

GUJARAT TECHNOLOGICAL UNIVERSITY, AHMEDABAD, GUJARAT
COURSE CURRICULUM

Course Title: Textile Science
(Code: 3315104)

Diploma Programmes in which this course is offered	Semester in which offered
Computer Aided Costume Design and Dress Making	First Semester

1. RATIONALE

Rapid changes and progress in textile industry has led to the advancement in the fabrics selected for manufacturing garments. Manufacturing of fiber and textiles for apparel, household and industrial use has great business opportunity. This course on Textile Science provides in-depth knowledge on different fibers available in the market, its mechanical production or engineering of fibers, the chemistry and physics involved in producing and testing fibers. This course will provide sound foundation for students undertaking course in costume designing and dress making.

2. LIST OF COMPETENCIES

The course content should be taught and implemented with the aim to develop different types of skills leading to the achievement of the following competencies.

- i. **Select suitable textile fibers for a given application on the basis of physical and chemical properties.**
- ii. **Explain the characteristics of different types of fabrics based on type of yarn, weaves and other fabric construction processes.**

3. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				Total Marks
				Theory Marks		Practical Marks		
L	T	P	C	ESE	PA	ESE	PA	150
2	0	2	4	70	30	20	30	

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

4. DETAILED COURSE CONTENTS

Unit	Major Learning	Topics and Sub-topics
Unit -I Introduction to Textile fibers.	1.1 Define different terms related to textile fibers. 1.2 Classify fibers based on criteria.	1.1 Terms and definition related to textile 1.2 Importance of textile 1.3 Fibers, filaments, yarns- spun yarns, filament yarns, sewing threads 1.4 Fabrics- woven, knitted, non woven 1.5 Classification and nature of fibers
Unit– II General fiber properties	2.1 Describe the physical and chemical properties of fibers.	2.1 Fiber length 2.2 Fiber strength 2.3 Flexibility 2.4 Spinability 2.5 Uniformity 2.6 Density 2.7 Luster 2.8 Moisture & Moisture regain 2.9 Elasticity, elastic recovery, elongation. 2.10 Water-repellant fibers. 2.11 Resiliency & compressibility. 2.12 Chemical, Environmental & other properties.
Unit– III Manufacturing processes and properties of Textile fibers	3.1 Explain the manufacturing processes of different fibers. 3.2 State the physical and chemical properties of different fibers.	Brief introduction about manufacturing processes and physical & chemical properties of following textile fibers. 3.1 Cotton. 3.2 Silk. 3.3 Wool. 3.4 Polyester. 3.5 Acrylic. 3.6 Nylon.
Unit– IV Yarns.	4.1 Describe the different terms related to yarn	4.1 Definition of yarn. 4.2 Types of yarn. 4.3 Yarn twist. 4.4 Yarn count (definition, unit of yarn count)
Unit-V Conversion of yarn into fabric.	5.1 Differentiate between warp and weft yarns. 5.2 Describe the characteristics of basic and decorative weaves. 5.3 Differentiate between different types of fabrics. 5.4 Explain different type of fabric construction process.	5.1 Woven fabric 5.1.1 Basic loom & its structure 5.1.2 Warp & weft yarns, grain line 5.1.3 Basic weaves.(Plain weave, Rib weave, Variation of plain weave, Basket variation of plain weave, Twill weave, Satin weave, Sateen weave) 5.1.4 Decorative weaves.(Dobby weaves, Jacquard weave, Leno,weaves, Surface figure weave, Pile, Double weave) 5.1.5 Draft and peg-plan of weave. 5.1.6 Fabric count. 5.2 Knitted fabric. 5.3 Non-Woven fabric. 5.4 Other fabric construction process. 5.4.1 Braided fabric 5.4.2 Nets 5.4.3 Laces 5.4.4 Film fabric 5.4.5 Tufted fabric
Unit- VI General and advanced field	6.1 List out the use of different types of clothing and textile.	6.1 Use for clothes 6.2 Protective clothing 6.2.1 For fire fighter clothes

Unit	Major Learning	Topics and Sub-topics
of textile products.	6.2 State the characteristics of different protective clothing. 6.3 State the characteristics of different type of textiles.	6.2.2 For welder 6.2.3 Bullet proof vests 6.2.4 Spare suits 6.3 Geo textile 6.4 Agro textile 6.5 Medical textile 6.6 Industrial use. 6.6.1 Out door 6.6.2 Used in manufacturing plant 6.6.3 Foot wear 6.6.4 Transportation 6.6.5 Miscellaneous

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.	Introduction to Textile fibers.	04	02	02	03	07
2.	General fiber properties.	02	05	02	00	07
3.	Manufacturing process and properties of textile fibers.	07	10	11	00	21
4.	Yarns.	05	02	02	03	07
5.	Conversion of yarn in to fabric.	07	05	06	10	21
6.	General and advanced field of textile products.	03	04	03	00	07
Total		28	28	26	16	70

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

S. No.	Unit No.	EXERCISES
1	II, III	Fiber identification test
2	IV	Preparation different types of yarns. 5.1 Simple yarn 5.2 Complex or Novelty yarn
3	V	Collection of different types of fabric sample and identify each.
4	V	Preparation of all basic weaves by hand (with reference to theory).
5	V	Draft and Peg-plan of weave.
6	V, VI	Collect Different types of fabric with different print.
7	III, V, VI	Visit to following site and write a report on industrial visit. <ul style="list-style-type: none"> • Spinning mill • Handloom cluster • Weavers service centre

7. SUGGESTED LIST OF PROPOSED STUDENT ACTIVITIES

Following is the list of proposed student activities like: course/topic based seminars, internet based assignments, teacher guided self learning activities, course/library/internet/lab based mini-projects etc. These could be individual or group-based.

8. SUGGESTED LEARNING RESOURCES

A. List of Books

S.No.	Author	Title of Books	Publication
1	Sushila Dantyagi.	Fundamentals of textiles and their care.	Orient blackswan pvt.ltd.2012
2	Marjery Joseph.	Textile science	Holt rinechart and wiston 1992
3	Dorothy S. Lyle.	Modern textile	Mcmillan publishing.co.1982
4	Durga Deuokar	Household textile and their care	
5	Elizabeth.	From fiber to fabric	

9. COURSE CURRICULUM DEVELOPMENT COMMITTEE

Faculty Members from Polytechnics

- **Prof. Ms. Ila. J. Dave** HOD CACDDM Dept. Sir B.P.T.I. Bhavnagar
- **Ms. Nirza A. Atrey** I/C HOD CACDDM, GGP, Ahmedabad
- **Ms. Kanchana P. Shah** I/C HOD CACDDM ,C.U. Shah Polytechnic, Surendranagar
- **Ms. Farjana V. Kugashiya**, Lecturer ,CACDDM, GGP, Ahmedabad
- **Ms. Punita J. Virani** , Lecturer, CACDDM, Sir B.P.T.I. Bhavnagar

Co-ordinator and Faculty Member from NITTTR Bhopal

- **Prof. Mrs. Chanchal Mehra**, Associate Professor, Dept. of Vocational Education and Entrepreneurship Development, NITTTR, Bhopal