





**SARVAJANIK UNIVERSITY**  
**Sarvajnik College of Engineering and**  
**Technology**  
**Bachelor of Engineering**



	Specification of fibers: Count, Denier, Tex etc. Classification of fibres used in Textile Industry, Difference between natural and manmade fibres, Advantages and disadvantages of natural and manmade fibres. Essential requirements of fiber forming polymers. Basic structure of a fibre, Molecular architecture, configuration, conformation.	
<b>2</b>	<b>Natural Fibres - Structure, Growth, Harvesting, Physical, Chemical properties and Applications:</b> Seed Fibre: Cotton Bast Fibres: Linen, Jute, Hemp, Ramie Protein Fibres: Wool, Silk and minor hair fibres Mineral Fibres: Asbestos Other natural Fibres e.g. Sisal, Banana, Leaf Fibres, Pina, Bamboo, Coir, etc.	<b>16</b>
<b>3</b>	<b>Manmade Fibres - Principles of Manufacturing Manmade Fibres:</b> Melt spinning, dry spinning and wet spinning	<b>4</b>
<b>4</b>	<b>Regenerated Fibres - Principle &amp; Technology of Manufacturing, Physical, Chemical properties and Applications:</b> Cuprammonium rayon, Viscose, Lyocell, regenerated protein fibres etc.	<b>4</b>
<b>5</b>	<b>Synthetic Fibres - Principle &amp; Technology of Manufacturing, Physical, Chemical properties and Applications:</b> Nylon, Polyester, Polypropylene, Acrylic Brief idea about other synthetic fibres like Saran, Vinyon, Polyurathane.	<b>8</b>
<b>6</b>	<b>Brief Idea about various High performance fibers:</b> Significance, characteristics, classification & applications.	<b>2</b>

**Suggested Specification table with Marks (Theory):**

<b>Distribution of Theory Marks</b>					
R Level	U Level	A Level	N Level	E Level	C Level
<b>20</b>	<b>20</b>	<b>05</b>	<b>05</b>	<b>05</b>	<b>05</b>

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

**BSC: basic science course /ESC: Engineering Science Course /HSM: Humanities and management /PCC: Professional Core course /PEC: professional Elective course /OEC: Open Elective course/ MD: mandatory non-credit course**



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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:**

Sr no	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1.	Introduction to Textile Fibres	H. V. Sreenivasa Murthy	WPI Publishing; ISBN : 978-9385059094	2015	1st edition
2.	Hand Book of Textile Fibres (Vol I & II)	J. Gordon Cook	Woodhead Publishing; eBook ISBN: 978-1845693152; Paperback ISBN: 978-1855734845	1984	1st edition
3.	A Text Book of Fibre Science and Technology	S. P. Mishra	Newagepublishers; ISBN:978-8122412505	2000	1st edition
4.	Man made Fibres	R.W. Moncrieff.	Newnes-Butterworths; ISBN:978-0408001298	1975	6th edition
5.	Textile Fibres	Kaplan, N. S.	Abhishek Publications; ISBN: 978-8182478831	2019	
6.	Production of synthetic fibres	A. A. Vaidya	Prentice-Hall of India, New Delhi.	1988	

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**Course Outcomes:**

Sr. No.	CO statement	Marks % weightage
CO-1	Describe the essential and desirable properties of fibres, basic structure and classification of textile fibres.	20
CO-2	Describe the origin, physical, chemical and biological properties of natural fibres.	30
CO-3	Describe the methods of fibre formation and physical, chemical properties of regenerated fibres.	15
CO-4	Describe the methods of fibre formation physical, chemical and biological properties of manmade fibres.	25
CO-5	Describe the applications of natural, synthetic and high performance fibres	10

**Mapping with POs:**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS O1	PS O2	PS O3
CO-1	2	1	2	3	2	1	2	0	0	1	1	1	3	2	2
CO-2	2	1	2	3	2	1	3	0	0	2	1	1	3	2	3
CO-3	2	1	2	3	2	1	3	0	0	1	1	1	3	2	2
CO-4	2	1	2	3	2	1	3	0	0	2	1	1	3	2	3
CO-5	3	1	2	3	2	1	3	0	0	1	2	2	3	2	3
Ratio nale*	2	1	2	3	2	1	3	0	0	1	1	1	3	2	3

Page 4 of 5

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**Rationale\*:** Explaining why it is matching this particular program outcome

The knowledge of basic structure, physical & chemical properties and application of various natural, synthetic and high performance textile fibres leads to the achievement of the various PO.

**List of Open learning website:** <https://nptel.ac.in>, World Wide Web, Google Search Engine etc

**List of Open Source Software: Ios apps** -Rieter Calculator, Yarn Count

**FOR LAB SESSIONS:**

**List of Experiments:**

1. Study of physical properties of natural fibres.
2. Study of physical properties of synthetic fibres.
3. To identify fibres by burning test.
4. Identification of fibres using chemical analysis.
5. To study the longitudinal view & cross sectional view of the natural fibres to learn to identify them.
6. To study the longitudinal view & cross sectional view of the synthetic fibres and to learn to identify them.
7. To distinguish animal fibres from vegetable fibres (i) with an alkali. (ii) with an acid.
8. To distinguish (i) Silk from wool fibres. (ii) Nylon from other fibres. (iii) Polyesters from other fibres.
9. To distinguish linen from cotton.
10. To distinguish Orlon Acrylic Fibres from other fibres.
11. To determine density of fibres.
12. To do qualitative and quantitative estimation of fibres in a blends.
13. Testing of unknown fibres present in the fabric.
14. To prepare swatch file of various fabric samples made by using different fibres.

**Major Equipment Needed:** Fibre Wall Chart, Projection Microscope / Scanning Electron Microscope, Density analyser such as density gradient column, electronic balance, suitable heating facility, and necessary glass wares, Differential scanning calorimeter.

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**mandatory non-credit course**