

**DISCIPLINE SPECIFIC ELECTIVE COURSE
DSE HP 8D1: TEXTILE PROCESSING**

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course Title & Code	Credits	Credit Distribution of the Course			Eligibility Criteria	Pre-requisite of the Course (if any)
		Lecture	Tutorial	Practical / Practice		
Textile Processing DSE HP 8D1	4	2	0	2	Class XII	Fundamental of Textiles DSC HP 307

Learning Objectives

- To understand the theories and mechanisms of textile colouration.
- To study the application of various dyes and auxiliaries for dyeing and printing of textiles.
- To gain knowledge of various kinds of finishing processes on textile fabrics.

Learning Outcomes

The students will be able to

- Understand the chemistry, and application of various dyes for dyeing of textiles.
- Learn the methods and styles of textile printing using various dye classes,
- Learn about various types of mechanical and chemical finishes applied to textiles.

SYLLABUS OF DSE HP 8D1

**THEORY
(Credits 2; Hours 30)**

UNIT I: Dyeing**10 Hours**

This unit will provide students with an in-depth understanding of the chemistry and application of various dye classes on different fibre substrates

- Theory of dyeing
- Chemistry and application of various dye classes: Direct, Reactive, Vat, Azoic, Sulphur, Acid, Basic, Disperse
- Dyeing auxiliaries

UNIT II: Printing**10 Hours**

This unit will focus on the various printing methods and techniques, along with their application to different textile substrates.

- Methods of printing: Block, Roller, Screen (flat bed, rotary)
- Styles of printing: Direct, Resist, Discharge, Transfer, Digital, Flock
- Printing with various classes of dyes on different fibres
- Finishing and after treatment of printed goods: Ageing, Steaming, Baking, washing-off

UNIT III: Finishing**6 Hours**

In this unit the students will learn about the chemistry and function of various finishes applied to textiles.

- Classification of finishes
- Preparatory finishes: For Cellulosic, Proteins and Synthetic fibres
- Finishes affecting appearance and texture
- Finishes for enhancing performance characteristics

UNIT IV: Measurement of Colour and Colour Fastness**4 Hours**

In this unit, students will gain an understanding of the concept of colour and measurement of colour fastness

- Colour theory
- Concept of colour measurement: Optical density, K/S, $L^*a^*b^*$, $L^*c^*h^*$ values
- Principle of colour fastness and its measurement: Wash, Light, Rub, Perspiration

PRACTICAL
(Credits 2; Hours 60)

1. Preparatory Finishing: Cellulosic and Protein fibres

- Desizing
- Scouring
- Bleaching
- Mercerisation

2. Dyeing

- On cotton using direct, reactive, azo and vat
- On wool and silk using acid, basic and reactive

- On acrylic using basic dyes
3. **Printing with blocks and screens**
 - Direct style of Printing on cotton
 - Discharge printing on cotton using direct dyes
 - Resist Printing on cotton using azo dyes
 4. **Colour fastness measurement**
 - Wash fastness
 - Crock/Rub fastness
 - Perspiration fastness
 5. **Colour measurement**
 - Optical Density
 - K/S
 - $L^*a^*b^*$
 - $L^*c^*h^*$

Essential Readings

- Trotman, E. R. (1984) *Dyeing and Chemical Technology of fibres*, Sixth edition, England: Charles Griffin and Company Ltd.
- Rastogi, D. and Chopra, S.(Eds.) (2017)*Textile science*, India: Orient Black Swan Publishing Limited
- Miles, L.W.C. (1994) *Textile Printing*, 2nd ed., West Yorkshire: Society of Dyers and Colorists, England.
- Sekhri S. (2022) *Textbook of Fabric Science: Fundamentals to finishing*, 4th ed., PHI Learning Pvt. Ltd. Delhi

Suggested Readings

- Aspland J. R., (1997) *Textile Dyeing and Colouration*, NC: AATCC.
- Clarke, W. (1977) *An Introduction to Textile Printing*, London: Butterworth and Co. Ltd.
- Shenai, V.A. (1987) *Chemistry of Dyes and Principles of Dyeing*, Vol II, Bombay: Sevak Publications.
- Shore, John (Ed) (1990) *Colorants and Auxiliaries: Organic Chemistry and Application Properties*, Vol. 1 & 2, West Yorkshire: Society of Dyers and Colorists, England.

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