GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT

COURSE CURRICULUM

Course Title: Fibre Science and Technology
Course Code: 3322801

Diploma Programmes in which this course is offered	Semester in which offered
Diploma in Textile Processing Technology	Second Semester

1. RATIONALE

This course is one of the most important courses for textile engineers since it provides the knowledge regarding basic fibre chemistry with their natural / synthetic sources and their manufacturing methods. It also provides the clear concept of physical and chemical properties of various natural, regenerated, synthetic and newly invented fibres to enable them to process according to their end uses.

2. COMPETENCY

The course content should be taught and implemented with the aim to develop different types of skills so that students are able to develop the following competency:

i. **Explain manufacturing process of man-made fibres.**

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	
4	0	0	4	70	30	0	0	**100**

Legends: L-Lecture; **T** – Tutorial/Teacher Guided Student Activity; **P** - Practical; **C** – Credit;; **ESE** - End Semester Examination; **PA** - Progressive Assessment.

Note: It is the responsibility of the institute heads that marks for **PA of theory** & **ESE and PA of practical** for each student are entered online into the GTU Portal at the end of each semester within the dates specified by GTU.

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I Introduction to Textile Fibres	1a. Identify Fibres. 1b. Differentiate Textile fibers. 1c. Describe properties of Fibres.	1.1Textile fibers: Kind & classification 1.2 Specification of fibers: Count, Denier, Tex etc. 1.3Properties of Textile fibers
Unit– II Natural Fibres	2a. Explain composition of natural Fibres. 2b. Describe characteristics of various natural fibres.	2.1Chemistry of Natural fibers (Cotton, Wool, Silk etc.) 2.2Morphology, Chemical Structure, Physical Properties, Chemical Properties, Sectional views and Applications of Natural fibres
Unit– III Semi Synthetic Fibres	3a. Identify composition of Semi Synthetic fibres 3b. Describe characteristics and manufacturing process of different Semi Synthetic fibres	3.1Chemistry of Semi Synthetic fibres (Viscose Rayon, Cuprammonium Rayon, Acetate rayon etc.) 3.2Manufacturing process, Chemical Structure, Physical Properties, Chemical Properties, Sectional views and Applications of Semi Synthetic fibres
Unit– IV Synthetic Fibres	4a. Describe the basic raw materials required for mfg. of Synthetic fibres 4b. Explain the different manufacturing methods and properties of Synthetic fibres with their sectional views 4c.Describe various applications of different Synthetic fibres	4.1Chemistry of Synthetic Fibres (Nylon, Polyester, Acrylic etc.) 4.2Manufacturing process, Chemical Structure, Physical Properties, Chemical Properties, 4.3 Sectional views and Applications of Synthetic fibres.
Unit – V Recent Developments in Fibre Science & Technology	5a. Explain chemistry and properties of recently developed fibres. 5b. Describe manufacturing process & applications of recently developed fibres. 5c. Describe the properties of modified polyester.	5.1 Manufacturing process, Chemical Structure, Physical, and Chemical Properties and applications of fibers like Polypropylene, Lycra, Lyocell, Tencel, Polynosic Rayon etc. 5.2 Modification process, Chemical Structure, Physical & Chemical Properties and applications of fibres like Cationic Dyeable Polyester (CDPET) obtained from normal polyester.

5. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (THEORY)

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total
I	Introduction to Textile Fibres	04	2	2	4	08
II	Natural Fibres	16	6	8	6	20
III	Semi Synthetic fibres	12	4	6	4	14
IV	Synthetic Fibres	16	6	8	6	20
V	Recent Developments in Fibre Science & Technology	08	2	4	2	08
	Total	**56**	**20**	**28**	**22**	**70**

Legends: R = Remember; U = Understand; A = Application and above levels (Bloom's revised taxonomy)

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

6. SUGGESTED LIST OF EXERCISES/PRACTICAL

--- Not Applicable ---

7. SUGGESTED LIST OF STUDENT ACTIVITIES

Following is the list of proposed students activities like:

- Literature survey of Basic and innovative textile fibres.
- Collection and Study of microscopic views of different textile fibres.
- Group discussion on recent textile fibres.
- Collection of data of various textile fibers & Power point Presentation.
- Seminar/Presentation on recent developments in the field of Textile fibres.

8. SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No	Author	Title of Books	Publication
1	V. A. Shenai	Textile Fibres (Vol. – I)	Sevak Publication, Mumbai,1984
2	S. P. Mishra	A Text Book of Fiber Science & Technology	New Age International (P) Ltd.Publishers, New Delhi ,2000
3	R. GopalKrishnan V. Kashinathan & K. Bagyan	Fibre Science	SSM – ITT Staffs' & Students'; Co. Op. Stores Ltd, Tamilnadu, 1991.
4	R. W. Moncrieff	Man Made Fibres	Heywod, Cambridge, London (UK),1970
5	E. R. Trotman	Dyeing & Chemical Technology of Textile Fibres	Charles Griffin & Company Limited, London,1975.
6	J. Gordon Cook	Hand Book of Textile Fibres (Vol. – I & II)	Wood Head Publishing Ltd., Cambridge, England,1993.

B. List of Major Equipment/ Instrument

Not Applicable

C. List of Software/Learning Websites

i. wikipedia.org/wiki/Fiber
ii. http://www.onlineclothingstudy.com/2012/01/microscopic-view-of-natural-and-man.html

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. J H Thakker**, I/C Head, Textile Processing Dept., RCTI, Ahmedabad.
- **Prof. R G Patel**, Lecturer, Textile Processing Dept., RCTI, Ahmedabad.
- **Prof. R D Joshi**, Lecturer, Textile Processing Dept., RCTI, Ahmedabad.
- **Prof. C R Madhu**, Ad. Lecturer, Textile Processing Dept. RCTI, Ahmedabad.

Coordinator & Faculty Members for NITTTR, Bhopal

- **Dr. C. K. Chugh**, Professor & Head, Electronics Media