

**PTX3I104 TEXTILE CHEMICAL PROCESSING –I****Course Objectives**

- To learn about necessity and application of various pretreatment given to textile materials during dyeing process.
- **To gain knowledge about theory of coloration.**
- To understand the dyeing principles of various cellulosic and protein based fibres based textile materials.
- To understand the different machineries used for chemical processing of the textile materials

**Course Outcomes**

**After successful completion of this course, the students will have**

**knowledge on :**

- Necessity and requirements of Pre treatments in wet processing of textiles.
- Different class of dyes and ways of coloration of cellulosic and protein fibres based textile materials.
- Selection of the dyes and recipe for colouring the various fibre/ fabric
- Colour fastness of the dyed fibre/ fabric
- Working principles of various dyeing machines

**Module-I (10 Hours)**

**Dry preparatory process:** Mending, Stamping, Shearing and cropping. Singeing-objectives, Different methods of singeing (Plate, Roller and Gas Singeing), drawbacks and advantages.

**Desizing:** Objectives, classification and mechanism of removal of starch in various methods. Efficiency of desizing, Desizing of Synthetic.

**Scouring:** Objectives, mechanism of removal of impurities, recipe and controlling parameters involved. Scouring of coloured textiles. Scouring of natural, manmade and blended textiles. Evaluation of scouring efficiency.

**Module-II (10 Hours)**

**Bleaching:** Objectives of bleaching, hypochlorite, peroxide and chlorite bleaching. Field of application - Bleaching of cotton, silk, wool, and man-made blended textiles by suitable bleaching agents. Controlling parameters and mechanism. Principles and application of optical brightening and blueing agents.

**Module-III (08 Hours)**

**Mercerization:** Objectives, Process parameters and operation, mechanism related to various physical and chemical changes in cotton during mercerization. Causticization, Barium activity number - its determination and interpretation. Brief idea of hot and cold ammonia mercerization.

**Concept of colour:** Visible spectrum, wavelength and blindness of colour. Metamerism. Primary and secondary colour, shade, tint, Hue, chroma, color wheel

**Module-IV (12 Hours)**

**Theory of dyeing:** Classification of Dyes, Dye-fibre interaction,

**Dyeing of textiles Cellulosic and Protein fibres :** Application of Direct, Reactive, Vat, Sulphur, Azoic dyes on cellulose fibres. Application of Acid, Basic and Reactive dyes on wool and silk. Eco friendly chemicals and banned dyes. Continuous dyeing Range (CDR)

**Books Recommended:**

1. A K Roy Choudhary, –Textile Preparation & Dyeing||, Science Publishers, USA, 2006.
2. Broadbent D.A., –Basic Principles of Colouration||, Society of Dyers & Colourists, 2001.
3. Karmakar S.R., –Chemical Technology in the pretreatment processing of textiles||, Textile Science & Technology, Elsevier Publication, 1999.
4. Shore J, –Cellulosics dyeing||, Society of Dyers & Colourists, Bradford, UK, 1995.
5. Mittal R M and Trivedi S S, –Chemical Processing of polyester / cellulosic Blends||,
6. Trotman, E.R., –Dyeing and Chemical Technology of Textile Fibres||, Charles Griffin and Co. Ltd., London. 1991.
7. Shenai, V.A. –Technology of Bleaching and Mercerizing - Vol. III||, Sevak Publications Chennai, 1991.
8. Bhagwat R.S –Handbook of Textile Processing||, Colour Publication, Mumbai, 1999.
9. Shenai, V.A., –Principle and Practice of Dyeing||, Sevak Publisher, Bombay,1991.
10. T.L.Vigo, –Textile Processing and Properties||, Elsevier, New York, 1994.