


**DIPLOMA IN APPAREL DESIGN AND FABRICATION TECHNOLOGY  
THIRD SEMESTER**

	<b>Course Title: FABRIC STRUCTURE</b>		
	<b>Credits (L:T:P) : 4:0:0</b>	<b>Total Contact Hours: 52</b>	<b>Course Code: 15FT34T</b>
	<b>Type of Course: Lectures, Self Study &amp; Quiz</b>	<b>Credit :04 SEE- 100 Marks CIE- 25 Marks</b>	<b>Core/ Elective: Core</b>

**Prerequisites: Knowledge of Textile fibres.**

**COURSE OBJECTIVES**

1. To know the various types of yarns
2. To understand the knowledge of looms
3. Develop the knowledge about textile processing
4. To identify the types of weaves
5. To know the laundry and stain removal processes

<b>Course Outcomes</b>		<b>CL</b>	<b>Linked PO</b>	<b>Teaching hrs</b>
<b>CO1</b>	To evaluate types of yarns	U/A	1,2,3,5,6,7	<b>8hrs</b>
<b>CO2</b>	To understand yarn twist and yarn count	U/R/A	1,2,3,5,8	<b>8hrs</b>
<b>CO3</b>	To understand looms and their application	U/R/A	1,2,3,6,7	<b>8hrs</b>
<b>CO4</b>	Apply the knowledge of weaves in fabric construction	U/R/A	1,4,5,8,9,10	<b>10hrs</b>
<b>CO5</b>	Application of different finishing processes	U/R/A	1,2,3,4,7,8	<b>10hrs</b>
<b>CO6</b>	To use laundering and stain removal techniques	U/R/A	2,3,6,7,9,10	<b>8hrs</b>

### COURSE-PO ATTAINMENT MATRIX

Course	Programme Outcomes									
	1	2	3	4	5	6	7	8	9	10
<b>FABRIC STRUCTURE</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>

*Level 3- Highly Addressed, Level 2-Moderately Addressed, Level 1-Low Addressed.*

*Method is to relate the level of PO with the number of hours devoted to the COs which address the given PO.  
If  $\geq 40\%$  of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 3  
If 25 to 40% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 2  
If 5 to 25% of classroom sessions addressing a particular PO, it is considered that PO is addressed at Level 1  
If  $< 5\%$  of classroom sessions addressing a particular PO, it is considered that PO is considered not-addressed.*

### **COURSE CONTENT AND BLUE PRINT OF MARKS FOR SEE**

Unit No	Unit Name	Hour	Questions to be set for (5marks) PART - A			Questions to be set for (10marks) PART - B			Marks weightage (%)
			R	U	A	R	U	A	
1	Yarns	8hrs	1	-	1	-	1	1	15.38
2	Yarn Twist and count	8hrs	-	-	1	-	1	1	15.38
3	Looms	8hrs	-	1	-	-	-	1	15.38
4	Weaves	10hrs	-	1	1	1	-	1	19.23
5	Finishing processes	10hrs	1	1	-	-	1	1	19.23
6	Laundering	8hrs	1	-	-	-	-	1	15.38
			09(45marks)			10(100 marks)			100
	<b>TOTAL</b>	<b>52</b>							

**Legend: R; Remember, U: Understand A: Application**

### **CONTENT**

Unit	Major Topics	Hours Allotted
1	Yarns	8hrs
2	Yarn Twist and count	8hrs
3	Looms	8hrs
4	Weaves	10hrs
5	Finishing processes	10hrs
6	Laundering	8hrs
	Total	52hrs

## UNIT 1

8hrs

### YARNS

- 1.1 Definition, Properties of yarn,
- 1.2 Types of yarns- - ply yarns, cabled yarns, doubled yarns , novelty yarns, Processed yarns
- 1.3 Study of Novelty yarns-slub, flake, spiral, ratine, boucle, nub, chenille yarns
- 1.4 Spinning-Ring spinning and Mull spinning, Wet spinning and Dry spinning

## UNIT 2

8hrs

### YARN TWIST AND COUNT

- 2.1 Yarn twist- Z and S twist
- 2.2 Yarn count- direct system, indirect system
- 2.3 Study of yarn count for cotton, linen, wool, worsteds, silk and manmade fibers
- 2.4 Calculation of yarn count for different fibers.

## UNIT 3

8hrs

### LOOMS

- 3.1 Study of loom- power loom, hand loom,
- 3.2 Function and parts of loom
- 3.3 preparations for weaving, motions of weaving
- 3.4 shuttle loom, shuttle less loom

3.5 projectiles, Rapier, water jet, circular loom

10 hrs

#### **UNIT 4**

##### **WEAVES**

4.1 Definition of weaves, study of point paper design

4.2 Basic weaves-plain, twill, satin

4.3 Novelty weaves-Pile weave, Double cloth weave, Gauze weave, Swivel Weave, Lappet weave, Dobby weave, jacquard weave.

4.4 Selvedge-plain, tape, split, fused, leno, tucked

4.5 Balance of cloth, Thread count

#### **UNIT 5**

10 hrs

##### **FINISHING PROCESS**

5.1 Importance, converting grey goods.

5.2 Classification –Preparatory, Stabilizing and Textural

5.3 Preparatory- Degumming, Scouring, Keiring and boiling

5.4 Stabilizing-Singeing and gassing, Bleaching

5.5 Textural- Mercerization, Decating, Calendaring, tentering, Shrinking

#### **UNIT 6**

8hrs

##### **LAUNDERING**

6.1 Principles of laundering

6.2 Types of washing- Hand, Machine, Dry cleaning.

6.3 Laundry Equipments-Indoor and Outdoor

6.4 Classification of stains

6.5 Stain removal Agents

6.6 Method of removing stains

#### **SEMINAR**

**Every student to select one of the following topics for the seminar.**

1. Textile mills
2. Handlooms
3. Power looms
4. Market survey
5. Weavers service centre nearby.

#### **Indicative Reference:**

1. Fiber to fabric- Bernerd p corbman McGRAW .HILL INTERNATIONAL EDITIONS
2. Understanding fabrics from fiber to finished cloth-Debbie Ann Gioello-fair child publications
3. Introduction to textiles-kanwar varinder pal singh-kalyani publishers
4. A text book of fibre science and technology-s.p. mishra-new age international publishers
5. Fabric studies-kanwar varinder pal singh-kalyani publishers
6. Text book of fabric science fundamentals to finishing-seema sekhari-eastern economy edition
7. Textiles and their care
8. Household textiles and laundry work-durga deulkar-atma ram and sons
9. Textile fibres and their use-katharine paddock hess-oxford ibh publishing co
10. Fabric care-noemia dsouza-new age international limited ,publishers
11. Fundamentals of textiles and their care-Susheela Dantyagi-orient long man ltd NewDelhi
12. Textile processing—j.L.smith,abhishek Publications,Chandigarh
13. Technology of textile processing—shenai—Sevale publications ,Bombay
14. Journals- Apparel Views, colourant

### Related E- References

<https://www.youtube.com/watch?v=34P4sR6tP7M>  
<https://www.youtube.com/watch?v=DRiVy1C6WE0>  
<https://www.youtube.com/watch?v=wRRSjA2IA5k>  
[https://www.youtube.com/watch?v=G3G1\\_KgfbzA](https://www.youtube.com/watch?v=G3G1_KgfbzA)  
<https://www.youtube.com/watch?v=wtYTlkhyFK0>  
<https://www.youtube.com/watch?v=YYWlevX7Kw0>

### COURSE ASSESSMENT AND EVALUATION

	What		To Who m	Frequency	Max. Marks	Evidence Collected	Course Outcomes
<b>DIRECT ASSESSMENT</b>		<b>I A Tests</b>	<b>Stude nts</b>	<b>Three IA (Average marks of three IA tests are considered)</b>	<b>20</b>	<b>Blue Books</b>	<b><u>1 to 5</u></b>
		<b>Class room Assignments</b>		<b>Class room Assignments</b>	<b>05</b>	<b>Log of Activity</b>	<b><u>1&amp;2</u></b>
				<b>TOTAL</b>	<b>25</b>		

	<b>SEE -SEMESTER END EXAMINATION</b>	<b>End Exam</b>		<b>End Of the Course</b>	<b>100</b>	<b>Answer Scripts</b>	<b>ALL CO's</b>
<b>INDIRECT ASSESSME</b>	<b>Student Feedback on course</b>		<b>Stude nts</b>	<b>Middle Of The Course</b>	<b>Feed Back Forms</b>		
	<b>End of Course Survey</b>			<b>End Of The Course</b>	<b>Questionnaire</b>		<b>ALL CO's</b>

**Note:** I.A. test shall be conducted for 20 marks. Average marks of three tests shall be rounded off to the next higher digit.

**Note to I A Verifier :** The following documents to be verified by CIE verifier at the end of semester

- 1 Blue books
- 2 Student suggested activities report for 05 marks
- 3 student feedback on course regarding Effectiveness of Delivery of instructions and Assessment Methods.

#### • MODEL OF RUBRICS FOR ASSESSING STUDENT ACTIVITY

Dimension	Scale					Students Score				
	Unsatisfactory 1	Developing 2	Satisfactory 3	Good 4	Exemplary 5	1	2	3	4	5
1. Research & gather information	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collects some basic information; most refer to the topic	Collects a good information; all refer to the topic	Collects a excellent deal of information; all refer to the topic	Ex: 2				
2. Fulfil team's roles & duties	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collects some basic information; most refer to the topic	Collects a good information all refer to the topic	Collects a excellent deal of information; all refer to the topic	3				
3. Shares work equally	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collects some basic information; most refer to the topic	Collects a good information all refer to the topic	Collects a excellent deal of information; all refer to the topic	4				
4. Listen to other Team mates	Does not collect any information relating to the topic	Collects very limited information; some relate to the topic	Collects some basic information; most refer to the topic	Collects a good information; all refer to the topic	Collects a excellent deal of information; all refer to the topic	5				
<b>Grand Average/Total=(2+3+4+5)=14/4=3.5=4</b>						4				

**Note:** The above rubric is only an example. The concerned Course Coordinator may devise appropriate rubrics for the assigned activity.

## MODEL QUESTION PAPER (CIE)

Test/Date and Time	Semester/year	Course/Course Code	Max Marks		
Ex: I test/6 <sup>th</sup> week of sem 10-11 a m	III SEM	<b>FABRIC STRUCTURE</b>	20		
	Year: 2015-16	Course code:15FT34T			
Name of Course coordinator :			Units:1,2 Co: 1,2		
<b>Note: Answer all questions</b>					
Question no	Question		CL	CO	PO
1	Differentiate between double yarn and cable yarn		A	1	1,2
2	Explain ply yarns		U	1	1,2
3	Explain yarn Twist OR Distinguish between yarn count and thread count		A	2	1,2
4	Describe any 4 Fancy yarns with neat sketch OR Differentiate between wet and dry spinning		R	2	1,2

**DIPLOMA IN APPAREL DESIGN AND FABRICATION TECHNOLOGY  
THIRD SEMESTER  
SUBJECT TITLE: FABRIC STRUCTURE  
MODEL QUESTION PAPER  
PART-A**

**ANSWER ANY SIX QUESTIONS. EACH QUESTION CARRIES FIVE MARKS**

- 1 Explain fireproof and waterproof finishes
- 2 what is dyeing explain classification of dyes
- 3 Describe Roller printing
- 4 Describe knitting machines
- 5 What is Jacquard Knitting explain
- 6 Enlist types of felt and write their uses
- 7 Describe Machine Braiding
- 8 Discuss the importance of embroidery
- 9 write the types of leather and its uses

## **PART-B**

**ANSWER ANY SEVEN QUESTIONS. EACH QUESTION CARRIES TEN MARKS**

- 1 a) Explain natural dyes  
b) Describe soil resistant and wash and wear finishes
- 2 Describe any five synthetic dyes
- 3 Explain the methods of printing
- 4 a) what do you know about Ikat printing  
b) Explain circular knitting machine
- 5 with a neat sketch explain plain knit and purl knit stitches
- 6 a) what is pile knitting describe  
b) Explain Tricot stitch with neat sketch
- 7 a) Explain felting process  
b) Write the properties and uses of felt fabrics
- 8 Explain net and braided fabric
- 9 Describe types of lace and write their uses
- 10 Explain the processing of leather

## **QUESTION BANK**

**COURSE: FABRIC STRUCTURE  
05 MARKS EACH**

### **REMEMBER**

- a) Define spinning
  - b) Explain ring spinning
- Write the advantages of mule spinning  
differentiate between wet and dry spinning  
Explain yarn Twist  
write the importance of yarn twist in fabrics
- a) Enlist classification of yarns
  - b) Explain ply yarns
- Differentiate between double yarn and cable yarn  
Distinguish between multiple and simple yarns
- a) Define weaving
  - b) Enlist types of weaving

### **UNDERSTAND**

- explain warp preparation  
Explain weft preparation  
Write the importance of winding operation  
Write the advantages of power loom  
Explain the hand loom with its functions



Explain any 3 parts of a loom  
Describe shuttleless loom and their advantages  
Distinguish between shuttle and shuttleless loom  
Explain Rapier and projectile loom

### **APPLICATION**

Explain warp face satin and weft face satin  
Explain plain weave with example  
Describe the importance of jacquard weave  
Write the principles of laundering Explain dry cleaning  
Classify stains and explain  
Explain balance of cloth  
Write the importance of calendaring process  
Why bleaching is necessary for grey goods? Explain  
Write the importance of pressing

### **10 MARKS EACH**

### **REMEMBER**

Explain ring and mule spinning and their importance  
Distinguish between yarn count and thread count  
Explain basic yarns with neat diagram  
Describe any 4 Fancy yarns with neat sketch  
Difference between fancy and novelty yarns  
Explain warp and weft preparation of yarns

### **UNDERSTAND**

Distinguish between hand and power loom  
Distinguish between spinning and weaving  
Explain the preparatory finishing process  
Explain the stabilizing finishing process  
Prepare a point paper design for the following weaves:

- a) rib weave
- b) left hand twill

Explain the following weaves

- a) Double cloth weave
- b) Swivel weave

### **APPLICATION**

Explain the different types of selvages  
Explain the principles of laundering  
Explain the stain removal method for the following stains  
a) Beverages  
b) Cosmetics  
Write the importance of calendaring and tentering  
Write a note on solvent and detergents  
a) Define loom  
b) Explain its parts and function

Distinguish between twill weave and satin weave with neat sketch  
Explain the importance of ironing and pressing