

Faculty of Engineering & Technology

P.K. University

Shivpuri (MP)



Department Of Textile Technology

**Evaluation Scheme & Syllabus
for**

**Diploma - Textile Technology
4TH Semester**

(Effective from session 2025-26)

Diploma - Textile Technology

Study And Evaluation Scheme For Diploma in Textile Technology

YEAR -2ND /SEMESTER -4TH

SUBJECT CODE	SUBJECTS NAME	STUDY SCHEME Periods/ Week			Credits	Marks In Evaluation Scheme						Total Marks of Internal & External
						INTERNAL ASSESSMENT			EXTERNAL ASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
DINDUTT401	Industrial Safety	4	0	0	4	30	-	30	70	-	70	100
DTEXTTT402	Textile Testing	4	0	0	4	30	-	30	70	-	70	100
DPRINTT403	Principles of Design And Colour	4	0	0	4	30	-	30	70	-	70	100
DINTRTT404	Introduction To Knitting and Garment Technology	4	0	0	4	30	-	30	70	-	70	100
DTEXTTT405	Textile Testing Lab	0	0	2	1	-	25	25	-	25	25	50
DINTRTT406	Introduction To Knitting and Garment Technology Lab	0	0	2	1	-	25	25	-	25	25	50
DINTRTT407	Introduction To Computer Lab	0	0	4	2	-	25	25	-	25	25	50
Total		16	0	8	20	120	75	195	280	75	355	550

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L	T	P
4	0	0

DINDUTT401: INDUSTRIAL SAFETY

1. INTRODUCTION: Need for Industrial Safety - Legal Humanitarian, Economic and Social consideration. Safe working conditions and productivity, Unsafe conditions and Hazards. Cost of accidents- Direct or Indirect social cost, financial cost. Role of management and workers participation in Industrial Safety. Safety management principles and practices.

2. PRINCIPLES OF ACCIDENT PREVENTION: Definitions - Accident, Injury, Dangerous occurrences, Unsafe acts, Unsafe conditions and hazards. Theories of accidents prevention, Principles and methods of accidents preventions.

3. SAFETY ENGINEERING: Safe guarding of machines- Statutory provisions related to safe guarding of machinery and working near unguarded machines. Principle of machine guarding. Ergonomics of machine guarding. Types of guards and guarding machines in textile industry. Incidental safety devices. Accidents and hazards. Guarding of machines and safety precautions in Opening, Cleaning, Carding, Drawing, Combing, Fly frame, Ring frames, Rotors (spinning), Winding, Doubling, Warping, Sizing and Weaving operations.

Material Handling: Ergonomics of material handling, Principles of correct method of lifting objects of different size, shape and weight with safe use of accessories for manual handling.

Safety aspects of design and construction and use of material handling machinery use in textile industry- Lifts, Forks, Motor Trolleys, Over head cranes and Chain Pulles. Principle of good illumination at work place and its recommended minimum standard. Lighting and Colour.

Danger From Electricity: Safe limits of amperage and voltages. Means for cutting over loads and short circuit protection. earth fault protection. Protection of joints and conductors. Fire explosion, Common cause for industrial fire detection and alarm. Knowledge of water system, Carbon Dioxide System, Foam Extinguishers system and Dry Chemical Extinguishing Systems for extinguishing fire, Sprinklers.

4. SAFETY PRECAUTION IN CHEMICAL PROCESSES: Bleaching, Dyeing, Printing, Finishing and Accidental hazards. Chemical hazards in wet processing. Effluent in textile processing. Health and Welfare: Health hazards in Textile industry. Dust and Fly. Noise generated and control measures. Occupational hazards, Occupational diseases. Personal production equipment. Health and welfare measures e.g First Aid Facilities and other welfare measures Hospital, Clinics. Special precautions for specific work environment.

5. SAFETY STATUTES: Employees welfare and legislation. Indian Boiler Act and Regulation. The Water (Control of Pollution) Act and Rules. The Air (Pollution) Act and Rules.

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DTEXTTT402:TEXTILE TESTING

1 SAMPLING AND QUALITY CONTROL: Definition of sample, sample size, sampling Technique, Introduction to quality control, Accuracy of measurement, presentation and analysis of data, SQC charts analysis of defects, difference between average and correlation. Standard deviation and coefficient of variation.

2. IMPORTANCE OF TEXTILE TESTING: Introduction to textile testing, properties of fibres, yarns and fabrics and their relevance in assessing the performance, of textiles during and after manufacture.

3. FIBRE DIMENSIONS:

- i. Fibre Length Measurement - Use of Baer sorter, Fibro graph, Uster-stapler, their principles of operation.
- ii. Fibre Fineness Measurement - By cutting and weighing method, Sheffield micronair, Aerlometer, Maturity of cotton by caustic soda method and by airflow methods.
- iii. Role of Humidity - Absolute Humidity, Relative Humidity, moisture Regain, Moisture content.
- iv. Introduction to H.V.I. (High Volume Instruments)

4. YARN DIMENSIONS:

- i. Measurement of yarn twist by Rock bank twist tester, continuous twist tester and by twist and untwist methods.
- ii. Measurement of yarn diameter by microscope.

5. FABRIC DIMENSIONS:

- i. Measurement of fabric thickness. Measurement of crimp by crimp tester.
- ii. Air permeability of fabrics, its measurement by air permeability tester.
- iii. Crease recovery of fabrics, factors effecting crease recovery, measurements of crease recovery by crease recovery tester.
- iv. Water repellancy tests.
- v. Abrasion resistance test on fabric by Mortindale, Abrasion Tester.

6. TENSILE TESTING OF TEXTILES:

- i. Fibre strength testing by Pressely strength tester, stelometer.
- ii. Yarn strength testing, types of testing machines, single yarn strength testing and Lea strength testing.
- iii. Fabric strength testing by cut strip, grab strip and revealed strip methods.
- iv. Fabric tear testing by tongue tear, trapezoid tear test.
- v. Bursting strength testing by hydraulic strength tester.

7. EVENNESS TESTING

- i. Nature of irregularities - short term, medium term and long term variations, periodic and non periodic irregularities.
- ii. Evenness testing by uster evenness tester and fielden and walker evenness tester.
- iii. Classmate faults and class faults.

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DPRINTT403: PRINCIPLES OF DESIGN AND COLOUR

1. Drawing, tracing, enlarging reducing and transferring of simple and elaborate figures.
2. Sketching of flowers, buds, leaves, geometrical figures and their assembly to obtain an all over effect in fabric.
3. Preparation of sketches for stripped, check, spotted geometric and diaper patterns, suitable for fabrics.
4. Light and pigment theory of colours.
5. Complementary colours, the chromatic circle.
6. Pigment theory of colour. Classification of colours and attributes of the primary and secondary colours. Modification of colors.
7. Colours in combination, general principles of colour contrast, colour harmony, tints, shades and broken hues.
8. Application of colour and weave effect.
9. Development of textile patterns on different basis such as drop, turn over, drop reverse etc. Unit and repeat compared.
10. Transfer of design of motives on graph paper and pilling of weaves according to structure/texture.

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**DINTRTT404: INTRODUCTION TO KNITTING AND GARMENT
TECHNOLOGY**

- 1. KNITTING :** Introduction and general terms of knitting, Difference in woven and knitted fabrics, properties-knit V/s woven. Warp and weft knitting-mechanism and comparison.
- 2. LOOP FORMATION WITH NEEDLE :** Running position, clearing position, Feeding position, Knocking over positions, Knitting position.
- 3. KNITTING NEEDLES :** Beard, Latch, Compound type of knitting needles, Advantages and disadvantages of beard and latch type.
- 4. STITCHES :**Knit, tuck and floats and its comparison.
- 5. TYPES OF LOOPS :**Types of loops, Classification of weft knitted fabrics - single knit (single jersey), Double knit (double jersey), Factors responsible for production is weft knitting machine.
- 6. GARMENT CLASSIFICATION :** Garment classification for men and women. Fabric selection for garment and properties. Measurement and its importance, Methods of taking important body measurements for gents and ladies garments.
- 7. PATTERNING AND GRADING :** Patterning, importance of paper patterns, Types of patterns, Study of pattern drafting, Identification of fitting problems and its remedy.
8. Types of sleeves, collars, pockets, etc.
- 9. SPREADING, CUTTING AND SORTING :** Objectives of spreading, Methods of spreading, cutting and sorting.
- 10. SEWING TECHNOLOGY :** Classification of stitch, Types of seams sewing tools and part of sewing machine.
11. Stitching defects & their remedies.

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DTEXTTT405: TEXTILE TESTING LAB

L	T	P
0	0	2

LIST OF EXPERIMENT

1. To find the count of yarn
 - (i) by physical balance
 - (ii) by yarn quadrants balance.
 - (iii) by Bessley yarn balance. and to calculate Coefficient of variation (CV).
2. To calculate yarn count by wrap reel and to calculate C.V..
3. Determine the twist of yarn per inch/per meter in double yarn and its individual components by continuous twist tester and twist and untwist tester.
4. Find out the hank of sliver and roving with the aid of wrap block machine.
5. Find the staple length of fibre by Bare Sorter.
6. Measure fibre fineness by flowing air through a sample of fibre by micronaire.
7. Find out fibre length by analytical digital fibre graph.
8. Find out lea strength of cotton yarn by lea strength tester (Power driven) and CSP.
9. Find the breaking strength of cotton yarn by Ballistic strength testing machine.
10. To find the breaking strength and elongation of single thread of cotton by single thread testing machine (Hand or power driven).
11. Examine the bursting strength of a fabric by bursting strength tester.
12. Find out the relative abrasion properties of fabrics by Martindale abrasion tester.
13. Find the breaking strength of different textile fabrics by means of cloth strength tester (power driven).
14. Measure crimp by Shirley crimp meter.
15. Find out air permeability of fabric by air permeability tester.
16. Measure crease recovery of fabric by crease recovery tester.
17. Find out fibre strength by stelo-meter.
18. Test of pilling of fabrics by computerized pilling tester.
19. Estimation of final pH value of finished fabric.
20. Test evenness of the yarn by evenness tester,

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**DINTRTT-404 INTRODUCTION TO KNITTING AND GARMENT
TECHNOLOGY LAB**

LIST OF PRACTICALS

1. Standard measurement for children.
2. Bodies block for
 - i. 3 Years child
 - ii. Grown up woman
 - iii. Grown up man
3. Application of the principle and technique of pattern making for design and construction of -
 - i. Blouse
 - ii. Ladies suit
 - iii. Gents shirts
 - iv. Pant.
4. Drafting of different types of sleeves and collars.
5. Study of construction and working of knitting machine.

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L	T	P
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DINTRTT407: INTRODUCTION TO COMPUTER LAB

LIST OF PRACTICAL'S

1. Practice on utility commands in DOS.
2. Composing, Correcting, Formatting and Article (Letter/Essay/ Report) on Word Processing tool Word and taking its print out.
3. Creating, editing, modifying tables in Database tool.
4. Creating labels, report, generation of simple forms in Database tool.
5. Creating simple spread sheet, using in built functions in Worksheet tool..
6. Creating simple presentation.
7. Creating mail ID, Checking mail box, sending/replying emails.
8. Surfing web sites, using search engines.