GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE TECHNOLOGY (29) YARN MANUFACTURING I **SUBJECT CODE:** 2132902 B.E. SEMESTER III

Type of course: Engineering

Prerequisite: Zeal to learn the subject

Rationale: Yarn Manufacturing I covers the basics of Fibres, Lap and Sliver formation processes which are considered to be the most important preparatory processes for yarn formation.

Teaching and Examination Scheme:

Teaching Scheme		Credits		Total						
L	Т	Р	С	Theor	y Marks Pra		Practical Marks		Marks	
				ESE	PA (M)		PA (V)		PA	
				(E)	PA	ALA	ESE	OEP	(I)	
4	0	2	6	70	20	10	20	10	20	150

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	General idea of Ginning & Baling Processes Objective of Ginning, study of different types of Ginning Machineries, Characteristics of Bales and importance of contaminations, latest developments in Ginning and Baling Machines.	14	29 %
2.	Blow Room Objectives, Principles and Methods of Mixing and Blending; Different types of Conventional and Modern feeders, Openers & Cleaners; Blow Room sequence for different cotton & manmade fibers; Construction & working of machines for single process Blow room; Calculations pertaining to Blow room.	14	29 %
3.	Carding Objectives; Types of cards; Construction and Working of Revolving Flat Card; Card Clothing and its effect on sliver quality; Mounting; Grinding & Stripping with Integrated Grinding System; Card settings; Web Stripping and Coiler System; Auto leveller in Card; Semi and High Production Cards; Chute Feeding System; Tandem card; Latest developments in Card; Card waste and importance of suction hood for waste optimization at card; Calculations related to Card.	15	32 %
4.	Common defects and remedies in product delivered at each machine.	5	10 %

Reference Books:

- 1. A practical guide to opening and carding- W .klein.
- 2. Spun yarn technology, volume I, Blow room processes A.Ventasubramani.
- 3. Spun yarn technology, volume II, carding A.Ventasubramani
- 4. Peter R. Lord, Handbook of Yarn Production, Technology, Science and Economics, CRC Press publication, New York, 2002.
- 5. Carl A. Lawrence, Fundamentals of Spun Yarn Technology, CRC Press publication, New York.
- 6. R. Chattopadhyay Technology of Carding, NCUTE, IIT Delhi, 2003.

- 7. R. Chattopadhyay and R. S. Rengasamy, Spinning, Drawing, Combing & Roving, NCUTE Pilot, Programme, Indian Institute of Technology, New Delhi, 2003.
- 8. R. Chattopadhyay, Advances in Technology of Yarn Production, NCUTE, IIT Delhi, 2002.
- W. Klein, Vol. 1 3, The Technology of Short Staple Spinning, A Practical Guide to Opening & Carding and A Practical Guide to Combing, Drawing and Roving frame, The Textile Institute Manchester, U.K., 1998.

Course Outcome:

After learning the course the students should be able to

- 1. Select the type of ginning process for different varieties of fibres.
- 2. Select the number of cleaning points of Blow room for processing of different varieties of materials.
- 3. Know the remedial measures to be taken for different quality related problems at different machines.
- 4. Calculate the production and efficiency of all the machines.

List of Practical:

- 1. Lay out of spinning Lab
- 2. Study of various methods of transferring motion from one shaft to another shaft.
- 3. Introduction to Ginning machines.
- 4. Introduction, objects of Blow room and lay out of Blowroom line.
- 5. Study of Bypass arrangement.
- 6. Passage of material through Blow room.
- 7. Study of construction details of all parts.
- 8. Study of driving arrangement.
- 9. Study of Piano Feed Mechanism.
- 10. Study of Full Lap Stop Motion and Doffing Arrangement.
- 11. Calculations:-
- 12. (a.) Surface speeds (b.) Blows/inch (c.) Production.
- 13. Exercise based on Blow room.
- 14. Study of passage of material through Carding Machine.
- 15. Study of different parts of Carding Machine.
- 16. To study settings of different parts of Carding Machine.
- 17. Study of drive to different parts of the Carding Machine.
- 18. Calculations regarding to surface speeds of different parts of Carding Machine.
- 19. Calculations:-
 - (a.) Draft calculation (b.) TPI calculation.
- 20. Production of sliver on Carding Machine.
- **21.** Exercise based on card.

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 Knife Roller Gin.
- 2. Develop a 2 Bladed Beater of Blow Room.
- 3. Develop a Licker-in of Card.

Major Equipments:

Blow Room Carding Machine 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.