SYLLABUS

DHTT FIFTH SEMESTER

SUBJECT CODE	NAME OF SUBJECTS	No. of Hrs. Per week	marks		
			Internal	External	Total
5.1	Weaving Technology & Textile Calculations -IV	4	20	80	100
5.2	Fabric Structure-IV	4	20	80	100
5.3	Chemical Processing of Textiles-III	4	20	80	100
5.4	Principles of Textile Testing -I	3	20	80	100
5.5	Principles of Management & Entrepreneurship	4	20	80	100
5.6	Chemical Processing Practice-III & CCM	6	20	80	100
5.7	Weaving Technology Practice-IV & CATD	6	20	80	100
5.8	Textile Testing Practice-I	3	20	80	100
	Total	**34**	**160**	**640**	**800**

5.1.WEAVING TECHNOLOGY & TEXTILE CALCULATION – IV

Schema:

1. The subject is divided into five units.
2. Each unit is given a weightage of 16 marks

UNIT- I:

1. Shuttle less weaving machines.
2. Rapier weft insertion technique – Single and Double Rapier – Mechanism and working principle.
3. Projectile weft insertion technique – Mechanismand working principle.
4. Air- jet weft insertion technique - Mechanism and workingprinciple.
5. Water – Jet insertion technique - Mechanism and workingprinciple.
6. Introduction to Multi- phase Weavingtechnique.

UNIT- II:

1. Jacquards – Structure and function of different parts of a jacquard. Working principle of electronic jacquard.
2. Single lift Single Cylinder jacquard – Mechanism and working principle.
3. Double lift Single Cylinder jacquard – Mechanism and workingprinciple.
4. Double lift cylinder jacquard – Mechanism and workingprinciple.
5. Open shed jacquard - Mechanism and Working principle.

UNIT- III:

1. Inverted hook jacquard - Mechanism and Workingprinciple.
2. Cross Border jacquard - Mechanism and Workingprinciple.
3. Self – twilling jacquard - Mechanism and Working principle.
4. Leno jacquard - Mechanism and Working principle.

UNIT – IV:

1. Diameter of yarns.
2. Ashenhurst’s formula for estimation of diameter of yarns.
3. Pierce’s formula for estimation of diameter of yarns.
4. Relative diameter of yarns.

UNIT- V:

1. Calculation on Cover of cloth.
2. Warp Cover, weft cover and cloth cover- Derivation andcalculation.
3. Fractional Cover, Percentage cover and Cover factor – Calculation for light medium and heavy fabrics.

5.2.FABRIC STRUCTURE – IV

Schema:

1. The subject is divided into five units.
2. Each unit is given a weightage of 16 marks

UNIT – I:

1. Extra warp and extra weft – designing and comparison.
2. Extra Warp figuring technique using healds, healds with dobby – Continuous, intermittent and spot styles – anchoring of spot effects – Planting – Stitching with dedicated weft threads.
3. Extra Warp figuring technique using healds, healds with dobby – Continuous, intermittent and spot styles – anchoring of spot effects – Chintzing – Stitching with dedicated warp threads.
4. Combination of extra warp and extra weft.

UNIT- II:

1. Basic of Patent – Satin, Design, draft, peg-plan, andbeaming.
2. Tapestry – Traditional and modern tapestries.
3. Basic of non – reversible Weft Tapestry – 3 picks, 4 picks – Design, draft, peg-plan, and beaming and interlacing diagram.
4. Basic weaves of reversible Weft Tapestry – 3 picks, 4 picks – Design, draft, peg-plan, and beaming and beaming and interlacing diagram.
5. Simple combined warp and weft tapestry.

UNIT- III:

1. Count of graph paper – Factors influencing the selection of appropriate count of graphpaper.
2. Figured single cloth – Structure of cloth with different weave combination – use of Straight tie and straight draft.
3. Figure warp backed cloth – Structure of cloth – Use of sectional harness in simplification of graph development process and punching technique.
4. Figured weft backed cloth – Structure of cloth – Separation of two series of weft for simplifying graph development process and punching technique.

UNIT – IV:

1. Figure double cloth – use of similar colours in warp and weft – Use of different colours in warp ad weft – Structure of cloth – Design development and punching process for straight harnessing with straight draft – Structure of cloth.
2. Figure double cloth – Design development and punching process for straight harnessing with sectional draft – Structure of cloth.
3. Figure double cloth – Structure of cloth - Design development and punching process for sectional harnessing with sectional draft – Structure of cloth.

UNIT – V:

1. Leno and gauze fabrics – Salient features; Bottom douping and top douping.
2. Open, Crossed and plain sheds in leno weaving, Positive and negative Easer arrangements and Shaker Device.
3. Indication of leno structures, drafting plan and lifting plan of straight and pointed draft structures.
4. Stripe and Check effect; plain, twill and leno combination;
5. Cord effect, Net leno.

REFERENCE BOOKS

1. Watson’s Textile Design and Colour by Z. Crosiciki
2. Watson’s Advanced Textile Design by Z. Crosiciki
3. Structural Fabric Design by James W. Klibbe
4. Fabric Structure by James Golak
5. Woven cloth construction by R. Mark
6. Grammar of Textile Design by H. Nisbet
7. Woven structure and Design by Dori Goernar

5.3.CHEMICAL PROCESSING OF TEXTILES – III

Schema:-

1. The subject is divided into five units.
2. Each unit is given a weightage of 16 marks

UNIT – I

1. Brief description of Structural Parameters of polyester making it difficult to Dye
2. Need, Principle and Methods of Heat Setting Polyester
3. Approaches for dyeing,– Various methods of dyeing Polyester involving use of chemical and Thermal Energy (Carrier Dyeing and H.T.H.P. Dyeing)
4. Thermo sol method of dyeing polyester.

UNIT – II

1. Brief description of parts and working of HTHP Beam dyeing machine, Jet Dyeing machine and Soft Flow Dyeing machines
2. Outlines of the common defects and damages while dyeing Polyester on above machines
3. Process sequences for. Polyester/cotton, Polyester/Viscose.

UNIT – III

1. Structural aspects of Polyamides (Nylon6 and Nylon66) affecting their dyeing behaviour
2. Dyeing of Polyamides with Disperse, Acid, Metal complex and Reactive dyes; Process details including time,Temperature and pH; Functions of chemicals used
3. Structural aspects of Acrylic affecting their dyeing behaviour
4. Introduction to Method of Dyeing Acrylic with Cationic and Disperse dyes.

UNIT – IV

1. Introduction to Textile Printing, Differences in Dyeingand Printing
2. Brief outlines of methods of Printing viz. Block Printing, Screen Printing, Rotary and Flat bed Screen Printing and Transfer Printing with their merits and demerits.
3. Brief outlines of Styles of Printing viz. Direct, Resist and Discharge Printing.

UNIT – V

1. Photographic Preparation of Printing Screens
2. Important Printing paste ingredients and their role
3. Outlines of Methods of Fixation commonly used in Printing of Textiles (Steaming, Ageing and Curing)

Reference Books:

1. Technology of Textile processing Vol. II, III & VI by Dr. V AShenai
2. Scouring and Bleaching by E R Trotman
3. Chemical Processing of Textiles –by Dr. C V Kaushik and Mr. Antao IrwinJojico
4. An Introduction to textile printing by W Clarke.

5.4.PRINCIPLES OF TEXTILE TESTING

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

UNIT – I:

1. Importance and objectives of Textile Testing, Role of textile testing in quality control.
2. Sampling techniques – factors governing sampling – Random and biased samples
3. Elementary Statistics – Testing of sample and collection of data; Analysis of data to ascertain mean, mode, median,range, percentage mean range and frequencydistribution.
4. Measures of Central Tendency and Measures of Dispersion – Standard deviation, Percentage mean deviation,coefficient of variation, standard error, confidencelimits.

UNIT – II:

1. Atmospheric conditions - Absolute humidity – Relative humidity, Standard testing atmosphere. Measurement of atmospheric condition.
2. Instruments used for determination of relative humidity – Wet and dry bulb hydrometer – Thermo hygrography – Electrolytic hygrometer.
3. Measurement of Moisture Regain and Moisture Content – Moisture testing oven – Shirley Moisture Meter –Corrected invoice weight.
4. Effect of Moisture Regain on fiber properties – Factors affecting Moisture Regain in textile materials – Standard regain value of textile fibers.

UNIT – III:

1. Measurement of linear density (count)
2. Warp reel and weighing balance method.
3. Direct reading count balances.
4. Knowles balance
5. Quadrant balance
6. Beesley’s balance

UNIT – IV:

1. Study of twist – Definition of twist – Twist direction – Amount of twist - Twist factor and twist multiplier.
2. Twist angle – function of twist in yarn structure – Twist and yarn strength – Effect of twist on fabric properties.
3. Measurement of twist – Sampling of yarn for twist testing - : Straightened fiber method, Twist contraction method..
4. Twist-Untwist method for folded yarn – Microprocessor twist tester.

UNIT – V:

1. Yarn evenness – Study of yarn evenness and its importance on process and product quality.
2. Classification of yarn irregularity – Expression of irregularity.
3. Measurement of yarn evenness by Visual examination, Cutting and weighing method.
4. Electronic capacitance method, Uster evenness tester, Uster – Classimate System – Yarn faults.

5.5.PRINCIPLES OF MANAGEMENT AND ENTREPRENURSHIP

Schema:-

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

UNIT – I

1. History of Handloom Industry
2. Socio Economic importance of Handlooms
3. Organizational structure of HandloomIndustry
4. Primary Handloom Weavers' Cooperative Society, Establishment, objectives and functions.

UNIT – II

1. Government of India's Schemes for upliftment of HandloomWeavers
2. Functions of WSCs and IIHTs
3. Cluster Development initiative for Handloom Industry
4. Scopes of Handloom Exports
5. Importance of Product diversification and Value addition in Handloom products.

UNIT –III

1. Definition of Marketing, Micro and Macro Marketing
2. Modern Approach, Classification of market
3. Objects and importance of marketing
4. Principles of marketing, Marketing mix
5. Market Planning, Market information and its importance
6. Branding and image creation, importance of geographicalindication.

UNIT –IV

1. Market Research
2. Types and Objectives of Market research, advantages
3. Market sampling, Primary and Secondary Data Sources
4. Definition, Importance and objectives of pricing
5. Factors affecting price decision, Single Price and VariablePrice
6. Pricing Policy for Handloom Products.

UNIT –V

1. Significance ofRural Marketing, Urban and International Marketing
2. Understanding Entrepreneurship, its need and importance
3. Scope of Entrepreneurial development, Types ofEntrepreneurs
4. Role of Entrepreneurship in economicdevelopment
5. Role of various agencies in promotingEntrepreneurship
6. Introduction to concepts of E. Business

5.6.CHEMICAL PROCESSING PRACTICE – III & CCM

Schema:-

1. The activities to be carried out are given in thesyllabus.
2. Every student shall be trained in all the listedactivities.

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1. Demonstration on scouring and bleaching of Polyester, Nylon andAcrylic
2. Demonstration on scouring and bleaching of P/C and P/V blends
3. Dyeing of the given sample of Polyester with Disperse dyes by Carrier method
4. Dyeing of the given sample of Polyester with Disperse dyes by HTHP method
5. Dyeing of the given sample of P/C or P/V with Disperse and Vat / Reactive dyes (Solid / Cross / Reserve Shades)
6. Dyeing of the given sample of Nylon with Acid dyes
7. Dyeing of the given sample of Nylon with Metal Complexdyes
8. Dyeing of the given sample of Nylon with Disperse dyes
9. Dyeing of the given sample of Nylon with Reactive dyes
10. Dyeing of the given sample of Acrylic with Cationic dyes
11. Dyeing of the given sample of Acrylic with Disperse dyes
12. Brief outlines of Colour Physics
13. Introduction to CIE system of colour specification (Meaning of L, a, b, C, H) Standard illuminants and observer
14. Calibration of Spectrophotometer
15. K/S. Data Generation

5.7.WEAVING TECHNOLOGY PRACTICE – IV & CATD

Schema:-

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.

The student shall practice the following assignments in batches both in FIFTH and SIXTH semester.

UNIT- I

JACQUARD MECHANISM

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

1. Sketching different parts of SLSC, DLSC, DLDC jacquards and familiarization of their functions
2. Sketching and familiarization of different system 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 – Calculating 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

FIGURE FABRIC DEVELOPMENT

1. Preparation of designs for different types of figured fabrics as per the calculated 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 theyprepared.
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 compound fabrics – double cloth, Bedford cord, welt, pique, terry, extra warp, extra weft, leno.
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 theweave.
4. Preparation of design for different types of figured fabrics using CATD System.

5.8.TEXTILE TESTING PRACTICE –I

Schema:-

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.

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1. Demonstration of equipments available in the Testing Lab and their functions
2. Notes on Elementary Statistical Tools – Collection of data, Mean, Mode, Median, Standard Deviation, Percentage Mean Deviation, Standard Error and Co-efficient of Variation with their use in Analysis of Test Results .
3. Cross sectional and longitudinal views of different fibres (Demonstration only).
4. Brief notes on Moisture in Textiles and Atmosphericconditions.
5. Determination of Moisture Regain and Moisture Content of the given material by drying and weighing method.
6. Determination of Atmospheric Conditions in the Testing Lab (Relative Humidity and Temperature) – Wet and Dry Bulb Hygrometer.
7. Determination of count – Length and weight method.
8. Determination of count Direct reading – Knowles Balance.
9. Determination of count - from fabric swatch- Beesley'sBalance.
10. Determination of count Direct reading – Quadrant Balance.
11. Elementary notes on Twist, its role in Yarn Structure.
12. Determination of Twist per inch in the given sample of yarn using Twist - Untwist Method.
13. Determination of Twist per inch in the given sample of yarn using Straightened Fibre Method.
14. Determination of Crimp in the given fabric swatch.
15. Determination of Weight of given fabric sample in terms of weight / square yard and GSM