivity Standards & Methods of Evaluation – BTRA
5. A Guide To Crimping / Texturising Technology – MANTRA
6. Proceedings of ISTE-AICTE approved Short Term Training Programme on “Developments in Production & Processing Techniques for Teoxtured Yarns & Fabrics”- Prof. P. A. Khatwani.
7. Yarn Preparation Vol. I by Sengupta

Course Outcome:

After learning the course the students should be able to

1. Know the basics of spinning process.
2. Know the flow of material through various Spinning machines.
3. Know the basic requirements for formation of Warp winding and Weft winding for the other subsequent processes.
4. Process the yarns of various count through yarn preparatory machines.
5. Know the basics of Man-made yarn formation processes.
6. Know the basics of Twisting and Texturizing processes.
7. Calculate production and efficiency of various Machines.

List of Practical:

1. To study the Ginning process.
2. To study the objects and passage of material through Blowroom.
3. To study the objects and passage of material through Carding.
4. To study the objects and passage of material through Drawframe.
5. To study the objects and passage of material through Comber.
6. To study the objects and passage of material through Flyer Frame/ Roving Frame.
7. To study the objects and passage of material through Ringframe.
8. To study the salient features of Ringframe.
9. To study the objects and passage of material through Rotor Machine.
10. To study the salient features of Rotor Machine.
11. To study the objects and passage of material through Dref Spinning system.
12. To study the salient features of Dref spinning..
13. To study the objects and passage of material through Airjet spinning system.
14. To study the salient features of Airjet spinning.
15. To study the objects and passage of material through Doubling Machine.
16. To study the objects and passage of material through Reeling Machine.
17. To study the objects and passage of material through Winding Machine.
18. To study the objects and passage of material through Pirn winding Machine.

Open Ended Problems/Design Oriented Problems: Apart from above experiments a group of students has to undertake one open ended problem/design problem. Few examples of the same are given below.

1. Develop a beater of Blow Room.
2. Develop a ring and traveler system of Ring Frame.
3. Develop a prototype of man-made spinning system.

Major Equipments:

Blowroom
Card
Speed frame
Draw frame
Ring frame
Rotor
Winding Machine
Pirn Winding

List of Open Source Software/learning website: http://nptel.iitm.ac.in, World Wide Web, Google Search Engine etc.

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.