5.1 STRUCTURAL FABRIC DESIGN - V

L	T	P	Cr
3	–	6	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, (21 hrs)

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

5. Specification of following standard fabrics:
(20 hrs)

Blazer cloth, book muslin, casement cloth, chiffon corduroy, denim, drills, felted cloth, flannel, gabardine, orgendie, serge, taffeta, tweed, industrial fabrics (blowrapper), water resistant and fire resistant cloth, upholestry cloth, parachute fabric, Kashmiri silk fabrics, regional shawl fabrics (Kashmiri,Ladakh, Jammu) e.g. ruffle shawls, pashmina and merino.

PRACTICAL EXERCISES

1. Preparation of original textile designs suitable for dobby jacquard weaving, four 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 design. 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. Impressions – Master Pieces of Indian Textiles by K Prakash
7. Shawls and Carpets of Kashmir by All India Handicraft Board, New Delhi
8. Simple Fabric Structure by S S Satsangi

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	2	4
2	2	4
3	21	44
4	3	6
5	20	42
Total	**48**	**100**

5.2 FUNDAMENTALS OF KNITTING

L	T	P	Cr
3	-	4	5

RATIONALE

The aim of this subject is to impart knowledge and skills to the students regarding various types of knits and their use in the textile design as they may have to work in knitting industry and import and export houses as well.

DETAILED CONTENTS

Sr. No.	Theory	Practical Exercises
1.	Comparison between knitted and woven fabrics, warp and weft knitting. Types of knitting needles, their knitting cycle (18 hrs.)	- Demonstration of different needles and their cycles - Yarn parameters for hosiery yarn
2.	Weft Knitting Types of stitches: Knit, tuck, float, lay their representation, effects (6 hrs.)	Preparation of knit tuck and float stitches.
3.	Weft knit structures: Plain, Rib, Interlock and Purl, their characteristics (12 hrs.)	Passage of yarn through Flat Bed and Circular Weft Knitting Machines
4.	Fabric defect in weft knitting (4hrs.)	- Identification of fabric defects on the knitted fabrics
5.	Warp Knitting: Introduction to under lap and over lap, closed lap and open lap. Elementary idea of Tricot and Raschel machines (8 hrs)	- Study of warp knitted samples with respect to the topics

INSTRUCTIONAL STRATEGY

Student may be asked to do the work on weft knitting machines and construct the lapping movement of warp knits.

RECOMMENDED BOOKS

1. Knitting technologies by D.B. Ajgaokar
2. Knitting technology by Mark Spancer

3. Textile Mathematics Vol III by J.E. Booth

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	18	38
2	6	12
3	12	26
4	4	8
5	8	16
Total	**48**	**100**

5.3 COMPUTER AIDED TEXTILE DESIGN - II

L	T	P	Cr
-	-	6	3

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 CATD system, working with various standard software packages like photoshop, coral draw, NedGraphics, Auto Tex (for textile design) Nanosoft, Textronics

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

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

4. Use of CATD in various end uses in single colour viz a viz dress material, upholstry, furnishing, label, & embroidery with the help of NedGraphics, Auto Tex (for Textile Design), Textronics

PRACTICAL EXERCISES

1. To draw 3 geometrical folk designs with Coraldraw
2. To do colour ways of the Ex.1 using Coraldraw
3. Create different textures for background and design using booties/natural objects which the student will create using digitiser
4. Make 3 woven design for shirting material using different strips, checks, dals
5. Do colour ways of Ex.4
6. Scan a 10 inch x15 inch design and learn to stitch making a single image

7. Design a logo for your production unit with written words also

RECOMMENDED BOOKS

1. CAD in clothing and textiles by W.Aldrich
2. A magazine on Computer in the world of textiles
3. NedGraphics
4. Coral draw and Adobe Photoshop
5. Wacom Digitiser

5.4 TEXTILE TESTING AND QUALITY CONTROL - I

L	T	P	Cr
4	-	4	6

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. Concept of ISO (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 wrap reel
4.	Measurement of yarn number from large and small yarn lengths. Beesley's and Knowle's balance. (10 hrs)	Measurement of yarn number from large and small length samples - use of Knowle's and Beesley's balances Direct weighing methods and Analytical balance
5.	Yarn twist and its measurement, direction of twists. 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:	Use of laundrometer for

	Test of colour fastness for (a) Washing (b) Rubbing (Wet & Dry) (c) Dry cleaning (d) Perspiration (Alkaline & Acidic medium) (e) Light (f) Chlorination. (10 hrs)	wash fastness testing Crockmeter for testing of rubbing fastness Demonstration of Grey scale & Blue scale.
7.	Fibre Identification (2 hrs)	- Microscopic test - Burning test - Solubility test
8.	Weight per sq. meters or per sq. yards (2 hrs)	Quadrant balance a) For woven fabric (Temple arerectalar) b) For knitted fabric (Round cutter)
9.	Blend test by (Microscopic, burning and chemical processes). (6 hrs)	Blend test by use of Microscope and solubility process.
10.	Air permeability test (2 hrs)	Use of air permeability tester

Note: 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 Hambey
3. Textile Testing by Angapan
4. Textile Testing by John H.Skinkle

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	8	12
2	6	10
3	8	12
4	10	18

5	10	18
6	10	18
7	2	2
8	2	2
9	6	10
10	2	2
Total	**64**	**100**

5.5 TEXTILE FINISHING

L	T	P	Cr
3	-	-	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. Textural finishes, their types and techniques (2 hrs.)

5. Mechanical finishes and its applications (12 hrs.)

    - Sanforizing
    - Calendering
    - Crabbing and Milling
    - Anti-felting
    - Softening
    - Decatising/blowing
    - Paper pressing

6. Chemical Finishes (14 hrs.)

    - Water proof and water repellent finishes
    - Flame retardant finishes
    - Soil release and soil repellent finishes
    - Antibacterial & moth proofing finishes
    - Crease/wrinkle resistant finishes

7. Assessment of Quality of Finished Textiles (6

hrs.)

8. Effluents and its treatments (6 hrs.)

9. 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, Vol. 10 by VA Shenai and NM Sharaf,, Sevak Publication, Mumbai
2. Textile Finishing by JT Marsh, BI Publications, New Delhi
3. Effluents by ATIRA
4. Textile Fiber to Fabric by Bernard P. Corbman, McGraw Hill International Editions
5. Textile Finishing by Hall, AJ, Haywood Books, London
6. Basic Water Treatment by Smethwurst G, IBT Publications, New Delhi
7. Treatment of Textile Processing Effluent by Manivasaram N, Sakthi Publications, Coimbatore
8. Production of Synthetic Fibres by Vaidya AA, Prentice Hall India Ltd., New Delhi
9. Textile Auxiliaries and Finishing Chemicals by AA Vaidya and SS Trivedi, ATIRA, Ahmedabad

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	2	4
2	2	4
3	2	4
4	2	4

5	12	26
6	14	30
7	6	12
8	6	12
9	2	4
Total	**48**	**100**

5.6 MANAGEMENT AND TEXTILE COSTING

L	T	P	Cr
3	-	-	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. Introduction to Management, different functions of management: planning, organizing, coordination and control (3 hrs)

2. Management Structure of an industrial organization with relation to textile industry (2 hrs)

3. Introduction to terms related to textile jobs (2 hrs)

4. Objectives and procedure of job evaluation (3 hrs)

5. Relations with subordinates, peers and superiors (2 hrs)

6. Factors determining motivation (3 hrs)

7. Methods for improving motivation (2 hrs)

8. Need for leadership (2 hrs)

9. Factors to be considered for accomplishing effective leadership (2 hrs)

10. Importance and necessity of industrial legislation (for small and large scale industry) (3 hrs)

11. Accident and Safety Management – Accident and safety measures, fire prevention and precaution measures
(4 hrs)

12. Sources of finances for projects (4 hrs)

13. Merchandising: Importance and different independent activities of merchandising
(4 hrs)

14. Basic concepts about different types of costs, like incremental cost, overhead cost, capital cost etc.
(6 hrs)

15. Accounting concepts and financial statements (Highlighting balance sheet and income statement presentation
(6 hrs)

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

SUGGESTED DISTRIBUTION OF MARKS

Topic No.	Time Allotted (Hrs)	Marks Allotted (%)
1	3	6
2	2	4
3	2	4
4	3	6
5	2	4
6	3	6
7	2	4
8	2	4
9	2	4
10	3	6
11	4	8
12	4	9

13	4	9
14	6	13
15	6	13
Total	**48**	**100**