


**Government of Karnataka**  
**Department of Technical Education**  
**Board of Technical Examinations, Bangalore**  
**DIPLOMA IN APPAREL DESIGN AND FABRICATION TECHNOLOGY**  
**FIFTH SEMESTER**

	<b>Course Title: APPAREL PRODUCTION</b>		
	<b>Credits (L:T:P) : 4:0:0</b>	<b>Total Contact Hours:52</b>	<b>Course Code: 15FT53T</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 Basic Machineries in Apparel Industry**

**COURSE OBJECTIVES**

1. Identify and distinguish the types of production process.
2. Evaluate the quality of raw materials and finished garments at different levels.
3. To associate the flow of production and to evaluate.
4. Access the quality standards and application of labels.

**COURSE-PO ATTAINMENT MATRIX**

Course Outcomes		CL	Linked PO	Teaching hrs
CO1	Apply quality assurance measures to maintain quality	U/A	1,2,3,4,7,10	4 hrs
CO2	Evaluate and access the quality through various stages of inspection	U/R/A	1,3,5,6,7,8,9,10	10 hrs
CO3	Manage various production systems and labor welfare.	U/R/A	2,3,4,5,8,9,10	12 hrs
CO4	Evaluate various quality standards and develop care labels.	U/R/A	2,3,4,5,6,7,8,9,10	6 hrs
CO5	Validate product specification through various tests.	U/R/A	3,5,7,8,9,10	10 hrs
CO6	Identify and distinguish the types of production process.	U/R/A	5,7,8,9,10	10 hrs

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

**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			Mark weightage (%)
			R	U	A	R	U	A	
1	INTRODUCTION	4	-	-	1	-	-	1	7.69
2	QUALITY INSPECTION	12	-	-	1	-	1	1	23.07
3	QUALITY STANDARDS	10	-	1	1	-	1	1	19.23
4	INDUSTRIAL ENGINEERING	8	-	-	1	-	-	1	15.38
5	PRODUCT SPECIFICATION	12	1	-	1	-	1	1	23.07
6	PRODUCTION SYSTEMS	6	1	1	-	1	-	1	11.53
	<b>TOTAL</b>	<b>52</b>	<b>09 (45marks)</b>			<b>10 (100 marks)</b>			<b>100</b>

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

**CONTENT**

Unit	Major Topics	Hours Allotted
1	INTRODUCTION	4 hrs
2	QUALITY INSPECTION	12 hrs
3	QUALITY STANDARDS	10 hrs
4	INDUSTRIAL ENGINEERING	8 hrs
5	PRODUCT SPECIFICATION	12 hrs
6	PRODUCTION SYSTEMS	6 hrs
	<b>TOTAL</b>	<b>52hrs</b>

**UNIT - I**  
**INTRODUCTION**

**4 hrs**

- 1.1 SWOT analysis of Indian Textile(Apparel) Industry
- 1.2 Importance and relationship between Quality, Cost and Delivery

**UNIT - II**  
**QUALITY INSPECTION**

**12hrs**

- 2.1 Fabric inspection – Four point system to identify the defects.
- 2.2 Trimming inspection— Labels, threads, Buttons, Zips, Hooks
- 2.3 In-process inspection – spreading defects, cutting defects, sewing defects, Placements of Trims and parts, Symmetry(balance) of Garments.
- 2.4 Care label –American, Japanese, ISO
- 2.5 garment defects in washing, pressing and folding defects in finishing and defects in packaging materials and packaging
- 2.6 Garment defects—major fault, minor fault ,defect zones
- 2.7 Final inspection – Random inspection, statistical inspection, arbitrary inspection  
100%inspection, 0%inspection

**UNIT – III**

**QUALITY STANDARDS**

**10 hrs**

- 3.1 Introduction (Concept of Quality and Quality Assurance), Importance and benefits of quality standards.
- 3.2 ISO 9000 , 14000 Standards.
- 3.3 Sources of quality standards – ISO, ASTM, AATTC, BIS, OKOTEX 100 standards
- 3.4 Standard Testing Parameters for Fabric and Garments - Fiber identification test, strength & performance test for fabric and Garment, Colour Fastness Stand, Pile pull test,
- 3.5 Special Testing Parameters for Fabric and Garments - Infant garment, sleep wear, sweaters and swim wear, , additional test for outer wear
- 3.6 Trims Testing Parameters (Pull test, Anti Corrosive, Non Formaldehyde)

**UNIT – IV**

**INDUSTRIAL ENGINEERING**

**8hrs**

- 4.1 Time study and Method Study
- 4.2 Flow charts-flow charts used in production room for export quality formal shirt
- 4.3 Labor- labor welfare measures, safety measures in apparel industry, daily wages, incentives, fringe benefits

## UNIT – V

### PRODUCT SPECIFICATION

12 hrs

- 5.1 Importance of product specification in apparel industry.
- 5.2 Developing Tech Pack (made of multiple pages containing Style, fabric, trims, Sewing, Quality, Print/Embroidery, Measurements specifications ) or Specification Sheet (contains style, fabric trims, sewing, quality, print/embroidery specifications in one single page, along with a separate measurements chart)
- 5.3 Product development—study of design, patterns, proto type Sampling

## UNIT VI

### PRODUCTION SYSTEMS

6 hrs

- 6.1 Different production systems—Make through system, Progressive bundle system, Section production system, Modular production system, One piece flow system, Over head production system, Piece rate production system
- 6.2 Advantages and Disadvantages of each system of production system

## SEMINAR

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

1. Total Quality Management
2. Tech Pack
3. Detecting the defects of raw material
4. Production room
5. Garment defects
6. Flow charts used in Production room

### Indicative Reference:

1. An Introduction to quality control for the apparel industry – Mehta P V
2. Textile testing - P Anagappan & Gopalakrishanan – JK Publication
3. Quality characterization of Apparel – Dr Subrata Das – Woodhead Publication
4. Quality management in Clothing industries – A J chutter
5. Apparel Production – R Srinivas
6. The technology of Clothing Manufacture – Herold Carr & Barbara Latham
7. Garment Technology for Fashion Designers – Gerry cooklin
8. Introduction to clothing Manufacture – Gerry Cooklin
9. Clothing Factory – H C Carr
10. Managing Quality in Apparel industry – Pradeep V Mehta NIFT Publication

### Related e-References

- <https://www.youtube.com/watch?v=9Rn8bDLVfks>  
<https://www.youtube.com/watch?v=UvO3WuA9dXw>  
<https://www.youtube.com/watch?v=x7LN-MZNvec>

[https://www.youtube.com/watch?v=zYJes\\_6M9nc](https://www.youtube.com/watch?v=zYJes_6M9nc)  
[https://en.wikipedia.org/wiki/Textile\\_industry](https://en.wikipedia.org/wiki/Textile_industry)  
[https://en.wikipedia.org/wiki/Worldwide\\_Responsible\\_Apparel\\_Production](https://en.wikipedia.org/wiki/Worldwide_Responsible_Apparel_Production)  
[https://en.wikipedia.org/wiki/Manufacturing\\_process\\_management](https://en.wikipedia.org/wiki/Manufacturing_process_management)  
<http://www.biz2credit.in/blog/2015/07/06/swot-analysis-of-textile-industry-in-india/>

## COURSE ASSESSMENT AND EVALUATION

	What		To Whom	Frequency	Max. Marks	Evidence Collected	Course Outcomes
<b>DIRECT ASSESSMENT</b>		<b>I A Tests</b>	<b>Students</b>	<b>Three IA (Average marks of three IA tests are considered)</b>	<b>20</b>	<b>Blue Books</b>	<b>1 to 6</b>
		<b>Class room Assignments</b>		<b>Class room Assignments</b>	<b>05</b>	<b>Log of Activity</b>	<b>1 to 6</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 ASSESSMENT</b>	<b>Student Feedback on course</b>		<b>Students</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 IA verifier:** The following documents to be verified by CIE verifier at the end of semester

1. Blue books ( 20 marks)
2. Student suggested activities report for 5 marks evaluated through appropriate rubrics.
3. Student feedback on course regarding Effectiveness of Delivery of instructions & Assessment Methods

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

Dimension	Scale					Students Score				
	Needs Improvement 1	Developing 2	Satisfactory 3	Good 4	Exemplary 5	1	2	3	4	5
<b>1.Research &amp; gather information</b>	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				
<b>2.Fulfil team's roles &amp; duties</b>	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				
<b>3.Shares work equally</b>	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				
<b>4.Listen to other Team mates</b>	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	
I test /6 <sup>th</sup> week 10-11 a m	V SEM	APPAREL PRODUCTION	20	
	Year: 2017-18	Course code:15FT53T		
Name of Course coordinator :			Units:1,2 Co: 1,2	
<b>Note: Answer all questions</b>				
Q. no	Question	CL	CO	PO
1	Explain SWOT Analysis of Indian textile Industry	U	1	1,2,3,4,7,10
2	Describe the importance of quality	U/A	1	1,2,3,4,7,10
	OR			
	Discuss Cost and Delivery	A	1	1,2,3,4,7,10
3	Identify Cutting defects and explain	A	2	1,3,5,6,7,8,9,10

	OR			
	Write the process of inspecting trimmings	A	2	1,3,5,6,7,8,9,10
4	Describe the various garment defects.	U/A	2	1,3,5,6,7,8,9,10

**DIPLOMA IN APPAREL DESIGN AND FABRICATION TECHNOLOGY  
FIFTH SEMESTER  
MODEL QUESTION PAPER  
PART-A**

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

Q.NO	DESCRIPTION	CL	CO'S
1	List out spreading defects.	R	2
2	Describe packaging defects	U	2
3	What is meant by time study explain	A	3
4	Differentiate daily wages and fringe benefits	A	3
5	Describe benefits of quality standards'	U/A	4
6	Explain washables test	A	5
7	Describe color fastness test	R/A	5
8	Develop a Tech Pack for a export quality formal shirt	R	6
9	List out production systems and explain any two	R/U	6

**PART-B**

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

Q.NO	DESCRIPTION	CL	CO'S
1	Describe the relationship between quality, cost and delivery	U	1
2	Describe trimming inspection	U	2
3	Explain final inspection	A	2
4	Explain any three production systems	A	3
5	Draw a flow chart of export quality formal shirt and explain	R/A	3
6	Explain 14000 quality standards	A	4
7	Describe product specification	A	5
8	What are the trim testing parameters explain	R/A	5
9	Differentiate between make through system and piece rate production system	A	6
10	What is Prototype sampling explain	A	6

**QUESTION BANK  
PART-A**

Q.NO	DESCRIPTION	CL	CO'S
1	Describe swot of Indian apparel industry	A	1
2	Discuss the importance of Cost	R	1
3	What is Four point system explain	A	2
4	Explain ISO care label	U	2
5	Describe the benefits of quality standards	R	3
6	What are the sources of quality standards	A	3
7	Differentiate between daily wages and fringe benefits	A	4
8	Discuss method study used in apparel industry	A	4
9	Illustrate a specification sheet of peg skirt	A	5
10	What is proto type sampling explain	A	5
11	Write the advantages of piece rate production system	U/A	6
12	Explain any two production system used in apparel industry.	R/A	6

**PART-B**

Q.NO	DESCRIPTION	CL	CO'S
1	What is SWOT explain in detail	U	1
2	Explain quality cost and delivery	U	1
3	Describe In process inspection	R	2
4	Identify garment defects for washing and pressing explain	U	2
5	Explain ISO 9000 standards	R	3
6	What is quality assurance explain in detail	R/A	3
7	Design a flow chart for the production room	A	4
8	Describe labor welfare measures	R/A	4
9	Write the importance of product specification in Apparel Industry	R/A	5
10	Develop a Tech Pack for a export quality formal wear	R/A	5
11	List out production systems and discuss the advantages and disadvantages of any two production systems	U/A	6
12	Explain any three production systems	U	6