DEPARTMENT OF HOME SCIENCE

SEMESTER-IV

UG Programme for Bachelor in B.Sc. Home Science (Hons.) degree in three years

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

DISCIPLINE SPECIFIC CORE COURSE

DSC HH 410 : Textile Science

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisiteof the course (if any)
		Lecture	Tutorial	Practical/ Practice		
Textile Science	4	3	0	1	XII Pass	Appeared in Fashion Studies

Learning Objectives

- To impart knowledge regarding production, properties and usage of textile fibres and yarns
- To create awareness regarding various techniques of fabric production and their properties
- To give an overview of dyeing, printing and finishing of textiles

Learning Outcomes

- Describe textile fibres in terms of their production and properties
- Understand production techniques and properties of yarns
- Explain various methods of fabric construction and relate them to specific uses keeping in mind fabric properties
- Recall various dyeing, printing and finishing techniques

SYLLABUS OF DSC HH 410

THEORY

(Credits 3; Hours 45)

UNIT I: Fundamentals of Textile Fibres 6 Hours

Unit Description: This unit will deal with the key concepts of textile polymers, morphology of textile fibers, primary, secondary properties and classification of textile fibers.

- Morphology of textile fibers: Monomer, Polymer, Degree of Polymerisation, Crystalline and Amorphous Regions, Orientation
- Primary and secondary properties
- Fiber classification

UNIT II: Production and Properties of Fibers 12 Hours

Unit Description: This unit will introduce the student to selected commercially significant cellulosic, protein and man-made fibers, their production, chemistry, properties and usage.

UNIT III: Production and Properties of Yarns 8 Hours

Unit Description: This unit will discuss the techniques of yarn production, types of yarns and their properties.

- Yarn construction:
  - Mechanical spinning (Cotton system, Wool system, Worsted system)
  - Chemical spinning (Wet, Dry, Melt)
- Types of yarns: Staple and Filament yarns, Simple and Complex yarns, Textured Yarns
- Yarn Properties: Yarn Twist and Balance, Yarn Count

UNIT IV: Fabric Construction 11 Hours

Unit Description: This unit will apprise the students about different fabric construction techniques. Students will learn basic principles of weaving, knitting and non-woven fabrics.

- **Weaving**
  - Parts of a loom
  - Operations and motions of the loom
  - Classification of weaves- construction, characteristics, usage
- **Knitting**
  - Classification of knits
  - Construction and properties of warp and weft knits
- **Non-wovens**
  - Types
  - Construction
  - Properties and usage

UNIT V: Basics of Textile Processing 8 Hours

Unit Description: This unit help students gain insight to the fundamentals of textile processing, viz. dyeing, printing and finishing.

- **Dyeing**
  - Fundamentals of dyeing- Dyes and Pigments
  - Stages of dyeing- Advantages and Disadvantages
- **Printing**
  - Fundamentals of printing
  - Difference between dyeing and printing,

- Methods of printing: Block, Screen
- Styles of printing: Direct, Resist, Discharge

- **Finishes**
  - Classification of finishes
  - Routine finishes

PRACTICAL
(Credits 1; Hours 30)

1.	Fibre Identification tests –Visual, burning, microscopic and chemical	8
2.	Yarn Identification – Single, ply, cord, textured, elastic, monofilament, multifilament and spun yarn	4
3.	Thread count and balance	6
4.	Fabric identification (woven, knitted, non-woven)	2
5.	Identification of basic weaves	4
6.	Tie-Dye	6

Essential Readings:

- Rastogi, D. & Chopra, S. (Eds.) (2017). *Textile Science*. New Delhi, India: Orient Black Swan Publishing Limited.
- Rastogi, D, Chopra, S., Arora, C. & Chanchal (Eds.). (2016). *Textile Science-A Practical Manual*. New Delhi, India: Elite Publishing House Private Limited.
- Sekhri S. (2022). *Textbook of Fabric Science: Fundamentals to Finishing*. Delhi, India: PHI Learning Pvt Ltd.
- Joseph, M. L. (1988). *Essentials of Textiles.* (6th Edition). Florida: Holt, Rinehart and Winston Inc.
- Corbman, P.B. (1983). *Textiles- Fiber to Fabric.* (6th Edition). USA: McGraw Hill.

Suggested Readings:

- Collier B. & Tortora G. Phyllis. (1997). *Understanding Textiles*. USA: Merrill.
- Hollen, N. and Saddler, J. (1979). *Textile*. New York: Mcmillan.
- Sekhri S. (2023) , वस्त्र विज्ञान (Vastra Vigyaan). Delhi: PHI Learning Private Ltd.

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