Faculty of Engineering & Technology

P.K. University

Shivpuri (MP)

Department Of Textile Technology

Evaluation Scheme & Syllabus
for

Diploma – Textile Technology
3RD Semester

(Effective from session 2025-26)

Diploma - Textile Technology

Study And Evaluation Scheme For Diploma in Textile Technology

SEMESTER-III

SUBJECTCODE	SUBJECTSNAME	STUDY SCHEME Periods/Week			Credits	MARKSINEVALUATIONSCHEME						Total Marks of Internal & External
						INTERNAL ASSESSMENT			EXTERNA LASSESSMENT			
		L	T	P		Th	Pr	Tot	Th	Pr	Tot	
DFABRTT301	Fabric Structure & Analysis	3	1	0	4	30	-	30	70	-	70	100
DELECTT302	Electrical Technology Electronics	3	1	0	4	30	-	30	70	-	70	100
DSPINTT303	Spinning Preparation	3	1	0	4	30	-	30	70	-	70	100
DWEAVTT304	Weaving Preparation	3	0	0	3	30	-	30	70	-	70	100
DELECTT305	Electrical Technology & Electronics Lab	0	0	2	1	-	25	25	-	25	25	50
DSPINTT306	Spinning Preparation Lab	0	0	2	1	-	25	25	-	25	25	50
DWEAVTT307	Weaving Preparation Lab	0	0	2	1	-	25	25	-	25	25	50
Total		12	3	6	18	120	75	195	280	75	355	550

Department Of Textile Technology
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
II Year III Semester

L	T	P
3	1	0

DFABRTT301: FABRIC STRUCTURE & ANALYSIS

1. INTRODUCTION: Introduction to fabric structure. Explanation of woven structure and other fabric structures. e.g. Knitted, Nonwoven, Bonded etc.

i. Definition of Warp and Weft, Ends and Picks. Determination of warp and wept in a given fabric. Design, Repeat of a design, Draft, Lifting or Peg plan and Denting order.

ii. Types of drafts used in the manufacture of the fabrics.

iii. Construction of plain weaves on point or graph paper. Relation of draft, design andpeg plan.

iv. Construction of plain weave and its derivates in the form of simple Matt or Hopsack and Ribbed Structures.

v. Various Hopsack or Matt weave designs with warp face, weft face and reversible effects.

vi. Ornamentation of plain fabrics by different methods.

2. TWILL WEAVES:

Construction of Twill weaves and their classification under the following heads.

i. Continuous regular twills.

ii. Pointed twills.

iii. Combined twills.

iv. Rearranged twills.

v. Broken twills.

vi. Fancy twills.

3. ANALYSIS OF FABRICS:

i. Analysis of a fabric and its objects. Confirmation of warp and weft and determination of weaving particulars from the given sample of a fabric.

ii. Procedure for transferring the interlacement of ENDS and PICKS on graph paper for obtaining the design of the given sample of the fabric.

4. SATIN WEAVE: Characteristics and uses of satin and sateen weaves. Construction of regular and irregular satin and satean.

5. DESIGN: Construction of the following design on point paper along with their draft, peg plan, denting order and weaving particulars.

i. Diamond and Diaper weaves on pointed draft.

ii. CREPE weaves by different methods and their characteristics.

iii. Simple Honeycomb, Brighton Honeycomb, Huck-a back, weaves.

iv. Mockleno weaves.

6. FABRICS : Calculation of fabric weight (GSM).

7. Miscellaneous :Weaves Design of following weaves only.

i. Sponge weaves

ii. Devon huck

iii. Barley Corn

iv. Stitched hop-sack

v. Twilled hop-sack

Department Of Textile Technology
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
II Year III Semester

L	T	P
3	1	0

DELECTT302: ELECTRICAL TECHNOLOGY & ELECTRONICS

1. ELECTRIC INDUCTION: Faraday's Laws of electromagnetic induction. Self and mutual induction. Statically and Dynamically induced e.m.f., Lenz's ,law. Fleming's left hand and right hand rule.

2. A. C. THEORY: Production of alternating e.m.f. Definition of cycle, Frequency, Amplitude, Time period, Instantneous, Average, R.M.S. maximum values of sinosoidal wave. Form factor, peak factor. Representation of a sinosoidal quantity by a mathematical expression and phasor, phase and phase difference, Relationship of voltage and current for pure resistance, pure inductance and pure capacitive reactance,impedance. Solution and phasor diagrams of simple R.L.C. series and parallel circuits. Active and reactive power. Significance of P.F.

3. THREE PHASE CIRCUITS: Production of Three phase voltage, advantages of three phase supply. Concept of star and delta connections. Relationship between phase and line values of currents and voltages, Power in three phase circuits, simple numerical problems.

4. MEASUREMENT & MEASURING INSTRUMENTS:

(i) Primary and secondary instruments-Indicating, Recording and Integrated instruments.
(ii) Working principle and construction of the following instruments.
(a) Ammeter & Voltmeter (Moving coil & Moving Iron). Extension of their ranges.
(b) Dynamometer type wattmeter.
(c) Single Phase A. C. Engery Meter.
(iii) Measurement of power in a single phase and three phase circuits by wattmeter, Use of digital multi-meter for measurement of voltage, Current and testing of devices.

5. ELECTRONICS: Basic idea of semi conductors P & N type. Semi conductor diodes, Zener diodes and their applications in rectifiers. Transistors-PNP and NPN-their characteristics and uses at an amplifier (Brief description only). Prniciple characteristics and application of SCR. Devices like UJT, FET, DIAC, TRIAC (Brief introduction, Introduction to operational amplifier, Introduction to basic logic gates and microprocessors.

6. D. C. MACHINES:D. C. Generator: Working principle, Constructional details, e.m.f. equation, Types of generators and their applications. D. C. Motor: Working principle, Back e.m.f., Types of D. C. motor and elementary idea of their characteristics. Torque equation, Methods of speed control (Description Only).

7. TRANSFORMERS: Working principle and constructional details of a single phase and 3 phase transformers, e.m.f. equation, Losses and efficiency, Cooling of transformers, Elementry idea of auto transformers and welding transformers.

8. SYNCHRONOUS MACHINES:

(a) Alternators: Working principle, Types of alternators, Constructional details, E.M.F. equation, Condition for parallel operation.

(b) Synchronous Motors: Working principle, Constructional details, Vector diagram, Effect of excitation on armature current and power factor, Synchronous condenser.

9. INDUCTION MOTORS:

(a) Three Phase Induction Motors: Working principle and constructional details-Types of induction motors-Slipring and Squirrel cage. Slip in induction motors. Speed torque characteristic, Starting and speed control. Application of induction motors in industry. General faults and their remedies.

(b) Single Phase Induction Motors:M Working principle and constructional details and application of single phase motors (Split phase, Capacitor start and Run Motor). A. C. series motors, General faults and their remedies.

10. ELECTRO HEATING: Types of electro heating. Brief description of resistance ovens and induction furnace and core furnaces.

11. ELECTROPLATING: Importance of electroplating, Principle of electroplating and equipment used. Processes used in electroplating, Anodizing.

Department Of Textile Technology
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
II Year III Semester

DSPINTT303: SPINNING PREPARATION

L	T	P
3	1	0

1. Introduction to various processes involve in conversion of fiber into yearn with objective.

2. GINNING AND BALING:

i. Ginning, objects of ginning.
ii. Classification of ginning machines.
iii. Description and working of knife roller gins e.g.
Single roller gin, Double roller gin.
iv. Description and working of Macarthy gins e.g. Single
macarthy gin, Double Macarthy gin.
v. Description and working of saw gins e.g Single saw gin,Double saw gin and Improved saw gin.
vi. Defects in ginning and their removal.
vii. Suitability of ginning machines for Indian, Americanand Egyptian type of cottons.
viii.Pressing and baling and its importance.

3. PRELIMINARY OPERATIONS:

i. Mixing and its importance, method of mixing. Advantages and disadvantages.
ii. Description and working of auto mixer and other modern blenders.

4. OPENING AND CLEANING:

i. Blow Room: Objects of Blow room . Improtance of opening and cleaning. Trash content, opening by nails, air currents and beaters.
ii. Study of opening and cleaning machines e.g. Blending bale opener, hopper feeders, Porcupine opener, Stepcleaner, S.R.R.L. opener, shirley opener, Whit in axiflow machine, Air stream cleaner, Two bladed beater, Three bladed beater and Kirschner beater. Nature of waste extracted in various openers and beaters E. R. M. cleaner and Monocylinder beaters.
iii. Construction & Working of Bale Plucker.

5. AUXILIARY EQUIPMENT: Use and working of cleaning trunks, Metal separators, Grid bars and leaf bar, Air filters, Condensors, Screens or Cages, Automatic distributors, Conveyors.

6. PREPARATION OF LAP:

i. Lap forming mechanism, Object and mechanism of CalenderRoller and their weightings.
ii. Objects of picking. single process and scutchers. Selection of machinery according to type of fibre and their suitable combinations. Production and efficiency level obtainable from different blow room machineries under normal mill conditions. Lap rejection. Introduction of modern Blow Room lines like Rieter & Trutszchler.
iii. Feed regulating motions used in scutcher and their importance with special reference to P.I.V. gears.
iv. Lap measuring and doffing devices in scutcher.

7. BLOW ROOM:-

(i) Calculation of production of scutchers and other machines and efficiency.
(ii) Calculation of lap length and measureing motions.
(iii) Draft calculations, draft constant, mechanical and actual draft.

8. CARDING:

i. Objects of carding, passage of material through the card, cards parts and their functions e.g. Feeding system Licker-in, moteknives, Back plate front plate, Cylinder, Flats, Doffer, Under casing etc.
ii. Theory of carding actions in a revolving flat card.
iii. Drive of card parts.

9. CARD CLOTHING:

i. Flexible and metallic card clothing.
ii. Method of mounting the card with flexible and metallic card clothing.

10. MAINTENENCE:

i. Card grinding, its objects, Grinding medium, Grinding instruments, Card grinding routine, Flat grinding.
ii. Card stripping, its objects, effects of stripping stripping equipment's e.g. Plain stripping roll and vacuum stripper.
iii. DEVELOPMENTS IN CARDING Special features of high production carding machines. Tandem cards with chute feed system. Calculations based on efficiency, draft & production in carding.

11. CARDING CALCULATIONS:-

(i) Calculation of speeds, drafts and productions of card and drawing machines.
(ii) Calculation of speeds with respect to various motions of machines.
(iii) Calculations of production, efficiency, draft and waste percentage.

Department Of Textile Technology
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
II Year III Semester

L	T	P
4	0	0

DWEAVTT304 WEAVING PREPARATION

I. WINDING:

1. Types of packages.
2. Slow speed upright spindle winding machine. (Brief idea)
3. Traversing mechanisms (Rotary, Reciprocating, Multipede)
4. Uses and limitations of slow speed winding machines and essentials of high speed winding machines.
5. High speed and super high speed warp winding machines- Cone winder or rotoconer, Schlaphorst and Auto Coner, B-C spooler
6. Study of various types of slub catchers, traversing devices, tensioning devices, ribbon formation and methods of eliminating them. Full package stop motions. Commonly occurring faults in warp winding, their causes and remedies.
7. Norms for slub catcher setting and tension levels.
8. Different types of high speed pirn winding machines with special reference to Leesona pirn winder.
9. Different types of automatic pirn winding machines with special reference to a modern pirn winder.
10. Bunch building mechanisms.
11. Commonly occurring faults in pirn winding, their causes and remedies.

II. WARPING :

1. Introduction to various ways of warping.
2. Types of creel.
3. Sectional warping machine.
4. Slow speed and high speed beam warping machines.
5. Stop motions. measuring motions and tensioning devices.
6. Commonly occurring faults in warping and their causes and remedies.

III. SIZING:

7. Object of warp sizing.
8. Introduction to various methods of sizing.
9. Study of slasher sizing machine- Warp sheet passage.
10. Detailed study of sizing machine, measuring and marking motion, beam creels, brake guide and tension rollers, sizing and squeezing rollers, drying cylinders, steam trap, sow box construction, leasing rods, adjustable comb, drive, beam pressing motion, slipping friction motion, change wheel drive.
11. Improvements made in the improved type of slashers with conventional cylinders.
12. Multi-cylinders and hot air sizing machines with special reference to drying unit, passage of warp on the machine.
13. Various kinds of sizing ingredients used for cotton, polyster, viscose and their blends.
14. Preparation of size paste for light medium and heavy size Mfor cotton and man-made fibres blends, Lapping and Migration.
15. Manual and mechanical methods of drawing, and knotting, twisting of warp.

Department Of Textile Technology
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
II Year III Semester

L	T	P
0	0	2

DELECTT305: ELECTRICAL TECHNOLOGY & ELECTRONICS LAB

LIST OF PRACTICALS-:

1. To change the speed and direction of rotation of d.c. shunt motor by
   (a) Armature control method.
   (b) Field control method.
2. To change the speed and direction of rotation of d.c. compound motor by
   (a) Armature control method.
   (b) Field control method.
3. To measure the terminal voltage with variation of loadcurrent of
   (a) D.C. shunt generator.
   (b) D.C. compound generator.
4. To perform load test on a single phase transformer and determine its efficiency.
5. To start and run a induction motor by
   (a) Star Delta Starter.
   (b) Auto Transformer Starter.
6. To measure slip of an induction motor by direct loading.
7. To start and change the direction of rotation of an induction motor.
8. To measure transformation ratio of a single phase transformer.
9. To measure power and P.F. in a single phase circuit by Ammeter, Voltmeter and Wattmeter.
10. To measure power and P.F. in a 3 phase/A.C. circuit by two wattmeter method.
11. To calibrate a single phase energy meter at different P.F.'s and different loads.
12. To locate the faults in an electrical machine by a megger.
13. To connect a fluorescent tube and note its starting and running current.
14. To draw characteristics of Silicon Controled Rectifier (SCR).
15. Testing of electrical devices - Zenor, Diode, Transistor, FET, UJT, SCR.
16. Use of operational amplifier as adder, subs tractor, comparator, differentiator and integrators.

Department Of Textile Technology

(Faculty of Engineering & Technology)

P.K. University, Shivpuri (MP)

II Year III Semester

L	T	P
0	0	2

DSPINTT306:SPINNING PREPARATION LAB

LIST OF EXPERIMENTS

1. Operation, Setting and Gauging of blending bale opener(hopper feeder) and To measure the dimension of various important parts of the machine.
2. To calculate the speed of different moving parts of blending bale opener (hopper feeder).
3. Operate and gauge the porcupine opener, step cleaner and other opening machines available in the workshop and also calculate speeds of different moving parts.
4. Operation, setting and maintenance of Kirschner beater and to calculate number of beats per inch of feed material.
5. Adjustments of the weight per yard of the lap and its length.
6. Cleaning maintenance of the feed regulating motion in scutcher.
7. Operate the card machine and produce sliver and to practice piecing lap and sliver.
8. To set and gauge different part of card machine.
9. Calculate the speeds of cylinder, flats, doffer and licker-in and other moving parts of card machine.
10. To calculate all tension drafts, all intermediate drafts, total drafts and draft constants of a card machine.
11. To calculate number of laps consumed per shift of eight hours.

Department Of Textile Technology
(Faculty of Engineering & Technology)
P.K. University, Shivpuri (MP)
II Year III Semester

L	T	P
0	0	2

DWEAVTT307: WEAVING PREPARATION LAB

LIST OF EXPERIMENTS

1. Practice in preparing cones, cheeses and pirns from hanks orring bobbins.
2. Practice in creeling and preparation of warp on sectional/mill warping machine of required number of ends and width.
3. Practice in creeling and preparation of warpers beam on Slow, Speed warping machine of required warp plan.
4. Practice in creeling and preparation of warpers beam on High Speed warping machine of required warp plan.
5. Practice in operating sizing machine (if working model of sizing plant available).
6. Practice of size paste preparation in laboratory.
7. Practice of making weaver's knot in laboratory.
8. Practice in drafting and denting for different design draft.
9. Study and sketch the important parts of pirn winding machine.
10. Study and sketch the important parts of warp winding machine.
11. Study and sketch the important of sectional warping machine.