



GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering

Subject Code: 3172913

Semester: VII

Subject Name: Modern Fibre Technology

Type of course : Professional Elective Course

Prerequisite : Students should have the basic knowledge of fibres.

Rationale : Man-made fibres is popularly being used as a raw material for manufacturing apparels, technical textiles and other textile materials, thus it is necessary to acquire knowledge about the manufacturing of the man-made fibres, their properties and the post processes thereof.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P		Theory Marks		Practical Marks		
			ESE (E)	PA (M)	ESE (V)	PA (I)		
3	0	0	3	70	30	0	0	100

L- Lectures; T- Tutorial/Teacher Guided Student Activity; P- Practical; C- Credit; ESE- End Semester Examination; PA- Progressive Assessment

Content:

Sr. No.	Content	Total Hrs
1	Introduction - Definition, classification, fibre forming processes, products and properties and application areas.	3
2	Structural principles of polymeric fibres – Molecular size and interaction, orientation, crystallinity, morphology, thermal transitions.	3
3	Melt spinning process – Introduction, Process, variables and conditions for continuous spinning, special features of high speed spinning, role of some critical parameters and structure formation during spinning.	6
4	Solution spinning process – Process variables, dry spinning and wet spinning, structure formation and comparison of features of the spinning processes.	6
5	Spin finish for manufactured yarns and drawing of the fibres.	3
6	Heat setting of thermoplastic fibres .	2
7	Manufactured fibres for high performance, industrial and non-conventional applications.	1
8	Introduction to texturing – Definition, advantages, applications and broad classification.	2
9	False twist process, factors influencing properties of textured yarns, feed material characteristics, process variables, Draw texturing, machines and quality aspects.	8
10	Air jet texturing, Other methods of texturing - Gear crimping, Stuffer box texturing, Knife edge crimping and Knit De-Knit process.	6
11	Recent developments in the field of fibres and texturing.	2



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Suggested Specification table with Marks (Theory): (For BE only)

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
12	16	16	16	5	5

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table.

Reference Books:

1. Manufactured Fibre Technology, Edited by V. B. Gupta and V. K. Kothari, Chapman and Hall, London, 1997.
2. Production of Synthetic Fibres, A.A.Vaidya, Prentice Hall of India Pvt. Ltd., New Delhi, 1988.
3. Texturising, Dr. H.V. Sreenivasamurthy & B. Purushothama, Woodhead Publishing India Pvt. Ltd., 2017.
4. False Twist Textured Yarns, C. Atkinson, Woodhead Publishing, 2012.
5. Synthetic fibres: Nylon, Polyester, Acrylic, Polyolefin, J. Eric McIntyre, 2005.
6. New Millennium Fibers, T. Hongu, Glyn O. Phillips, M. Takigami, 2005.

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	Acquire knowledge about the manufacturing of fibres with the help of melt spinning process.	20
CO-2	Understand the concept of solution spinning.	20
CO-3	Acquire knowledge about the working of the machinery and the subsequent processes.	20
CO-4	Have a detailed knowledge about the texturising process.	30
CO-5	Know the latest developments in the field of fibres and texturising process.	10

List of Open Source Software/learning website : Any Search Engine, NPTEL, Swayam portal etc.