



# GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Diploma in Engineering

Level: Diploma

Branch: Computer Aided Costume Design and Dress Making

Course / Subject Code: DI02051011

Course / Subject Name: Fabric Production and Technology

w. e. f. Academic Year:	2024-25
Semester:	2 <sup>nd</sup>
Category of the Course:	BSC

<b>Prerequisite:</b>	Basics of fiber and Yarn Manufacturing,
<b>Rationale:</b>	This course provides a comprehensive overview of various textiles, covering key aspects from definition and terminology to manufacturing processes, types and application of fabrics. This helps students to understand both functional and aesthetic aspects of woven, knitted, non-woven and other special fabrics. Brief section highlights the differences between various textiles. Decorative textiles (lace, netting and braids) show cases the artistic and creative aspects of textiles beyond basic fabric production. Including information on advanced textiles (technical, smart and optic textiles) highlights the cutting-edge developments in the textile industry.

## Course Outcome:

After Completion of the Course, Student will able to:

No.	Course Outcomes	RBT Level
01	Elaborate concept and manufacturing process of different woven textiles.	U
02	Discuss process and type of different knitted textiles.	U
03	Explain the key characteristics, production methods, and applications of various non-woven textiles.	U
04	Interpret the concept of decorative textiles and their application.	U
05	Determine suitability of advanced textiles based on its characteristics.	A

\*Revised Bloom's Taxonomy (RBT)

## Teaching and Examination Scheme:

Teaching Scheme (in Hours)			Total Credits L+T+ (PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR	C	Theory		Tutorial / Practical		
				ESE (E)	PA / CA (M)	PA/CA (I)	ESE (V)	
3	0	2	4	70	30	20	30	150



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## Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1.	<b>Woven Textiles</b> 1.1 Weaving: Definition and terminologies (Warp, Weft, Floats, Blended fabric, Union fabric) 1.2 Basic loom structure and its mechanism 1.3 Basic operations of weaving process 1.4 Type of looms: Shuttle loom, Shuttle less loom, Rapier loom, Water jet loom, Air jet loom 1.5 Type of weaves: <ul style="list-style-type: none"><li>• Basic weaves: Plain weave, Basket weave, Twill weave, Satin weave, Sateen weave</li><li>• Decorative weave: Dobby weave, Jacquard weave, Leno weave, Surface figure weave, Pile weave, Double weave</li></ul> 1.6 Fabric defects: Yarn and Weave defects 1.7 Types of fabrics and its application: Brocade, Burlap, Calico, Cambric, Canvas, Cheese cloth, Chiffon, Corduroy, Crepe, Damask, Denim, Dotted swiss, Drill, Gabardine, Georgette, Gingham, Lawn, Muslin, Organdy, Organza, Poplin, Satin, Seersucker, Taffeta, Tapestry, Terry cloth, Velvet, Voile	14	35
2.	<b>Knitted Textiles</b> 2.1 Knitting: definition and terminologies (Course and Wales) 2.2 Types of knitting: Hand and Machine knitting 2.3 Methods of knitting: Weft/filling knitting, Warp knitting 2.4 Types of knitted fabrics and its application: Circular knit, Crochet, Double knit, Flat knit/ Jersey, Cable knit, Purl fabric, Rib fabric, Bird's Eye Knit, Fleece Knit	10	20
3.	<b>Non-woven Textiles</b> 3.1 Non-woven: definition 3.2 Types of non-woven and its application <ul style="list-style-type: none"><li>• Felt: Manufacturing process and its application</li><li>• Bonded fabric: Manufacturing process and its application</li><li>• Special non-woven: Manufacturing process and its application (Fusible fabric, Film fabric, Coated fabric, Tufted fabric)</li></ul>	10	20
4.	<b>Decorative Textiles</b> 4.1 Decorative Textiles: definition and meaning	06	15



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	4.2 Basic manufacturing process of decorative textiles 4.3 Types of decorative textiles: its process and application: <ul style="list-style-type: none"><li>• Lace fabric</li><li>• Net fabric</li><li>• Braids</li><li>• Embroidered fabric</li></ul>		
5.	<b>Advanced Textiles</b> 5.1 Advanced textiles: definition and meaning 5.2 Basic manufacturing process of advanced textiles 5.3 Types of advanced textiles and its application: Technical textiles, Smart textiles, Optic textiles, Composite materials	05	10
	<b>Total</b>	<b>45</b>	<b>100</b>

## Suggested Specification Table with Marks (Theory):

Distribution of Theory Marks (in %)					
R Level	U Level	A Level	N Level	E Level	C Level
30%	40%	20%	10%	-	-

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

## References/Suggested Learning Resources:

### (a) Books:

1. Fabric Science Arthur Price & Allen C. Cohen, Fairchild publication, New York. ISBN: 1-56367-004-6
2. Textiles: Fiber to Fabric, Bernard P. Corbman, MC Graw Hill, New York. ISBN: 0-07-013137-6
3. Text book of Clothing & Textiles, Dr. Sushma Gupta, Neeru Garg & Renu Saini, Kalyani Publisher, New Delhi. ISBN: 81-7663-252-X
4. UGC- NET/SLET (Home Science), Navneeta Kaur Sokhi, COSMOS book hive, (P) Ltd.,Gurgaon-122016
5. Textile Science An explanation of fibre properties E.P.G Gohl, L. D, Vilensky CBS; 2nd edition (1 January 2005). ISBN: 812391038X



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## (b) Open-source software and website:

- [http://cbseacademic.nic.in/web\\_material/Curriculum/Vocational/2018/Textile%20DesignT&P\\_XI\\_829.pdf](http://cbseacademic.nic.in/web_material/Curriculum/Vocational/2018/Textile%20DesignT&P_XI_829.pdf)
- <https://www.technicaltextile.net/articles/technical-textiles-and-their-applications-3922>
- <https://www.carnagetextile.com/12-applications-of-technical-textiles-12-types-of-technical-textiles/>
- <https://www.onlineclothingstudy.com/2019/01/different-types-of-knitted-fabrics.html>
- <https://www.textileschool.com/251/knitted-fabrics-and-types/>
- <https://www.scribd.com/document/576213281/TEXTILE-SCIENCE-UNIT-3-Q-A>
- <https://www.stitchclinic.com/difference-between-fabrics/>

## Suggested Course Practical List:

Sr. No.	Practical List	Hours
1	Prepare types of basic weave samples with draft and peg plan. (8*8 cm) <ul style="list-style-type: none"><li>• Plain weave</li><li>• Basket weave</li><li>• Twill weave</li><li>• Satin weave</li><li>• Sateen weave</li></ul>	10
2	Prepare types of decorative weave samples with draft and peg plan. (8*8 cm) <ul style="list-style-type: none"><li>• Leno weave</li><li>• Pile weave (cut/uncut)</li><li>• Surface figure weave</li><li>• Double weave</li></ul>	10
3	Prepare knitting samples. (10*10 cm) <ul style="list-style-type: none"><li>• Knit</li><li>• Purl</li><li>• Rib</li><li>• Moss</li></ul>	08
4	Prepare any one sample. (8*8 cm) <ul style="list-style-type: none"><li>• Lace fabric sample using crochet/ knitting.</li><li>• Any other decorative textiles.</li></ul>	02
	<b>Minimum Practical Hours</b>	<b>30</b>



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## List of Laboratory/Learning Resources Required:

- Textile laboratory
  1. 10/12 No. set of needles
  2. 4mm to 7mm crochet needle

## Suggested Project List:

- \* Collect different woven fabrics and identify and label each.
- \* Collect different knitted fabrics and identify and label each.
- \* Collect different non-woven fabrics and identify and label each.
- \* Collect different types of advanced textiles and identify and label each.
- \* Survey of different latest textiles available in the market and prepare a report.

## Suggested Activities for Students: If any

- \* Internet-based assignments.
- \* Teacher guided self-learning activities
- \* Undertake micro-projects in teams
- \* Undertake a market survey of different latest textiles.

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