5.1 STRUCTURAL FABRIC DESIGN - V

L	T	P
3	–	6

RATIONALE

The students of textile design are supposed to have knowledge and skill regarding various advanced weaves and their construction. Hence, in this subject, students will learn advanced design for various fabrics and quality particulars of different textiles.

DETAILED CONTENTS

THEORY

1. Jacquard Harness & design calculations. (2 hrs)

2. Economical distribution of colour in designs as applied to textiles (2 hrs)

3. Construction of point paper designs, process of drafting a sketch design, drafting designs from woven fabrics. Prevention of long floats, figure shading, insertion of ground weaves, correct and incorrect designs drafting, combination of special weaves and special yarns (This should be shown by visiting textile designing section of textile industry) (15 hrs)

4. Methods of comparing jacquard designs, conditions to observe in designing figured fabrics (3 hrs)

5. Introduction of tapestry fabrics, varieties of tapestry fabrics, construction of jacquard harness and method of preparing tapestry designs, instruction for card-cutting. (6 hrs)

6.. Introduction of following standard fabrics: (20 hrs)

Blazer cloth, book muslin, brocade, buckram calico, casement cloth, chiffon corduroy, crepe fabrics damask, denim, drills, duck, felted cloth, flannel, fustian gabardine, honeycomb fabrics, huckaback cloth, jean khaki – leno, long cloth, mull muslin, orgendie pile fabrics, pique, plush, pongee poplin quilts repp. Reversible cloth, rib cloth, rugs, serge, swivel fabrics, taffeta, terry towel, tweed, valveteen, welts, industrial fabrics (blowrapper), water resistant, fire resistant cloth, blankets, shawls, men's suitings, women's suit fabrics, curtains, upholestry cloth.

PRACTICAL EXERCISES

1. Preparation of original painted textile designs suitable for dobby weaving, four painted textile designs to be prepared by students. Each student or one pair of students should have their own design separately

2. Preparation of point paper jacquard designs from original painted design. Applied design for damask, brocade, tapestry fabrics, double cloth leno and pile fabric should be prepared. At least four woven original jacquard designs to be produced by every group of four students separately

INSTRUCTIONAL STRATEGY

Student should be able to understand different weaves from fabric samples or by weaving and should be taken for a visit to Museum for Oriental Tapestry/Carpets

RECOMMENDED BOOKS

1. Watson's Advance Textile Design

2. Watson's Textile Colour and Design

3. Grammer of Textile Design by Nisbet

4. Structural Fabric Design by Kilby

5. Woven Structures and Design I and II by Davis Goerner

6. Fibre to Fabric by Ghosh

7. Knitting Technology by Spencer

8. Impressions – Master Pieces of Indian Textiles by K Prakash

9. Shawls and Carpets of Kashmir by All India Handicraft Board, New Delhi

5.2 FABRIC MANUFACTURE-III

L T P
3 - 4

RATIONALE

Diploma holders in Textile Design are supposed to have knowledge and skills in advanced techniques of weaving used to produce designs on fabrics. In this subject, students will learn these mechanisms and manufacturing techniques.

DETAILED CONTENTS

Sr. No.	Theory	Practical Exercises
1.	Jacquard-different types of jacquard, detailed study of double lift double cylinder jacquard, chain for even and odd picks and sequence of card arrangement for double lift double cylinder jacquard . Figuring capacity of jacquard. (12 hrs.)	- Practical on jacquard loom. - Preparation of jacquard card & practice on card cutting machine. - Preparation of jacquard card & practicle
2.	Working of inverted hook, cross-border, gauge and leno jacquards. Their effect on capacity of design and saving in card cutting (10 hrs.)	- Study different jacquards with special reference to designing capacity.
3.	Common defects of jacquard shedding and their effect on the fabric. (5 hrs.)	- Study different jacquard shedding defects in fabric.
4.	Card cutting machine, card lacing (3 hrs.)	- Practice on card lacing
5.	Principle of drop box motion, preparation of drop box chain for different weft patterns, weft mixers for 2x 1, 4 x 1 and pick at will motion for 4 x 4 box motions. (8 hrs.)	- Preparation of chain for different weft patterns and study of pick at will motion.
6.	Elementary idea of modern weaving machines. (3 hrs.)	
7.	Introduction to carpet weaving (Tufted and knotted carpets). (5 hrs.)	- Preparation of carpet samples on carpet frames.

INSTRUCTIONAL STRATEGY

Student may be asked to do all the work on handloom or power loom machines to develop the knowledge and skill in fabric manufacturing.

RECOMMENDED BOOKS

1. Weaving mechanism Vo.I and Vol.II by N N Benerjee
2. Fancy weaving by KT Aswani
3. Principles of weaving by marks and Robinsons.
4. Mechanism of weaving by TW Fox.
5. Jacquard-EK Saral Vidya by S.S. Satsangi (Bilingual)

5.3 CAD FOR TEXTILE DESIGN - II

L	T	P
-	-	6

RATIONALE

The term CAD has found its way into all major discipline that have got anything to do with designing or drafting techniques. The major objective of this course is to expose the students to different softwares available in the field of textile design industry so that they are able to use those softwares in the design and construction of various textiles.

DETAILED CONTENTS

Related Theory for Practical Exercises

1. Philosophy and utility of CAD system, working with various standard software packages like photoshop, coral draw

2. Understanding graphic representation, file conversion, drawing simple geometric figures, capturing a picture using CCD/Scanner

3. Use of computer to construct design on different bases with reference to various arrangements for woven designs

4. Use of CAD in various end uses viz a viz dress material, upholstry, furnishing, label, & embroidery,

PRACTICAL EXERCISES

Software packages like Textronics/Texstylers/Wonderweave/Scotweave Design systems may be adopted for doing following exercises (Any one may be choosen or any other latest software):

i) Preparation of Woven Fabric Construction and Design

   1. Selection of a fabric
   2. Use of CAD for creating fabric structure by selecting drafting and lifting plan
   3. Selection of colour scheme
   4. Selection of yarn count, twist and its direction, and type of yarn
   5. Presentation of simulated fabric design on computer screen and also on paper

ii) Modify/editing fabric design from original fabric and looking at the effect of modification (modification could be on yarn count, colour, twist, and its direction; fabric drafting and lifting plan)

RECOMMENDED BOOKS

1. CAD in clothing and textiles by W.Aldrich

2. A magazine on Computer in the world of textiles

5.4 TESTING AND QUALITY CONTROL - I

L	T	P
4	-	4

RATIONALE

Diploma holders in textile design are responsible for testing and quality control of yarn and fabric at the shop floor. Thus in this subject, student will be made fully aware of different quality standards and their maintenance during manufacturing processes for the total quality concept

DETAILED CONTENTS

Sr. No.	Theory	Practical Exercises
1.	Textile testing - its aim & scope. Concept of quality control and its importance. Methods of quality control. (8 hrs)	
2.	Importance of fixing standards. Brief idea of factors responsible for deviation from standards. (6 hrs)	
3.	Sampling techniques. Random and biased samples. Techniques for fabric sampling for specific tests. (8 hrs)	Preparation of leas of different sizes on warp reel
4.	Methods of yarn numbering (Direct, indirect and universal systems) measurement of yarn number from large and small yarn lengths. Beesley's and Knowle's balance. (12 hrs)	- Measurement of yarn number from large and small length samples - use of Knowle's Beesley's balances - Direct weighing methods and - Analytical balance
5.	Yarn twist and its measurement, direction of (twists size). Function of twist in yarn structure. Effect of twist on yarn Properties. Measurement of twist in single and ply yarns. (10 hrs)	Measure of twist in single and folded yarns by twist testers.
6.	Chemical testing: Test of colour fastness for (a) Washing (b) Rubbing (Wet & Dry) (c) Dry cleaning (d) Perspiration (Alkaline & Acidic medium) (e) Light (f) Chlorination. (12 hrs)	Use of laundrometer & crockmeter for testing of fastness. Demonstration of Grey scale & Blue scale.

7.	Blend test by (Microscopic, burning and chemical processes).	(8 hrs)	Blend test by use of Microscope and solubility process.

NB: All testing procedures are to be followed as per laid down standards by BIS.

INSTRUCTIONAL STRATEGY

Student must be taken to textile industries/Mills for practice and study of inspection and quality control operations

RECOMMENDED BOOKS

1. Textile Testing by JE Booth

2. Textile Testing by Grover and Hamley

3. Textile Testing by Angapan

4. Textile Testing by John H.Skinkle; DB Taraporewala and Sons, Bombay

5.5 TEXTILE FINISHING

L	T	P
3	-	-

RATIONALE

A diploma holder in textile design must have necessity knowledge and procedures used for finishing. For this, he should be acquainted with different types of processing of finishing machines used for finishing. In addition, relevant skills also need to be developed in him about the operation of these machines.

DETAILED CONTENT

Theory

1. Introduction, objects of finishing and its importance. (2 hrs.)

2. Classification of various types of finishes (2 hrs.)

3. Study of finishes with respect to the purpose, fabrics and reagents used. (2 hrs.)

4. Routine Finishes (8 hrs.)
   - Heat setting
   - Desizing
   - Scouing
   - Bleaching
   - Mercerization

5. Calendering & its applications (2 hrs.)

6. Textural finishes, their types and techniques (2 hrs.)

7. Special Finishes (14 hrs.)
   - Special calendering
   - Water proof and water repellent finishes
   - Flame retardant and flame proof finishes
   - Soil & stain release finishes
   - Antibacterial & moth proofing finishes
   - Crease/wrinkle resistant finishes

8. Stabilization finishes & its applications (8 hrs.)
   - Relaxation shrinkage/compressive shrinkage
   - Mercerization
   - Fulling and crabbing
   - Chlorination
   - Resin treatments
   - Stentering
   - Wet & Dry Decating

9. Effluents and its treatments (6 hrs.)

10. Latest developments in finishing (2 hrs.)

INSTRUCTIONAL STRATEGY

The students should be taken to textile industry to show them various processes of finishing and its machinery so that they can know the various finishing processes being used by textile industry.

REFERENCE BOOKS

1. Technology of Finishing by VA Shenai
2. Textile Finishing by JT Marsh, BI Publications, New Delhi
3. Effluents by ATIRA
4. Technology of Bleaching by VA Shenai
5. Textile Fibres and Their use by Katharine Paddock HESS Oxford & IBJ Publishing Co. Pvt. Ltd., New Delhi, Bombay, Kolkata
6. Textile Fiber to Fabric by Bernard P. Corbman, McGraw Hill International Editions

5.6 MANAGEMENT AND COSTING

L	T	P
3	-	-

RATIONALE

Management and costing assumes vital importance for a diploma holder in textile design. He must appreciate the value of leadership, motivation, human relations etc. because he is to work in team in a textile industry. Creating awareness regarding industrial legislation, environmental education and entrepreneurship will help the students to perform their jobs more effectively.

DETAILED CONTENTS

THEORY

1. Principles of Management (17 hrs)

    1.1 Introduction to Management, different functions of management: planning, organizing, coordination and control, gathering and organizing data
    1.2 Management Structure of an industrial organization with relation to textile industry
    1.3 Line and staff functions
    1.4 Functions of different departments related to textile industry
    1.5 Relationship between individual departments

2. Human Resource Development (6 hrs)

    2.1 Introduction
    2.2 Staff development and career advancement
    2.3 Training strategies and methods
    2.4 Objectives and procedure of job evaluation
    2.5 Methods of job evaluation
    2.6 Objectives and methods of merit rating
    2.7 Advantages and disadvantages of merit rating
    2.8 Relations with subordinates, peers and superiors

3. Motivation (6 hrs)

    3.1 Factors determining motivation
    3.2 Characteristics of motivation
    3.3 Methods for improving motivation
    3.4 Incentives, pay promotion, rewards
    3.5 Job satisfaction and job enrichment
    3.6 Labour welfare
    3.7 Workers' participation in management

4. Leadership (4 hrs)

4.1 Need for leadership
4.2 Functions of a leader
4.3 Factors to be considered for accomplishing effective leadership
4.4 Manager as a leader

5. Industrial Legislation (8 hrs)

5.1 Introduction
5.2 Importance and necessity of industrial legislation
5.3 Principles of labour legislation
5.4 Types of labour laws and disputes
5.5 Salient features of the following Acts(General Knowledge only)
  a) Factory Act, 1948
  b) Payment of Wages Act 1936
  c) Minimum Wages Act, 1948
  d) Workmen's Compensation Act, 1923
  e) Industrial Dispute Act, 1947
  f) Employee' State Insurance Act, 1948

6. Environmental Education (6 hrs)

6.1 Introduction
6.2 Ecology
6.3 Factors causing pollution
6.4 Effects of pollution on human health
6.5 Air pollution and control Act – salient features
6.6 Water pollution and control Act – salient features
6.7 Noise pollution and its control

7. Entrepreneurship (3 hrs)

7.1 Introduction to entrepreneurship
7.2 Project Planning
7.3 Sources of finances for projects

8. Costing (8 hrs)

8.1 Basic concepts about different types of costs, like incremental cost, overhead cost, capital cost etc.
8.2 Accounting concepts and financial statements (Highlighting balance and income statement presentation, primary emphasis on accounting as a source of financial information with procedural details kept to be a minimum)
8.3 Cost control system including standard costs
8.4 Profit planning

RECOMMENDED BOOKS

1. Principles of Management by Phillip Kotler
2. Industrial Legislation and Labour Laws by F Cherunelam
3. Accounting Methods by IM Pandey
4. Cost Accounting for Beginners by B Datta
5. Textile Management by VD Dudeja