

DSC-ADC-1: Understanding Fabrics

CREDITS: 4 (THEORY 3, PRACTICAL 1)

(Theory 45 Periods; Practical 30 Periods)

LEARNING OBJECTIVES:

1. To impart knowledge regarding production, properties and usage of textile fibres and yarns
2. To apprise the learners about the various techniques of fabric production and their properties
3. To familiarise the students with the concepts related to fabric finishes and quality.

COURSE OUTCOMES:

After completing this course, the learner will be able to:

1. Classify textile fibres based on length and origin.
2. Identify different types of textile fibres using various tests.
3. Compare and select fabrics for different end uses based on their properties
4. Describe the properties of textile yarns based on their characteristics
5. Identify different textile fabrics based on their construction
6. Refer to fabrics by their popular trade names and their characteristics
7. Select fabrics for different end uses based on their regular and functional finishes
8. Describe the desirable fabric properties for garment construction
9. Inspect the fabrics and identify the quality related problems.

THEORY

(Credits: 3; Periods 45)

Unit I: Textile Fibres

10 Lectures

Unit Description:

This unit provides basic knowledge of textile fibres to create a better understanding of the properties and end use of the fabrics made from different fibres

Sub Topics:

1. Textile Fibre classification based on their Origin (natural and man-made) and Length (staple and filament)
2. Identification of textile fibres through Physical examination (Visual and Feeling test), Burning test, Microscopic test, Chemical test
3. Natural and Manmade Fibres - Properties and end-uses (Cotton, Linen, Wool, Silk, Rayon, Acetate, Nylon, Polyester, Acrylic, Spandex)
4. Newer Fibres – Properties and end uses

Unit II: Textile Yarns

10 Lectures

Unit Description:

This unit provides basic knowledge of the yarn making processes and yarn properties to create a better understanding the fabrics made from them.

Sub Topics:

1. Yarn manufacturing process – Basic steps of Mechanical and chemical spinning
2. Types of yarn – Spun, Filament, Simple, Fancy/Novelty
3. Yarn properties – Yarn count, Yarn twist

Unit III: Fabric Construction

15 Lectures

Unit Description:

This unit provides knowledge of the most common fabric construction methods to help in understanding the properties of the fabrics better. This unit also deals with the quality aspects of the fabric and the procedures for checking the required quality specifications of fabrics.

Sub Topics:

1. Fabric construction methods – weaving, knitting, lace, net, Felt and non-woven, braiding – properties and end uses
2. Weaving : Basic loom, parts and operations
3. Basic and fancy weaves – plain, twill, satin, dobby, jacquard, pile, leno, surface figure weaves
4. Knitting: Basic Construction, Characteristics and usage
5. Blended fabrics – Reasons for blending, Properties of common Blended Fabrics
6. Glossary of Common Fabrics
7. Fabric characteristics - Texture, Hand, weight, width
8. Fabric Quality -Fabric inspection systems, Common Fabric defects, Acceptable quality level
9. Visit to Weavers' Service Facility and writing a report on the visit

Unit IV: Fabric Finishes

10 Lectures

Unit Description:

This unit deals with the common routine and functional finishes applied on fabrics to provide a better understanding of fabric performance properties.

Sub Topics:

1. Aims and classification of Fabric finishes
2. Basic/ Routine finishes - Scouring, Bleaching, De-sizing, Singeing, Mercerisation, Tentering, Calendaring
3. Functional finishes - Crease resistant, flame retardant, Anti-microbial, moth proofing

PRACTICAL
(Credit: 1; Periods: 30)

1. Identification of fibres – Physical Examination, Burning Test, Demonstration of Chemical and Microscopic Test
2. Identification of yarns by Visual examination – spun & filament yarns, ply & novelty yarns
3. Analysis of Fabric properties - Dimensional Stability, Thread Count, GSM
4. Calculation of Yarn Count
5. Preparation of samples of basic weaves through paper/ribbon weaving
6. Preparation of a file containing fabric swatches of various Fibres, Yarns, Fabrics, Weaves, Fabric defects.

ESSENTIAL READINGS

- Corbman P.B. (1985). Textiles-Fibre to Fabric. New York: McGraw Hill Book Co.
- Grover E. B. & Hamby D. S., (1969), Handbook of textile testing and quality control, New Delhi: Wiley Eastern Ltd. Handbook of textile testing,
- Rastogi, D. & Chopra, S. (Eds.) (2017). Textile Science. New Delhi, India: Orient Black Swan Publishing Limited.
- Sekhri S. (2013). Textbook of Fabric Science: Fundamentals to Finishing. Delhi, India: PHI Learning.

SUGGESTED READINGS:

- Allec C., Johnson I., Joseph P. (2011). Fabric Science (6th Edition). New York: Fairchild Publications.
- Bureau of Indian standards, (1990), Testing and grading of textile fibers, Part I-III, New Delhi
- Tortora (1992) Understanding Textiles. 4th Ed., New York Macmillan Publishing Company
- Verma P. (2003). Vastra Vigyan Evam Paridhan. Bhopal: Hindi Granth Academy.

DSC-ADC-A1: Fundamentals of Apparel Design & Construction

CREDITS: 4 (THEORY 2, PRACTICAL 2)

(Theory: 30 Periods; Practical: 60 Periods)

LEARNING OBJECTIVES:

1. To familiarise the students with the terminologies and concepts related to apparel design and its construction
2. To provide the basic knowledge of the different tools and processes involved in garment design and construction
3. To familiarise the students with the concepts related to apparel finishes and quality
4. To provide an introduction to home and technical textiles

COURSE OUTCOMES:

After completing this course, the learner will be able to:

1. Define basic apparel design and construction terminologies
2. Identify and describe the functions of tools used in garment design and pattern making
3. Describe the importance and types of fabric grain.
4. Explain the steps of garment construction such as the preparation of the fabrics, laying out the patterns, cutting and marking the fabrics
5. Explain different types of pattern layout on various fabrics.
6. Make different types of temporary, permanent and decorative stitches.
7. Finish plain seam using various techniques
8. Construct a flanged pillow cover and Petticoat
9. Identify and describe the types of home textiles and technical textiles

THEORY

(Credits: 2; Periods 30)

Unit I: Introduction to Apparel Design

10 Lectures

Unit Description:

This unit introduces the students to common terminologies and concepts associated with garment design. It also deals with the aspects and factors affecting garment design and the type of trimmings that would add to the aesthetic aspects of the design.

Sub Topics:

1. Common terms: Apparel, Seam, Seam Finish, Seam allowance, Basic Blocks, Pattern, Grading, Stay stitching, Facing, Binding, Hem, Yoke, Gusset, Nap, Darts, Pleats, Tucks, Gathers
2. Garment Design: Aspects (Function, Structure, Decoration) and types (Structural and Applied/Decorative), Application of structural and decorative design in a garment
3. Trimmings – Types, selection and application of trimmings on apparels.
4. Garment designing according to age, climate, occasion, occupation

Unit II: Basics of Apparel Construction

10 Lectures

Unit Description:

This unit provides the basic knowledge of the tools and steps associated with apparel construction.

Sub Topics:

1. Fabric grain – types, identification and importance in apparel construction
2. Common tools and equipment required for measuring, drafting, pinning, marking, cutting, sewing, pressing
3. Preparation of fabrics for clothing construction- Pre-shrinking, Grain straightening, truing
4. Steps in Clothing Construction – Pattern layout, pinning, marking, cutting and sewing
5. Pattern Layout - general guidelines, basic layouts- lengthwise, partial lengthwise, crosswise, double fold, open, combination fold

Unit III: Application of Textiles and Garment Quality

10 Lectures

Unit Description:

This unit familiarises the students of the Application of textiles as apparel, at home and in the industry. It also introduces the students to the concept of readymade garment quality and the criteria for quality evaluation.

Sub Topics:

1. Apparel/Garment Classification
2. Home Textiles – Categories, Standard Sizes and Fabrics used for Towels, Bed Linen
3. Technical Textiles – Medical textiles, Protective textiles, Sports textiles, Smart textiles
4. Garment Labels: Types and importance of labels with special reference to care labels
5. Evaluating the quality of readymade garments: overall appearance, fabric, fit, workmanship, finishing, price
6. Project work: Evaluation of Readymade garment Quality.

**PRACTICAL
(Credit: 2; Periods 60)**

1. Hand Stitches
 - Temporary hand stitches - even, uneven, pin, machine, diagonal basting, thread mark
 - Permanent hand stitches - hemming, blind hemming, back stitch, fine stitch
 - Decorative hand stitches – stem, chain, herringbone, running, lazy-daisy, satin
 - Fastener attachment – Button and buttonhole, Hook and eye, Press Button
2. Child's basic bodice and basic sleeve block.
3. Adaptation of child's basic sleeve to flared, puffed sleeve
4. Introduction to sewing machine - Practice of running the sewing machine on paper and fabric on straight lines, curved lines and corners.
5. Plain seam and seam finishes - Pinking, Turned and Stitched, Edge stitched, hand overcast, over-locked, Piped/Bound
6. Samples of pleats, tucks, gathers
7. Construction of a flanged pillow cover, petticoat
8. Analysis of the use of structural and Decorative designs in garments.

ESSENTIAL READINGS

- Colton V. (1995). Reader's Digest- Complete Guide to Sewing. New York: The Reader's Digest Association, Inc.
- Brown, P. and Rice, J.1998, Ready-to-wear Apparel Analysis, Prentice Hall,Frings G. (1996). Fashion-From Concept to Consumer (5th Edition). USA: Prentice Hall Publications
- Kallal, M. J., 1985, Clothing Construction, Macmillan Publishing Company, New York,
- Marshall S G, et al. (2009). Individuality in Clothing & Personal Appearance (6th Edition). USA: Pearson Education,
- Vanderhoff M., Franck L., Campbell L., (1985). Textiles for Homes and People. Massachusetts: Ginn and Company.

SUGGESTED READINGS

- Cunningham G. (1976). Singer Sewing Book. New York: The Singer Company.
- Gayatri V. (2007). Cutting and Stitching Practical. New Delhi: Asian Publishers.
- Stamper, A.A., S. H. Sharp and L.B. Donnell, 1986, Evaluating Apparel Quality, Fairchild Publications, America
- Verma P. (2003). Vastra Vigyan Evam Paridhan. Bhopal: Hindi Granth Academy.