

- **TNT Educational Series.** (n.d.). *Mastering CAD and portfolio skills for fashion design* (TNT Educational Series, Book 1)

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time

**Bachelors in Arts with With Community Science
Category-V**

**DISCIPLINE SPECIFIC ELECTIVE COURSE – DSE-FAS-5-HSC:
TEXTILE SCIENCE CONCEPTS**

CREDIT DISTRIBUTION, ELIGIBILITY, PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit distribution of the course			Eligibility Criteria	Prerequisite of the course
		Lecture	Tutorial	Practical		
Textile Science Concepts	4	3	0	1	Class XII	NIL

Learning Objectives

To provide learners with knowledge of the production, properties and uses of textile fibres and yarns, along with an understanding of various fabric production techniques and their properties.

Learning Outcomes

The students would be able to:

- Classify textile fibres based on length and origin.
- Compare and select fabrics for different end uses based on their properties.
- Describe the properties of textile yarns based on their characteristics.
- Explain the basic parts and working principles of a loom used in fabric weaving.
- Differentiate between basic and fancy weaves such as plain, twill, satin, dobby, jacquard, pile, leno and surface figure weaves.
- Describe the structure, characteristics and uses of knitted fabrics.
- Analyse the reasons for fibre blending and identify the properties of commonly used blended fabrics.
- Explain the types, production methods and properties of non-woven fabrics.
- Compare different fabric construction techniques in relation to their performance and end-use applications.
- Identify and analyse textile materials by recognising fibres, yarns, fabric properties and weave structures using appropriate testing and examination methods.

**THEORY
(Credits 3; Hours 45)**

UNIT I: Textile Fibres – Properties and Identification

15 Hours

This unit provides an understanding of textile fibres, focusing on their structure, properties, identification methods, and end-use applications.

- Identification of textile fibres through physical examination, burning test, microscopic test, and chemical test
- Common Natural and Man-made fibres – Production, morphology, physical, chemical and biological properties
- New and emerging fibres – properties and end-uses

UNIT II: Textile Yarns

10 Hours

This unit introduces yarn manufacturing processes and yarn characteristics.

- Mechanical and chemical spinning
- Types of yarn – simple, fancy/novelty, textured yarns
- Yarn properties – yarn count and yarn twist

UNIT III: Fabric Construction – Weaving and Knitting

12 Hours

This unit introduces the fundamental methods of fabric construction through weaving and knitting.

- Weaving – basic loom parts and operations
- Basic and fancy weaves – plain, twill, satin, dobby, jacquard, pile, leno and surface figure weaves
- Knitting – basic construction, characteristics and uses

UNIT IV: Fabric Innovations and Applications

8 Hours

This unit explores modern fabric developments. It highlights blended and non-woven fabrics, their production methods, properties, and practical uses in various industries.

- Blended fabrics – reasons for blending and properties of common blends
- Non-woven fabrics – types, production methods and properties

PRACTICAL (Credits 1; 30 Hours)

1. Identification of fibres through Physical Examination
2. Fibre Identification through Burning Test
3. Demonstration of Chemical and Microscopic Test for fibre identification
4. Identification of yarns by Visual examination – spun & filament yarns, simple & novelty yarns
5. Analysis of Fabric properties - Dimensional Stability, Thread Count, GSM
6. Calculation of Yarn Count
7. Weave identification, point paper diagrams

Essential Readings

UNIT I

This unit introduces the fundamental building blocks of textiles—fibres—and their structural and functional characteristics. It covers fibre identification methods, properties of natural and man-made fibres, and explores new and emerging fibres along with their applications in various end uses.

- **Rastogi, D., & Chopra, S. (Eds.).** (2017). *Textile Science*. Orient Black Swan.
- **Sekhri, S. (2022).** *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning.

- **Tholia, A.** (2013). *Understanding fabrics: A practical approach* (2nd ed.). Sarv International.

UNIT II

This unit focuses on yarn formation and its significance in fabric production. It explains different spinning methods, types of yarns, and important yarn properties such as count and twist that influence fabric performance and quality.

- **Rastogi, D., & Chopra, S. (Eds.).** (2017). *Textile Science*. Orient Black Swan.
- **Sekhri, S.** (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning.
- **Tholia, A.** (2013). *Understanding fabrics: A practical approach* (2nd ed.). Sarv International.

UNIT III

This unit provides an understanding of the primary methods of fabric construction through weaving and knitting. It discusses basic loom operations, various weave structures, and the characteristics and applications of knitted fabrics.

- **Rastogi, D., & Chopra, S. (Eds.).** (2017). *Textile Science*. Orient Black Swan.
- **Sekhri, S.** (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning.
- **Tholia, A.** (2013). *Understanding fabrics: A practical approach* (2nd ed.). Sarv International.

UNIT IV

This unit explores advancements in fabric development, including blended and non-woven textiles. It highlights their production methods, properties, and functional applications across different sectors of the textile and apparel industry.

- **Rastogi, D., & Chopra, S. (Eds.).** (2017). *Textile Science*. Orient Black Swan.
- **Sekhri, S.** (2022). *Textbook of fabric science: Fundamentals to finishing* (4th ed.). PHI Learning.

Suggested Readings

- **Allec, C., Johnson, I., & Joseph, P.** (2011). *Fabric Science* (6th ed.). Fairchild Publications.
- **Corbman, B. P.** (1985). *Textiles: Fiber to Fabric*. McGraw-Hill.
- **Grover, E. B., & Hamby, D. S.** (1969). *Handbook of Textile Testing and Quality Control*. Wiley Eastern.
- **Hollen, N., Saddler, J., Langford, A. L., & Kadolph, S. J.** (1988). *Textiles* (6th ed.). Macmillan.
- **Tortora, P. G.** (1992). *Understanding Textiles* (4th ed.). Macmillan.
- **Sekhri Seema** (2022). *Vastra Vigyan*, PHI Learning Pvt. Ltd. Delhi

Note: Examination scheme and mode shall be as prescribed by the Examination branch, University of Delhi, from time to time