



GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering

Subject Code: 3722518

Semester – II

Subject Name: Textured Yarn Technology

Type of course : Elective

Prerequisite : Basic knowledge of texturizing process at BE level

Rationale : Texturing is an important process for man-made filaments. As the use of man-made fibers is ever increasing all over the world, the knowledge of texturizing is imperative to understanding the use during later processes.

Teaching and Examination Scheme:

| Teaching Scheme | | | Credits C | Examination Marks | | | | Total Marks |
|-----------------|---|---|--------------|-------------------|---------|-----------------|----|----------------|
| L | T | P | | Theory Marks | | Practical Marks | | |
| | | | ESE (E) | PA (M) | ESE (V) | PA (I) | | |
| 3 | 0 | 2 | 4 | 70 | 30 | 30 | 20 | 150 |

Content:

| Sr No. | Topics | Teaching Hrs |
|--------|--|--------------|
| 1 | Principles of texturing and modern classification of Textured yarn, Methods of manufacturing Textured Yarns, Comparison of different texturizing methods optimization of texturing parameters, Draw-texturing- the need and fundamental approaches; Mechanics of texturing. Physical and mechanical properties of textured filament yarn structure and geometry of textured yarns – Role of spin finish on textured yarns. | 8 |
| 2 | False-twist texturing – Basic principle, Mechanism, Process parameters, texturability of various fibres – process parameters – Draw texturing – simultaneous and sequential draw texturing. | 10 |
| 3 | Air jet texturing - Principle, mechanisms, Air jet texturizing machine, development of jets and machinery, process optimization and characterization, air jet textured yarns application. Air interlacement - Principle and mechanism, jet development and Characterization, air jet texturing of spun yarns. | 8 |
| 4 | Friction texturing- the need and development, mechanics of friction texturing, latest development in twisting devices, | 8 |
| 5 | Bulked continuous filament yarns – BCF draw texturing machine, Process variables, BCF yarns, Modification of yarn properties during draw texturing. | 8 |

Reference Books:

1. D. K. Wilson and T. Kollu, The Production of Textured Yarns by the False Twist Technique, Textile Progress, Vol. 21, No.3, Textile Institute, Manchester, U.K., 1991.



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2. J.W.S. Hearle, L. Hollick and D.K. Wilson, Yarn Texturing Technology, Woodhead Publishing, UK, 1998.
3. C. Atkinson, False twist Textured Yarn. Woodhead Publishing
4. Textile Research Journal, Journal of Textile Institute and other technical journal Papers

Course Outcome:

| Sr. No. | CO Statement | Marks % weightage |
|---------|---|-------------------|
| CO-1 | Students will gain an understanding of different types of textured yarn, its properties, and applications. They will also be able to identify and understand structure of textured yarn and mechanics of texturing. | 25% |
| CO-2 | Students will be able to comprehend principle of different texturing methods such as false twist texturing, Air jet texturizing, Friction texturizing. They will also be able to identify process parameters of different texturizing method. | 45% |
| CO-3 | Students will be able to carry out textured yarn testing. They will also be able to identify application of textured yarn and fabrics made from them. | 10% |
| CO-4 | Students will be able to identify and understand the significance of important process parameters in texturizing process. | 10% |
| CO-5 | Students will be able to describe and figure out the parts and passage of BCF draw texturing machine. They will also be able to understand properties of BCF yarn. | 10% |

List of Experiments:

1. Analyze the raw material requirements for texturing process.
2. Evaluate the applicability of draw texturing and edge crimping.
3. Evaluate Tg and Tm values for different fibres?
4. Analyze the different process variables involved in drawing and their influences on properties of fibres.
5. Analyze the structural changes that take place in a fibre during drawing process in draw texturing process.
6. To understand importance heater length and temperature in draw texturing process.
7. To study physics of nozzle design in air jet texturing process.
8. Study different testing methods to measure the characteristics of texturing yarn.
9. To analyze design modifications in texturing machines

Major Equipment's:

False Twist Texturing Machine, Draw texturing machine, Air jet texturing machine, Friction texturing machine, Dynafil M tester

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