

SYLLABUS
DHTT SIXTH SEMESTER

SUBJECT CODE	NAME OF SUBJECTS	No. of Hrs. Per week	marks		
			Internal	External	Total
6.1	Weaving Technology & Textile Calculations -V	4	20	80	100
6.2	Fabric Structure-V	4	20	80	100
6.3	Chemical Processing of Textiles-IV	4	20	80	100
6.4	Principles of Textile Testing -II	4	20	80	100
6.5	Chemical Processing Practice-IV & CCM	6	20	80	100
6.6	Weaving Technology Practice-V & CATD	6	20	80	100
6.7	Textile Testing Practice-II	3	20	80	100
6.8	Project Work	3	20	80	100
	Total	34	160	640	800

Grand Total Marks

Sl. No.	Class	Total Marks
1.	First year	1000
2.	Second year (3 rd & 4 th Semester)	1600
3	Third year (5 th & 6 th Semester)	1600
	Grand Total	4200

6.1.WEAVING TECHNOLOGY & TEXTILE CALCULATIONS – V

1. The subject is divided into Five Units
 2. Each unit is given a weightage of 16 Marks
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Unit I

1. Traditional Design Weaving Techniques of Handlooms - Adai (Warp & Weft) of Kancheepuram, Jala Weaving of Varanasi, Jamdani Weaving of West Bengal, Paithani Weaving of Aurangabad
2. Warp Tie&Dye Technique – Design preparation, design transfer to warp, weaving
3. Weft Tie&Dye Technique – Design preparation, design transfer to weft, weaving
4. Combined Warp and weft Tie&Dye Technique – Design preparation, design transfer to warp and weft, Weaving.

Unit II

1. Harness ties – London and Norwich systems
2. Types of Harness ties – Straight, Pointed, Sectional, Border and mixed ties
3. Jacquard Design and Harness Calculations – Calculations related to Sett of harness, sett of warp, ends per repeat, size of repeat, number of repeats, symmetrical repeat setting for straight draft and pointed draft, number of cords per hook and casting out.

Unit III

1. Determination of Ends per inch and picks per inch while changing count to maintain the same level of compactness.
2. Determination of Ends per inch and picks per inch while changing weave to maintain the same level of compactness.
3. Determination of Ends per inch and picks per inch while changing count and weave to maintain the same level of compactness.
4. Determination of Count of warp and weft and Ends per inch and picks per inch while increasing / decreasing the weight of fabric to maintain the same level of compactness.

Unit IV

1. Cloth calculations – Amount of warp and weft, weight per linear meter, weight per square meter using NE, Worsted, Woolen Yorkshire, Denier and Tex systems for fabrics woven with cotton, silk, worsted, woolen and polyester yarns.

Unit V

1. Costing of Fabrics – Handloom-made, Power-loom-made and Mill-made – involving cotton, polyester, silk, wool, etc.,

6.3.CHEMICAL PROCESSING OF TEXTILES – IV

1. The subject is divided into Five Units
 2. Each unit is given a weightage of 16 Marks
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UNIT – I

1. Process of printing Cotton with Direct dyes, Reactive dyes in direct style with recipe, process conditions and role of chemicals used
2. Process of printing Cotton with Pigments with recipe, process conditions and role of chemicals used.

UNIT – II

1. Printing of Silk with Acid dyes and Prematalized dyes ,respective process details and role of chemicals used.
2. Printing of Polyester with Disperse dyes, respective process details and functions of Auxiliaries used.
3. Brief description of methods for Traditional styles of Printing viz. Tie & dye, Kalamkari and Batik printing.

UNIT – III

1. Objects of Textile finishing, Factors affecting selection of Finishes, Classification of finishing processes viz.Mechanical and Chemical finishes, Temporary and Permanent Finishes
2. Brief outline of Mechanical Finishes Processes e.g. Calendaring, and Compressive shrinkage process.

UNIT – IV

1. Description of mercerization – process details and Effect on Structural characteristics
2. Brief introduction of Machines used for Yarn and Fabric Mercerization
3. Brief Outlines of Chemical finishing process for improvement in serviceability viz. Anti crease finishes, Softening and Stiffening, Flame Retardency, Water Proofing & Water Repellency Finishes.

UNIT – V

1. Introduction to Bio-finishing
2. Outlines of Harmful Chemicals in Wet Processing ofTextiles
3. Introduction to the concept of Eco-friendly Wet processing
4. Brief description of identification of dyes in powder.

REFERENCE BOOKS :

1. Technology of Textile processing Vol. – IV, VI, & X by Dr. V.A. Shenai
2. Dyeing and Chemical Technology of Textiles Fibres by E.R. Trotman
3. Chemical Processing of Textiles by Dr. C.V. Kaushik and Mr. Antao Irwin Josico
4. An introduction to Textile Printing by W. Clarke
5. A handbook of Textile Finishing by A.J. Hall
6. Chemical Finishing of Textiles by W.D. Schindler and P.J. Hauser

6.4. PRINCIPLES OF TEXTILE TESTING –II

1. The subject is divided into Five Units
 2. Each unit is given a weightage of 16 Marks.
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UNIT-I

1. Tensile testing of Textiles – Introduction – Terminology and definitions.
2. The load and elongation curve – The stress and strain curve.
3. Elastic recovery – Instantaneous and time dependent effects.
4. The mechanics of Strength testing machines – CRL, CRE & CRT.
5. Factors influencing yarn strength – Factors affecting the test results obtained from testing instruments.

UNIT – II

1. Pendulum lever principle (CRT) – single yarn strength tester,
2. Lea strength tester, Inclined plane principle (CRL) and Strain gauge principle.
3. Instron Tester, Ballistic strength tester.
4. CSP and Corrected CSP – Merits and demerits of single thread testing and tea strength testing.
5. RKM values, comparison of lea and single thread strength.

UNIT – III

1. Fabric strength testing – Types of test, sample preparation, Strip test & grab test.
2. Tearing strength test, Elmendorf tearing strength tester.
3. Pendulum lever; Ballistic strength tester.
4. Bursting strength testing.
5. Abrasion resistance – serviceability – Types of abrasion – Testing of abrasion resistance – Martindale abrasion tester.
6. Pilling of fabric and its causes - Measurement of pilling by using ICI pilling box tester.

UNIT – IV:

1. Crease resistance and crease recovery – measurement of crease recovery – Shirley crease recovery tester.
2. Fabric stiffness, handle and drape – Bending length, Flexural rigidity, Bending modulus – Shirley stiffness tester.
3. Fabric drapes – Drape co-efficient and drape meter.
4. Crimp of yarn in fabric – Crimp and fabric properties – Measurement of crimp percentage by using Shirley crimp tester.
5. Fabric shrinkage and its measurement..
6. Fastness testing of fabrics – Wet and Dry Rubbing fastness.
7. Estimation of weight of fabric by direct weighing method and comparing with calculated weight.

UNIT – V:

1. Fabric defects and identification.
2. Inspection of fabrics – Method of grading – American 10 point system – 4 point system.
3. Quality related terminology – Quality Management System; Quality circle, Quality policy; Quality plan; Quality assurance, Quality control; TQM and Six Sigma.
4. Concept of Quality assurance – TQM – ISO – Six Sigma Elements and Advantages.
5. Acceptance Quality Level (AQL), Military Standards – MIL-STD-105E, American National Standards Institute – ANSI/ ASQ – Z1.4.

6.5. CHEMICAL PROCESSING PRACTICE – IV & CCM

1. Every student shall be trained in all the listed activities.
2. Every student shall be examined in all the three units during practice examination.

-----1.

Printing of given sample of cotton in Direct Style with Direct dyes

2. Printing of given sample of cotton in Direct Style with Reactive dyes
3. Printing of given sample of cotton with Pigments
4. Printing of given sample of cotton with Reactive Dyes to produce a suitable design for Dress material in 3 colour.
5. Printing of given sample of cotton with Reactive Dyes to produce a suitable design for Table cloth in 3 colour
6. Printing of given sample of cotton with Reactive Dyes to produce a suitable design for Bed sheet in 3 colour
7. Printing of given sample of Silk in Direct style with Acid dyes
8. Printing of given sample of Silk in Direct style with Metal Complex dyes
9. Printing of given sample of Silk in Discharge style with Acid dyes to produce white discharge effect
10. Formulation and Batch correction
11. Colour maker and Shade Library
12. Quality assurance
13. Exercises on Colour Difference
14. Pass-Fail and Shade sorting
15. Fastness rating using CCM

6.6.WEAVING TECHNOLOGY PRACTICE – V & CATD

1. Every student shall be trained in all the listed activities.
 2. Every student shall be examined in all the three units during practical examination.
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The students shall practice the following assignments in batches both in FIFTH and SIXTH semester.

UNIT- I

JACQUARD MECHANIS

The students shall practice the following assignments both fifth and sixth semester.

1. Sketching different parts of SLSC, DLSC, DLDC jacquards and familiarization of their functions.
2. Sketching and familiarization of different systems and different types of harnessing.
3. Sketching different parts of piano card cutting machine and familiarization of their functions
4. Sketching lay-out of a jacquard loom and familiarization of mounting jacquard on a loom.
5. Preparing Jala frame to produce extra weft butta design in 40 ends and 40 picks.
6. Harness Calculation – Observing different harness set-up in the lab and calculating width of harness, Number of repeats, harness per inch and width of repeat.
7. Harness Building – Calculation the particulars required for harness building from the given particulars of cloth to be produced.
8. Practice harness building for straight tie, pointed tie, sectional tie, body – border tie.

UNIT – II

FIGURED FABRIC DEVELOPMENT

1. Preparation of designs for different types of figured fabrics as per the calculation width and given length.
2. Preparation of graph designs of various figured fabrics dealt in Fabric Structure–IV, Fabric Structure – V.
3. Punching and lacing of cards – Punching the pattern cards from the graph prepared by using the Piano Card Cutting machine, Lace the punched cards in sequence.
4. Weaving – weave the design from the punched cards they prepared.
5. Developing sample without any defects using punched cards.
6. Preparing the album of samples developed and writing their quality particulars.

UNIT – III:

FABRIC ANALYSIS AND CATD

1. Analysis of figured fabrics – simple / ordinary, double cloth, backed cloth, terry.
2. Extracting fundamental details like count of warp and weft, ends and picks per unit space, warp and weft crimp and weave repeat.
3. Deriving drafting, denting, peg-plan/ tie-up for the weave.
4. Preparation of graph for the design of various figured fabrics – The students shall prepare the graph and learn enlargement techniques using CATD System.

6.7.TEXTILE TESTING PRACTICE -II

1. Every student shall be trained in all the listed activities.
 2. Every student shall be examined in all the three units during practical examination.
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1. Determination of Washing fastness of dyed material following ISO 1,2, 3, 4, & 5 standards
2. Determination of Rubbing fastness of dyed material
3. Determination of Perspiration fastness of dyed material
4. Determination of Light fastness of dyed material
5. Determination of Sublimation fastness of dyed material
6. Visual assessment of Yarn evenness using ASTM Black Boards
7. Assessment of Single yarn strength
8. Assessment of Lea strength of yarn
9. Determination of Ballistic Strength of the given fabric
10. Determination of Tensile Strength of the given fabric
11. Determination of Fabric Tearing Strength using Elmendorf Tear Tester
12. Determination of Crease recovery of the given fabric
13. Bursting strength testing of the given fabric
14. Assessment of Pilling character of fabrics
15. Determination of bending length of the given fabric using Shirley Stiffness Tester
16. Assessment of Abrasion resistance of fabrics using Martindale AbrasionTester
17. Assessment of Drape character of the given fabric

6.8.PROJECT WORK

1. Every students / group of students shall be assigned a Project Work, He /She /They shall complete their Project Work in consultation with his/ her/ their Project Guide in a manufacturing establishment / organization or in the Institute itself. The Students may also be deputed for floor survey/ study in the Industry during winter vacations if required for the topic allotted to him/ her/ them.
- 2.The synopsis of work shall be evaluated for 20 marks by the Project Guide.
3. Evaluation of the Project shall be done for 80 marks by the committee of experts as constitution by the Institute.