



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: Master

Branch: Textile Engineering

Course / Subject Code : ME01025031

Course / Subject Name : Theory and Design of Spinning Machines

w. e. f. Academic Year:	2024-25
Semester:	1 st Semester
Category of the Course:	PEC

Prerequisite:	Basic knowledge of Theory and Design of spinning machines at BE level
Rationale:	Theory and Design of Spinning Machineries covers all the stages involved in the design modification of spinning machines from raw cotton to final stage of spinning.

Course Outcome:

After Completion of the Course, Student will able to:

No	Course Outcomes
01	Understand how high production with better yarn quality achieved with zone wise machine design modifications in spinning.
02	To understand the latest knowledge about design aspects of Spinning Machines.
03	Understand importance of automation at each stage of spinning line.
04	Demonstrate their ability to solve technical problems via technical approaches, self-study, team work and life-long learning approaches.

**Revised Bloom's Taxonomy (RBT)*

Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		C	Theory		Tutorial / Practical	
			ESE (E)		PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	30	20	150



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: Master

Branch: Textile Engineering

Course / Subject Code : ME01025031

Course / Subject Name : Theory and Design of Spinning Machines

Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	Cotton fibre selection through bale management- Importance of atomization, Fiber quality requirements for different spinning technologies, Blending of fibers, Evaluation of blending efficiency.	8	14%
2.	Blow Room: Concepts of opening and cleaning, Aerodynamics and its role in blow room. Limitations & technological changes took place in the design features to overcome the limitations. Card: Basic Operations, Principle of Operation, Technological consideration in the design of high production card, Limitations & technological changes took place in the design features to overcome the limitations.	9	19%
3.	Draw Frame: Basic objectives, Principle of operation, Different parts of draw frame, Major technological advancement on feed sections drafting section and delivery sections. Comber: Basic role of comber in spinning system, Limitations of comber preparatory, and higher production rate. Developments in comber design features and its preparatory processes.	9	19%
4.	Speed Frame: Basic functions of speed frame, Operating principle Developments in various sections of speed frame. Ring Frame: Basic objectives, Operating principle, limitation and developments in the various parts and section of the ring frame machine.	9	24%
5.	Comparative study of new spinning technology, Introduction to various spinning process like compact spinning, Open end spinning processes, Siro spinning, Self twist Spinning, Adhesive process, False twist process, Wrapping process.	10	24%
	Total	45	100

Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
10	20	20	20	20	10



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Engineering

Level: Master

Branch: Textile Engineering

Course / Subject Code : ME01025031

Course / Subject Name : Theory and Design of Spinning Machines

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. Advances in Technology of Yarn Production - R. Chattopadhyay, NCUTE Publication
2. The Economics, Science and Technology of Yarn Production, P. R. Lord, School of Textiles, NC State University, USA, 1981
3. Advances in Yarn Spinning Technology – C.A.Lawrence
4. Yarn Production: Theoretical aspects, P Grosberg & C Iype, The Textile Institute International, Manchester, 1999
5. Handbook of Yarn Production – Peter R. Lord
6. TRJ, JTI and other technical journal Papers

(b) Open source software and website:

1. <http://nptel.ac.in>
2. World Wide Web, Google Search Engine etc.

Suggested Course Practical List:

1. To study the advancements in Blow room and its importance.
2. To study the advancements in Card and its importance.
3. To study the advancements in Draw frame and its importance.
4. To study the advancements in Comber and its importance.
5. To study the advancements in Speed frame and its importance.
6. To study the advancements in Ring frame and its importance.
7. To study the advancements in Rotor and its importance.
8. To Study Core spinning.
9. To study Siro spinning.
10. To study compact spinning system.
11. To study Adhesive spinning system./

List of Laboratory/Learning Resources Required:

Blow Room, Card, Draw frame, Speed Frame, Ring Frame, Rotor.

* * * * *