

PTX7J001 CLOTHING SCIENCE & TECHNOLOGY

Course Objectives

- To enable the students to understand specific characteristics of human clothing.
- To gain knowledge about the fabric handle and aesthetic properties of fabric required for human clothing.
- To understand the comfort characteristics of fabric for clothing purposes.
- To understand the physiological and field testing of clothing.

Course Outcomes

After successful completion of this course, the students will be able to :

- Describe thermal non thermal components of clothing comfort
- Explain the role of body components in maintaining body temperatures
- Recognize the Principles of heat transfer to and away human body
- Explain various aspects of thermal & skin sensational clothing comfort
- List the characteristics of cloth and made by a interchange properties of fibre

Course Content

Module-I

Introduction : Concept of selection of fabrics for clothing purpose – Types of fabric required for apparel use for different age group, occasions, purpose – Fabric properties and performance for apparel use.

Serviceability of Fabrics: Abrasion resistance - flat abrasion, flex abrasion, edge abrasion, Pilling - mechanism of pilling formation, anti-pilling techniques, Snagging, Strength - Tearing strength - Tensile strength - Bursting strength , seam strength and seam slippage,

Tailorability of fabrics: tailorability of woven and knitted garments – tailorability of leather garments – tailorability of fur garments

Module-II

Aesthetic properties: Drape, Crease and Wrinkle recovery - Lustre. Yarn unevenness: neps, thick place, thin place, periodic fault, Scroopiness, Colour- Colour fastness: to light, washing, perspiration, rubbing, dry cleaning

Dimensional Stability of Fabrics: Hygral expansion, Relaxation shrinkage, Swelling shrinkage, Felting shrinkage. Mechanism of fabric shrinkage- Relationship between Hygral Expansion, Relaxation shrinkage and extensibility - Knitting Process Parameters and fabric stability. Methods of measuring dimensional stability to dry cleaning and dry heat.

Fabric Hand : smoothness, fullness and stiffness, subjective hand judgment, objective evaluation of fabric hand and its applications.

Module-III

Clothing Comfort :Definition of comfort - Human clothing system - Physical, Physiological and psychological aspects of comfort – Tactile and pressure sensation aspects. Applications of clothing comfort research.

Thermal Comfort :Introduction. Thermal transfer processes – Dry heat transfer and Rapid heat transfer. Function of Textiles in enhancing thermal comfort. Comparison of thermal comfort properties for different textile structures.

Module-IV

Functional Properties :Elasticity: elastic recovery, residual strain; Thermal insulation ; Water repellence, water resistance and water proof; Wicking: vertical and horizontal transportation of liquid; Water absorbency; UV protection; Soil release

Safety :Toxicity - residual dye stuff and other finishing agent ; Flammability

Books Recommended :

1. Kothari, V K, –Testing and Quality Management –, CBS Book Publishers, New Delhi, 2000.
2. Li. Y, –The Science of Clothing Comfort||, Textile Progress, Volume: 31, No. 1/2, Textile Institute, ISBN: 1870372247, 2001.
3. Saville B P, –Physical Testing of Textiles,|| The Textile Institute, Woodhead publication limited, Cambridge, ISBN: 1855733676, 1999.
4. Billie J Collier and Helen H Epps,|| Textile Testing and Analysis,||Prentice- Hall Inc., New Jersey , ISBN 0134882148, 1999.
5. Lyman Fourt& Norman R.S. Hollies, –Clothing: Comfort & Functions||, Marcel Dekker, Inc, Newyork, ISBN: 0-8247-1214-5.
6. G.Song, –Improving Comfort in Clothing||, Woodhead Publication Ltd, ISBN: 1-84569-539-9.
7. A.Das, R.Alagirusamy, IIT Delhi, –Science in Clothing Comfort||, Woodhead Publication Ltd, ISBN: 1-84569-789-8.