

# GUJARAT TECHNOLOGICAL UNIVERSITY

**TEXTILE PROCESSING (28)**  
**PROCESSING & APPLICATIONS OF NON CONVENTIONAL FIBRES**  
**SUBJECT CODE: 2152807**  
**B.E. 5<sup>th</sup> SEMESTER**

**Type of course:** Textile Processing Engineering

**Prerequisite:** Zeal to learn the subject

**Rationale:** This subject includes the detailed study of various non-conventional textile fibres as well as polymers used as fibres in industries other than textiles. The major application of such non-conventional fibres induces technical textiles.

**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)		
				PA	ALA	ESE	OEP			
3	0	0	3	70	20	10	30	0	20	150

**Content:**

Sr. No.	Course content	Total Hrs	% Weightage
1	Production, properties and applications of non conventional vegetable fibres like Abaca/Manilla, Henequen, Sunn, Sisal/Agave, Kenaf, etc.	06	14
2	Manufacturing, properties and applications of Natural polymers Regenerated Cellulosic fibres: Tencel/Lyocell, etc. Regenerated Protein fibres: Casein, Zein, Collagen, Soya bean, Groundnut fibres, etc. Other natural polymer based fibres: Alginate, Chitin & Chitosan, Spider silk fibres, etc.	14	33
3	Manufacturing, properties and applications of various aliphatic, partially aromatic and fully aromatic Polyamide fibres viz Qiana, Nylon 6 T, Nylon 67, Nylon 10, Nylon 11, Nomex, Kevlar, etc.	06	14
4	Manufacturing, properties and applications of Carbon fibres	03	7.5
5	Manufacturing, properties and applications of Glass, Asbestos, Aluminium silicate, lead fibres, etc.	08	19
6	Manufacturing, properties and applications of Vinyl based fibres i.e. Polyvinyl alcohol, Polystyrene, etc.	03	7.5
7	Recent developments in textile fibres	02	5

### Suggested specification table with marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	18	20	04	04	04

**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. Handbook of Textile Fibres: Man-Made Fibres - Gordon Cook
2. Man made fibres - Moncrieff
3. Handbook of fibre chemistry - Menachem Lewin
4. Regenerated cellulose fibres - Calvin Woodings
5. New fibres - Tatsuya Hongu
6. Handbook of Textile Fibre structure Vol. II - Eichorn, Hearle, Jaffe

#### Course outcome:

After learning the content of the subject the students will be able to:

1. Identify the non-textile applications of fibres.
2. Study some non-conventional spinning and manufacturing technologies of fibre production.
3. Compare the properties of different conventional and non-conventional fibres.
4. To blend different fibres to obtain best properties as per the requirement.
5. Replace the conventional fibres with newer ones.
6. Identify the overall areas where textile fibres can be implied.

#### List of Open Source Software/learning website:

1. <http://www.wto.org/>
2. <http://www.wtin.com/>
3. <http://textileinformation.blogspot.in/>
4. <http://www.fibre2fashion.com/>
5. <http://textilelearner.blogspot.in/>
6. <http://www.fashion-era.com/>

**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.