GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: Elements of Textile Technology
(Code: 3312801)

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

1. RATIONALE

Textile processing is Dyeing, Bleaching, Printing, Finishing, etc. For understanding textile processing, the students should also understand the prerequisite of Textile processing, i.e. the process of making textiles. Textile emanates from fibers. Natural or manmade fibers are converted into yarn and yarn is converted to cloth or textiles. Textiles are formed by weaving, knitting, crocheting, knotting or pressing fibers together This subject provides basic knowledge of textile manufacturing. It includes various textile fibres, their classification. It also provides knowledge of spinning and weaving processes and it also provides knowledge of Textile Woven Design, Knitting and Texturising.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to achieve different types of skills leading to achieve following competency:

i. **Apply textile manufacturing technology concepts, principles and processes- yarn spinning, weaving and knitting in Textile Processing**

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**	
3	0	2	5	70	30	20	30	150

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

4. DETAILED COURSE CONTENTS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I Fibers	1.1 Classify the textile fibers	• Classification of fibers
Unit– II Textile Basic Concepts	2.1 Describe different textile terms.	• Basic terminology of textile terms. • Form of feed and delivered material in process of spinning and weaving .
Unit– III Ginning process	3.1 Explain ginning process	• Outline of Ginning process • Object of ginning, working of knife Roller Gin
Unit– IV Spinning Process	4.1 Explain spinning process.	• Outline of spinning process. • Objectives of blow room process and brief study of conventional blow room. [Passage of material through Hopper bale opener, Step cleaner and scutcher m/c.] • Modern blow room • Objects and passage of material through carding m/c. • Objects and passage of material through drawing frame m/c. • Objects and passage of material through speed frame m/c.[Can fed Inter] • Objects and passage of material through ring frame m/c • Objects and passage of material through comber m/c
Unit– V Weaving Process	5.1 Describe weaving and its preparatory process.	• Outline of weaving process • Objects and passage of material through modern winding m/c • Objects and passage of material through modern warping m/c • Objects and passage of material through multi cylinder sizing m/c • Objects and passage of material through plain loom
Unit– VI Yarn counts	6.1 Calculate yarn count	• Yarn numbering (Count) system • Direct and indirect system • English and metric system • Tex and denier system.
Unit– VII Weaving Designs	7.1 Describe the basic designs in weaving.	• Study of basic weaves i.e. Plain, Twill. Sateen, satin with design ,draft and peg plan
Unit– VIII Knitting & Texturising	8.1 Explain principles of knitting and texturising process.	• Introduction of knitting and texturising process • Warp and weft knitting principle • Objectives of texturising process Methods of Texturising / crimping , passage of filament through false twist texturing m/c.

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
1.	Classification of fibers	03	4			04
2.	Basic terminology of textile terms	04	4			04
3.	Study of Ginning process	03		4		04
4.	Outline of spinning process.	08		6	10	16
5.	Outline of weaving process	08		6	10	16
6.	Yarn numbering (Count) system	05		2	6	08
7.	Basic weaves	06		3	7	10
8.	Knitting and Texturising	05		1	7	08
Total		42	8	22	40	**070**

Legends: R = Remembrance; U= Understanding; A= Application and above levels (Revised Bloom's Taxonomy)

6. SUGGESTED LIST OF EXERCISES/PRACTICALS

The exercises should be properly designed and implemented with an attempt to develop different types of skills leading to the achievement of the competency

Sr. No.	Unit No.	Experiment/Tutorial
1	3	Prepare sketch and identify important parts of Knife roller gin
2	4	Prepare a sketch and identify important parts of Hopper bale opener
3	4	Prepare a sketch and identify important parts of Step cleaner m/c.
4	4	Prepare a sketch and identify important parts of Scutcher m/c.
5	4	Prepare a sketch and identify important parts of Carding m/c.
6	4	Prepare a sketch and identify important parts of Drawing frame m/c.
7	4	Prepare a sketch and identify important parts of Combing m/c.
8	4	Prepare a sketch and identify important parts of Inter m/c.
9	4	Prepare a sketch and identify important parts of Ring frame m/c.
10	5	Prepare a sketch and identify important parts of Autoconer Warp winding m/c.
11	5	Prepare a sketch and identify important parts of Super speed Warping m/c.
12	5	Prepare a sketch and identify important parts of Multi cylinder Sizing m/c.

13	5	Prepare a sketch showing passage of warp/ fabric through Plain power loom m/c. and identify important parts.
14	7	Prepare Design, draft and peg plan of Plain weave, Twill weave and satin /sateen weaves.
15	8	Prepare a sketch and identify important parts of False twist texturising m/c.

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

1. Collection of various textile fibres
2. Visit to Spinning unit, and preparing report with sketches.
3. Visit to weaving unit, and preparing report with sketches.
4. Visit to knitting unit, and preparing report with sketches.

8. SUGGESTED LEARNING RESOURCES

A. List of Books

Sr. No.	Author	Title of Books	Publication
1	ATA	Textile fibre	ATA
2	Sengupta	Yarn calculation	
3	Edited by Christopher Pastore, Paul Kiekens	Surface Characteristics of Fibers and Textiles	http://www.textileworld.com/store/Books/fashion-company.html
4	Cherie Bixler	How To Start A Fashion Company	http://www.textileworld.com/store/Books/fashion-company.html

B. LIST OF MAJOR EQUIPMENT/ INSTRUMENT

1. Length and weight measuring equipment.
2. Textile laboratory – Power looms at least for practice.

C. LIST OF SOFTWARE/LEARNING WEBSITES –

Searching engines could be used to locate textile related sites

A. http://www.textileassociationindia.org/
B. http://www.nitma.org/
C. www.sitra.org.in/
D. www.itamma.org/
E. http://www.ittaindia.org/
F. http://www.cottonsjourney.com/Storyofcotton/page5.asp
G. http://textiletechinfo.com/spinning/BLOWROOM.htm
H. http://en.wikipedia.org/wiki/Weaving
I. http://textilelearner.blogspot.in/

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE:

Faculty Members from Polytechnics

- **Shri M H Vyas,** Lecturer in Textile Manufacturing, R. C. Technical Institute, Ahmedabad
- **Shri R T Patel**, Lecturer in Textile Manufacturing, R. C. Technical Institute, Ahmedabad
- **Shri B B Bhatt,** Lecturer in Textile Manufacturing, R. C. Technical Institute, Ahmedabad

Coordinator and Faculty Members from NITTTR Bhopal

- **Dr. C. K. Chugh**, NITTTR, Bhopal, Professor and Head Dept. of Electronic Media, NITTTR, Bhopal