

C-18 - Curriculum
Diploma in Textile Technology



State Board of Technical Education & Training
Telangana, Hyderabad

IV Semester

TEACHING AND EXAMINATION SCHEME

[illegible]

ADVANCED ENGINEERING MATHEMATICS

Course Title	: Advanced Engineering Mathematics	Course Code	: 18TT-401F
Semester	: IV	Course Group	: Foundation
Teaching Scheme	: 45 : 15 : 0	Credits	: 3
in periods (L : T :P)			
Methodology	: Lecture + Tutorial	Total Contact	: 60
CIE	: 60 Marks	SEE	: 40 Marks

Pre requisites

This course requires the knowledge of Engg. Mathematics at Diploma first year level and Applied Engg. Mathematics at Diploma 3rd Semester level.

Course Outcomes :

At the end of the course, the student will have the ability to:

CO 1	Solve simple Homogeneous Linear Differential Equations
CO 2	Solve simple Non-Homogeneous Linear Differential Equations
CO 3	Express $f(x)$ as a Fourier series in the given interval
CO 4	Express $f(x)$ as a Fourier Half-Range Cosine series and Sine series
CO 5	Find Laplace transforms of simple functions
CO 6	Find Inverse Laplace transforms of simple functions and solve Linear Differential Equations using Laplace Transformations.

Blue Print of Marks for SEE

Unit No	Unit Name	Periods	Questions to be set for SEE				
			R		U	A	
1	Homogeneous Linear Differential equations with constant coefficients	05	Q4	Q1		Q9(a)	Q13(a)
2	Non-Homogeneous Linear Differential equations with constant coefficients	15					
3	Fourier series	10		Q2		Q10(a)	Q14(a)
4	Fourier Half-range series	05					
5	Laplace Transforms	10		Q3	Q5,Q6	Q9(b), Q11(a), Q11(b)	Q13(b), Q15(a), Q15(b)
6	Inverse Laplace transforms	15			Q7,Q8	Q10(b), Q12(a), Q12(b)	Q14(b), Q16(a), Q16(b)
Total		60	8		8	8	

Course Contents:

Unit – I

Duration: 05 Periods (L:3.0 – T:2.0)

Homogeneous Linear Differential equations with constant coefficients

Homogenous linear differential equations with constant coefficients of order two and higher with emphasis on second order.

Unit – II

Duration: 15 Periods (L:12.0 – T:3.0)

Non-Homogeneous Linear Differential equations with constant coefficients

Non-homogenous linear differential equations with constant coefficients of the form $f(D)y = X$, where X is in the form $k(a \text{ constant})$, e^{ax} , $\sin ax$, $\cos ax$, x^n , ($n= 1,2,3$) Complimentary Function (CF), Particular Integral (PI) and General Solution (GS).

Unit-III

Duration: 10 Periods (L: 8.0 – T: 2.0)

Fourier series

Orthogonality of trigonometric functions, Representation of a function in Fourier series over the interval $(c, c + 2\pi)$, Euler's formulae, sufficient conditions for existence of Fourier series for a function. Even, Odd functions and Fourier series over the Interval $(0, 2\pi)$ and $(-\pi, \pi)$

Unit – IV

Duration: 05 Periods (L: 3.0 – T: 2.0)

Fourier Half-range series

Representation of a function as Fourier Half-range Sine series and Cosine series over the interval $(0, \pi)$

Unit – V

Duration: 10Periods (L: 7.0 – T:3.0)

Laplace Transformations:

Definition, sufficient conditions for existence of Laplace Transform, Laplace Transform of elementary functions, linearity property, Change of scale property, First shifting theorem, multiplication by t^n , division by t , Laplace Transform of derivatives and integrals, unit step function, Laplace Transform of second shifting theorem

Unit – VI

Duration: 15 Periods (L: 12.0 – T: 3.0)

Inverse Laplace transforms:

Inverse Laplace transforms- shifting theorems and change of scale property, multiplication by s^n and division by s –Inverse Laplace Transform using partial fractions – convolution theorem (no proof) – application of Laplace Transformations to solve ordinary differential equations of second order with initial conditions.

Recommended Books:

1. Higher Engineering Mathematics, B.S.Grewal .
2. Laplace Transforms - Murray R. Spigel .
3. Ordinary Differential Equations – R. S. Aggarwal.
4. Fourier Series – A.R. Vasishtha and Gupta.

Suggested E-Learning references:

1. www.freebookcentre.net/mathematics/introductory-mathematics-books.html
2. E-books:www.mathebook.net

Suggested Learning Outcomes

Unit-I

1.0 Solve Homogeneous linear differential equations with constant coefficients in engineering situations

- 1.1 Solve Differential equations of the type $(aD^2 + bD + c)y = 0$ when the roots of the auxiliary equation are real and different, real and repeated, complex.
- 1.2 Solve the higher order homogeneous Linear differential equations with constant coefficients.

Unit-II

- 2.0 **Solve Non Homogeneous linear differential equations with constant coefficients in engineering situations**
- 2.1 Explain the concept of complementary function, particular Integral and general solution of a differential equation.
- 2.2 Solve n^{th} order differential equation of the type $f(D)y = X$ where $f(D)$ is a polynomial of second order and X is a function of the form $k, e^{ax}, \sin ax, \cos ax, x^n$.
- 2.3 Solve simple problems on the above types of 2.2

Unit-III

- 3.0 **Understand the Fourier series expansion of functions**
- 3.1 Define the orthogonality of functions in an interval.
- 3.2 Define Fourier series of a function on the interval $(C, C+2\pi)$ and write the Euler's formulae for determining the Fourier coefficients.
- 3.3 Write sufficient conditions for the existence of Fourier series for a function.
- 3.4 Write Fourier series of simple functions in the range $(0, 2\pi)$ and $(-\pi, \pi)$.
- 3.5 Write Fourier series for even and odd functions in the interval $(-\pi, \pi)$
- 3.6 Solve simple problems on even and odd functions in the interval. $(0, 2\pi)$ and $(-\pi, \pi)$

Unit- I

- 4.0 **Understand the Half – Range Fourier series expansion of functions**
- 4.1 Write Half – Range Cosine series of a function in the range $(0, \pi)$.
- 4.2 Write Half – Range Sine series of a function in the range $(0, \pi)$.
- 4.3 Solve simple problems on Half – Range Cosine and Sine series over the interval $(0, \pi)$

Unit-V

- 5.0 **Understand Laplace transforms**
- 5.1 Write the definition of Laplace Transform and Laplace transform of standard functions.
- 5.2 Explain the sufficient conditions of existence of Laplace Transform.
- 5.3 Write the properties of Laplace Transform – Linearity property, First shifting theorem, Change of Scale property.
- 5.4 Solve simple problems using the above properties.

- 5.5 Write formulae for Laplace transform of $t^n f(t), \frac{f(t)}{t}, f^n(t), \int_0^t f(u) du$ in terms of Laplace transform of $f(t)$
- 5.6 Solve simple problems using the above formulae.
- 5.7 Define unit step function and write the Laplace Transform of unit step function.
- 5.8 Write Second shifting theorem.

Unit-VI

6.0 Use Laplace transforms and Inverse Laplace transforms to solve differential equation in engineering problems

- 6.1 Define inverse Laplace Transform and write inverse Laplace Transforms of standard functions.
- 6.2 Solve simple problems on Inverse Laplace Transforms.
- 6.2 Write Shifting theorems and Change of scale property of inverse Laplace Transform.
- 6.3 Solve simple problems on 6.2
- 6.4 Write inverse Laplace Transforms corresponding to Laplace Transform of the functions $t^n f(t), \frac{f(t)}{t}, f^n(t), \int_0^t f(u) du$
- 6.5 Solve simple problems on 6.4
- 6.6 Define convolution of two functions and state convolution theorem.
- 6.7 Solve simple problems on Convolution theorem.
- 6.8 Use Laplace and inverse Laplace Transforms to solve simple differential equations of Second order.

Suggested Student Activities:

1. Student visits Library to refer Standard Books on Mathematics and collect related material.
2. Quiz
3. Group discussion
4. Surprise tests
5. Seminars
6. Home Assignments.

CO-PO Mapping Matrix

	Basic knowledge	Discipline Knowledge	Experiments and practice	Engineering Tools	Engineer and society	Environment & sustainability	Ethics	Individual and Team work	Communication	Lifelong learning	Linked PO
CO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	
CO1	3	2	2	1			1			3	1,2,3,4,7,10
CO2	3	2	2	1			1			3	1,2,3,4,7,10
CO3	3	2	2	1			1			3	1,2,3,4,7,10
CO4	3	2	2	1			1			3	1,2,3,4,7,10
CO5	3	2	2	1			1			3	1,2,3,4,7,10
CO6	3	2	2	1			1			3	1,2,3,4,7,10

Internal Evaluation

Test	Units	Marks
Mid Sem 1	1 and 2	20
Mid Sem 2	3 and 4	20
Slip Test 1	1 and 2	5
Slip Test 2	3 and 4	5
Assignments	-	5
Seminars	-	5
	Total	60

QUESTION PAPER PATTERN FOR MID SEMESTER EXAMS

Sl.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	4	1	Nil	4 Marks
02	Part-B	Understanding(U)	4	3	2	6 Marks
03	Part-C	Application(A)	4	5	2	10 Marks
Total Marks						20 Marks

MID SEM-I EXAM

S.No	Unit No	R	U	A	Remarks
1	Unit-I	1,2	5(a)	7(a)	
			5(b)	7(b)	
2	Unit-II	3,4	6(a)	8(a)	
			6(b)	8(b)	
Total Questions		4	4	4	

MID SEM-II EXAM

S.No	Unit No	R	U	A	Remarks
1	Unit-III	1,2	5(a)	7(a)	
			5(b)	7(b)	
2	Unit-IV	3,4	6(a)	8(a)	
			6(b)	8(b)	
Total Questions		4	4	4	

The length of answer for each question framed in respect of Part-A, B&C shall not exceed $\frac{1}{4}$ of a page, 1page and 2 pages respectively

QUESTION PAPER PATTERN FOR SEMESTER END EXAM

Sl.No	Description	Level	No of Questions	Marks for each question	Choice	Total Marks
01	Part-A	Remembering(R)	8	1	Nil	8 Marks
02	Part-B	Understanding(U)	8	3	4	12 Marks
03	Part-C	Application(A)	8	5	4	20 Marks
Total Marks						40 Marks

Unit No	Questions to be set for SEE				
	R		U		A
I	Q4	Q1		Q9(a)	Q13(a)
II					
III		Q2		Q10(a)	Q14(a)
IV					
V		Q3	Q9(b), Q11(a), Q11(b)		Q13(b), Q15(a), Q15(b)
VI			Q10(b), Q12(a), Q12(b)		Q14(b), Q16(a), Q16(b)
Total Questions		8		8	8

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA
BOARD DIPLOMA EXAMINATIONS
MID SEM –I, MODEL PAPER, IV SEMESTER
ADVANCED ENGINEERING MATHEMATICS

TIME: 1: 00 Hours

Max. Marks: 20

PART-A

Instructions: 1. Answer **ALL** questions 04 X 01 = 04
 2 Each question carries **ONE** mark

1. Write the General solution of $(aD^2+bD+c)y = 0$, whose roots of auxiliary equation are real and distinct.
2. Find the roots of auxiliary equation of the differential equation $(D^2 + 2D + 1)y = 0$
3. Find the Particular Integral of $(D^2 - 4D + 1)y = e^{3x}$
4. Find the P.I of $(D^2 - 16)y = \sin 4x$

PART-B

Instructions: 1. Answer any **TWO** questions 02 X 03 = 06
 2. Each question carries **THREE** marks

5 a) Solve: $(D^2 + 3D - 54)y = 0$

Or

5 b) Solve : $(D^2 + 16)y = 0$

6 a) Solve : $(D^2 + 4D + 4)y = e^{2x}$

Or

6 b) Find P.I of $(D^3 + D)y = \sin 2x$

PART C

Instructions: 1. Answer **ALL** questions 02 X 05 = 10
 2. Each question carries **FIVE** marks

7 a) Solve : $(D^3 - 2D^2 - 4D + 8)y = 0$

Or

7 b) Solve : $(D^3 - D^2 - D + 1)y = 0$

8 a) Solve : $(D^2 + 36)y = \sin^2 x$

Or

8 b). Solve : $(D^2 + 3D + 2)y = x^2$

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Code: 18TT-401F

STATE BOARD OF TECHNICAL EDUCATION & TRAINING, TELANGANA
BOARD DIPLOMA EXAMINATIONS
MID SEM –II, MODEL PAPER, IV SEMESTER
ADVANCED ENGINEERING MATHEMATICS

TIME: 1: 00 Hours

Max. Marks: 20

PART-

A

Instructions: 1. Answer **ALL** questions 04 X 01 = 04

2 Each question carries **ONE** mark

1. Define periodic function and give one example
2. Define Fourier series of the function $f(x)$ in the interval $(0, 2\pi)$
3. Write Half-range sine series of $f(x)$ in the interval $(0, \pi)$
4. Find a_0 for $f(x) = e^x$ in $0 < x < \pi$

PART-B

Instructions: 1. Answer any **TWO** questions 02 X 03 = 06

2. Each question carries **THREE** marks

5 a). If $f(x) = x^2$ in $(0, 2\pi)$, then find the value of a_n in Fourier series of $f(x)$

Or

5 b) If $f(x) = |x|$ in $(-\pi, \pi)$, then find the value of a_1 in Fourier series of $f(x)$

6 a). Find the value of a_n in half-range Cosine series for the function $f(x) = e^x$ in $(0, \pi)$

Or

6 b). Obtain the Fourier Half – Range Sine series for $f(x) = (\pi - x)$ in the interval $(0, \pi)$

PART C

Instructions: 1. Answer any **TWO** questions 02 X 05 = 10

2. Each question carries **FIVE** marks

a). Obtain the Fourier series for $f(x) = x$ in the interval $0 < x < 2\pi$

Or

b). Find the Fourier series for $f(x) = (x - x^2)$ in the interval $(-\pi, \pi)$. Hence show that

$$\frac{1}{1^2} - \frac{1}{2^2} + \frac{1}{3^2} - \frac{1}{4^2} + \dots + \frac{\pi^2}{12}$$

8 a) Express $f(x) = \pi x - x^2$ as a half-range Sine series in $(0, \pi)$

Or

8 b). Find the half –range cosine series for the function $f(x) = x^2$ in the interval $(0, \pi)$

BOARD DIPLOMA EXAMINATION, (C-18)
SEMESTER END EXAM MODEL PAPER
IV SEMESTER EXAMINATION
ADVANCED ENGINEERING MATHEMATICS

Time: 2 hours

[Total Marks: 40]

PART-A

Instructions:

1. Answer **ALL** questions

08 X 01 = 08

2 Each question carries **ONE** mark

1. Find the roots of auxiliary equation of the differential equation $(D^2 + 4D)y = 0$.
2. Define Fourier Series for the function $f(x)$ in the interval $(c, c+2\pi)$
3. Find the Particular Integral of $(D^2 - 4D + 1)y = e^x$
4. Find $L(e^{2t} + \cos 3t)$
5. Find $L(t + 5\cos ht)$
6. State the First Shifting theorem of Laplace Transforms.
7. Find $L^{-1}\left(\frac{1}{s-3} + \frac{s}{s^2+4}\right)$
8. Find $L^{-1}\left(\frac{1}{2s+5}\right)$

PART-B

Instructions:

1. Answer any **FOUR** questions

04 X 03 = 12

2. Each question carries **THREE** marks

9. a) Solve: $(D^2 + D + 1)y = 4e^{3x}$

Or

- 9 b) Find $L(t\cos 3t)$

- 10 a) Find Half Range Sine Series of $f(x) = x$ in $(0, \pi)$

Or

- 10 b) Find $L^{-1}\left(\frac{s+1}{s^2+6s-7}\right)$

- 11 a) If $L\{f(t)\} = \frac{20-4s}{s^2-4s+20}$, find $L\{f(3t)\}$

Or

- 11 b) Find $\int_0^\infty t \cdot e^{-2t} \sin 3t dt$ using Laplace Transform Technique

12 a) Show that $L^{-1}\left(\frac{1}{s(s^2+a^2)}\right) = \frac{1-\cos at}{a^2}$

12 b) Find $L^{-1}\left(\frac{s}{(s+2)^2+4}\right)$

PART C

Instructions: 1. Answer any **FOUR** questions

04 X 05 = 20

2. Each question carries **FIVE** marks

13. a) Solve : Solve: $(D^2 + D - 2) y = x + \sin x$

Or

13 b) Find $L[te^t \sin 3t]$

14 a) Expand $f(x) = x^2$ as a Fourier series in the interval $(-\pi, \pi)$

Or

14 b) Find $L^{-1}\left(\frac{s}{(s+1)^2(s^2+1)}\right)$

15 a) Find $L\left(\frac{\sin 3t \cdot \cos t}{t}\right)$

Or

15 b) Evaluate $L\left\{\int_0^t \frac{\sin t}{t} dt\right\}$

16 a) Find $L^{-1}\left(\frac{1}{(s+1)(s+2)}\right)$ using Convolution theorem .

Or

16 b). Solve the differential equation $y'' - 2y' - 8y = \sin t$, when $y(0) = 3$, $y'(0) = 6$ by

Laplace Transform method.

18TT- 402C, YARN MANUFACTURE

Course Title :	Yarn Manufacture	Course Code	18TT-402C
Semester	IV	Course group	Core
Teaching Scheme in Periods (L/T/P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours	60 Pds
CIE Marks	60 Marks	SEE	40 Marks

Legends: L- Lecture, T- Tutorial, P-Practical

Pre Requisites

This course require basic knowledge of textile fibres, process sequence and fundamentals of yarn manufacture

Course Outcomes

S. No	Course Outcome	Cognitive Levels	Teaching Periods
CO1	Explain the formation of yarn on a Ring spinning machine	R	12
CO2	Explain the winding process and stages of cop building on a ring frame	R	9
CO3	Explain the principle of yarn formation on a rotor spinning machine	R / U	9
CO4	Describe the yarn winding process	R / U	9
CO5	Explain different types of yarn finishing processes	U	9
CO6	Explain different methods of yarn manufacture other than ring spinning process and compare with ring spinning	U	12
	Total Periods		60

Course Contents

1. Basic parts and functions on Ring frame

Periods 12 : (L:9, T:3)

Objects / Functions of Ring frames- passage of material on a ring frame- types of creels -Drafting arrangement –drafts for different count ranges-significance of Inclination of roller drafting system - importance of traverse motion -different Fibre guiding devices by (using aprons) - features of Roller clearer & Pneumafil -Ring -different forms & materials of ring - characteristics of good ring-guidelines of Running in a new ring - Yarn guiding devices -Thread guide-Lappets-Balloon control

ring-Separators –Traveller- Functions, and different forms of travellers - different Wire profiles of the traveller - requirements of material of the traveller- influence of Traveller mass - importance of Traveller clearer - factors influencing traveller life .

2. Winding Process on Ring spinning

Periods 9 : (L:7, T:2)

Winding process of cops in the following aspects -Winding principle -The builder motion-Traversing of Ring rail -Yarn content and building cam -Variation in the speed of traveller -Effects on traveller - Insertion of twist in the yarn in the following aspects -Direction of twist -Twist multipliers-Twist levels for different count ranges -Variation in the yarn twist-Structure and winding of cop in the following aspects -Form of cop-Formation of the base-Formation of the conical layer - process of doffing - Preparation for the doff-Normal doffing -Automatic doffing - Auxiliary equipment -End breakage aspirator-Roving stop motion-Travelling cleaners-Monitoring -Automatic cop transport- motors used in practice for machine drive - Differences between variable speed drive and dual motor speed drive-salient features of modern ring frame- causes of end breakages in Ring spinning-

3. Rotor spinning

Periods 9 : (L:7, T:2)

Advantages of ring spinning- limitations of ring spinning- characteristics and properties of Ring spun yarn Principle of yarn formation in open end spinning-advantages and disadvantages of open end spinning systems- basic principle of yarn formation in rotor spinning - preparation and requirements of raw material for rotor spinning- rotor spinning process referring to opening unit, formation and - withdrawal of yarn and winding- parameters of rotor that influence the yarn quality and productivity- characteristics and properties of rotor yarn-End uses of open end spun yarns-advantages and disadvantages of rotor spun yarn. Compare the yarn characteristics of Rotor spun yarn and Ring spun yarn

4. Winding

Periods 9 : (L:7, T:2)

Objects of winding- passage of material through Autoconer - function of Balloon breaker / Unwinding accelerator-different types of yarn tensioners-different types of yarn clearers - clearing efficiency, knot factor and quality factor - principles of different Traversing methods-Define precision and non precision winding- functions of Waxing device- function of Anti patterning device - different types of Stop motions –splicing-Principles of splicing - Characteristics of spliced yarns- Advantages of splicing- different types of Bobbin cradle (cone / cheese holder)- angle of wind and winds per double traverse- open wind and close wind - conacity of package- need for foster cone / taper cone- requirements of wound package for different end uses - effect, causes and rectification of following common yarn faults- effect, causes and rectification following yarn package defects

5. Finishing

Periods 9 : (L:7, T:2)

Doubling-Objects of Doubling-passage of material through doubler winding machine - Wet doubling process - Passage of material through ring doubler- working of two for one twister.(T.F.O)- Twist direction and take up in doubled yarns- uses of doubled yarns -some typical products of doubling / varieties of doubled yarns -Reeling, Bundling and Baling - objects of Reeling- Passage of material on a Reeling machine-differences between Straight reeling and cross reeling- Methods of doffing the hanks- Methods of tying up of hanks- objects of Bundling- Bundling press (mechanical bundling)- method of Bundling weight correction - objects of Baling-Singeing or Gassing-Objects of yarn singeing - yarn gassing process-Yarn conditioning-Objects of conditioning- Yarn Conditioning Process

6. Other Systems of Yarn formation

Periods 12 : (L:9, T:3)

Principle of yarn formation in Friction spinning- Classify the friction spinning systems- process and elements of friction spinning- process of Dref-II friction spinning-general characteristics of friction spun yarns- advantages and disadvantages of friction spinning- principle of Electro static spinning- principle of Air Vortex spinning-Repco self twist spinning process -principle of yarn formation by False twist - Dref-III false twist friction spinning system- operating principle of Air Jet spinning- principles of yarn formation twist less spinning systems

Specific Learning Outcomes

1. Basic parts of Ring frame

- 1.1. Write the objects / Functions of Ring frames
- 1.2. Explain the passage of material on a ring frame.
- 1.3. Explain the types of creels
- 1.4. Drafting arrangement
 - 1.4.1. Mention the main draft and break draft for different count ranges
 - 1.4.2. State the significance of Inclination of roller drafting system
 - 1.4.3. State the importance of traverse motion
 - 1.4.4. Explain different Fibre guiding devices by (using aprons)
 - 1.4.5. Explain the features of Roller clearer &Pneumafil
- 1.5. Ring
 - 1.5.1. Explain different forms & materials of ring
 - 1.5.2. State the characteristics of good ring
 - 1.5.3. State the guidelines of Running in a new ring
- 1.6. Explain the Yarn guiding devices
 - 1.6.1. Thread guide
 - 1.6.2. Lappets
 - 1.6.3. Balloon control ring
 - 1.6.4. Separators
- 1.7. Traveller
 - 1.7.1. State the Function of traveller
 - 1.7.2. List different forms of travellers commonly used
 - 1.7.3. Mention different Wire profiles of the traveller

- 1.7.4. State the requirements of material of the traveller
- 1.7.5. State the influence of Traveller mass
- 1.7.6. State the importance of Traveller clearer
- 1.7.7. List the factors influencing traveller life

2. Winding Process on Ring spinning

- 2.1. Explain the Winding process of cops in the following aspects
 - 2.1.1. Winding principle
 - 2.1.2. The builder motion
 - 2.1.3. Traversing of Ring rail
 - 2.1.4. Yarn content and building cam
 - 2.1.5. Variation in the speed of traveller
 - 2.1.6. Effects on traveller
- 2.2. Explain the Insertion of twist in the yarn in the following aspects
 - 2.2.1. Direction of twist
 - 2.2.2. Twist multipliers
 - 2.2.3. Twist levels for different count ranges
 - 2.2.4. Variation in the yarn twist
- 2.3. Explain the Structure and winding of cop in the following aspects
 - 2.3.1. Form of cop
 - 2.3.2. Formation of the base
 - 2.3.3. Formation of the conical layer
- 2.4. Explain the process of doffing
 - 2.4.1. Preparation for the doff
 - 2.4.2. Normal doffing
 - 2.4.3. Automatic doffing
- 2.5. Explain following Auxiliary equipment
 - 2.5.1. End breakage aspirator
 - 2.5.2. Roving stop motion
 - 2.5.3. Travelling cleaners
 - 2.5.4. Monitoring
 - 2.5.5. Automatic cop transport
- 2.6. List the motors used in practice for machine drive
- 2.7. List the Differences between variable speed drive and dual motor speed drive
- 2.8. Enumerate the salient features of modern ring frame
- 2.9. Explain the causes of end breakages in Ring spinning

3. Rotor spinning

- 3.1. State the advantages of ring spinning
- 3.2. State the limitations of ring spinning
- 3.3. State the characteristics and properties of Ring spun yarn
- 3.4. State the principle of yarn formation in open end spinning
- 3.5. State the advantages and disadvantages of open end spinning systems
- 3.6. Explain the basic principle of yarn formation in rotor spinning
- 3.7. Explain the preparation and requirements of raw material for rotor spinning
- 3.8. Describe the rotor spinning process referring to opening unit, formation and withdrawal of yarn and winding
- 3.9. Explain the parameters of rotor that influence the yarn quality and productivity
- 3.10. State the characteristics and properties of rotor yarn
- 3.11. List the end uses of open end spun yarns
- 3.12. State the advantages and disadvantages of rotor spun yarn.
- 3.13. Compare the yarn characteristics of Rotor spun yarn and Ring spun yarn

4. Winding

- 4.1. Objects of winding
- 4.2. Explain the passage of material through Autoconer
- 4.3. State the function of Balloon breaker / Unwinding accelerator
- 4.4. Explain different types of yarn tensioners
- 4.5. Explain different types of yarn clearers
- 4.6. Define clearing efficiency, knot factor and quality factor
- 4.7. Explain the principles of different Traversing methods
- 4.8. Define precision and non precision winding
- 4.9. State the functions of Waxing device and anti patterning device
- 4.10. Explain different types of Stop motions
- 4.11. Define splicing
- 4.12. State the Principles of splicing
- 4.13. State the Characteristics of spliced yarns
- 4.14. List the Advantages of splicing
- 4.15. Mention different types of Bobbin cradle (cone / cheese holder)
- 4.16. Define angle of wind and winds per double traverse
- 4.17. Define open wind and close wind
- 4.18. Define conacity of package
- 4.19. State the need for foster cone / taper cone
- 4.20. State the requirements of wound package for different end uses

5. Finishing

- 5.1. Doubling
 - 5.1.1. Write the Objects of Doubling
 - 5.1.2. Explain the passage of material through doubler winding machine
 - 5.1.3. Explain the Wet doubling process
 - 5.1.4. Explain the Passage of material through ring doubler.
 - 5.1.5. Explain the working of two for one twister.(T.F.O)
 - 5.1.6. Explain Twist direction and take up in doubled yarns
 - 5.1.7. List the uses of doubled yarns
 - 5.1.8. List some typical products of doubling / varieties of doubled yarns
- 5.2. Reeling, Bundling and Baling
 - 5.2.1. State the objects of Reeling
 - 5.2.2. Describe Passage of material on a Reeling machine
 - 5.2.3. Mention the differences between Straight reeling and cross reeling
 - 5.2.4. Mention the Methods of doffing the hanks
 - 5.2.5. Mention the Methods of tying up of hanks
 - 5.2.6. State the objects of Bundling.
 - 5.2.7. Explain the Bundling press (mechanical bundling)
 - 5.2.8. Explain the method of Bundling weight correction
 - 5.2.9. State the objects of Baling
- 5.3. Singeing or Gassing
 - 5.3.1. Objects of yarn singeing
 - 5.3.2. Describe the yarn gassing process
- 5.4. Yarn conditioning
 - 5.4.1. Objects of conditioning
 - 5.4.2. Describe the Yarn Conditioning Process

6. Other Systems of Yarn formation

- 6.1. State the principle of yarn formation in Friction spinning
- 6.2. Classify the friction spinning systems
- 6.3. Describe the process and elements of friction spinning
- 6.4. Explain the process of Dref-II friction spinning
- 6.5. State the general characteristics of friction spun yarns
- 6.6. State the advantages and disadvantages of friction spinning
- 6.7. Explain the principle of Electro static spinning
- 6.8. Explain the principle of Air Vortex spinning
- 6.9. Explain Repco self twist spinning process
- 6.10. Explain the principle of yarn formation by False twist
- 6.11. Explain Dref-III false twist friction spinning system
- 6.12. Explain operating principle of Air Jet spinning
- 6.13. Explain the principles of yarn formation twist less spinning systems
- 6.14. Comparison of different methods of yarn manufacturing

Suggested Student Activities

1. Prepare a chart showing passage of material on a ring frame (PO2)
2. Collect the photographs of various parts on ring frame from the internet, explain the functions of each part by power point presentation.(PO2,PO9)
3. Prepare a chart showing important spare parts of Ring frame and state their function.(PO4)
4. Collect brochures of different spare parts of ring frame and submit a report on name of the companies, varieties supplied by them. (PO2,PO4)
5. Prepare a chart showing different methods of spinning and the principles of yarn manufacture. (PO2)
6. Collect different types of yarn packages and also prepare a chart showing different yarn packages by simple drawings using sketches. .(PO2,PO8)
7. Collect paper tubes used in winding and submit a report on their dimensions, strengths and suppliers, cost etc.,(PO2)
8. Visit a spinning mill and study the end breakage rate and submit a report stating the causes of end breakages as per your observations and analysis. (PO3,PO10)
9. Visit a spinning mill and submit a report on transport of material and waste management at different levels.(PO2,PO4,PO7)
10. Visit a spinning mill and submit a report on automations in different departments. .(PO10)

Recommended Books

1. Manual of Textile Technology : Short staple spinning series: Vol 1, 3, 4 – W.Klein
2. Elements of Ring spinning and Doubling - Dr.A.R.Khare
3. Spun Yarn Technology – A.Venkatasubramani
4. Spun Yarn Technology - Lawrence
5. Spun Yarn Technology – Eric Oxtobi

Suggested e-Learning References

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. www.fibre2fashion.com
4. <https://www.slideshare.net>

CO-PO Attainment Matrix

Course: Yarn manufacture											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3	1	3							2,3,4
CO2		3	1	2							2,3,4
CO3		3	1	2							2,3,4
CO4		3	1	2							2,3,4
CO5		3	1	2							2,3,4
CO6		3	1	3							2,3,4
Activities		3	1	2			1	1	1	1	2,3,4,7,8,9,10

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

Blue print of Marks and Questions for MSE and SEE

MID SEM – I EXAM							
Sl.No	Unit Name	R			U	A	
1	Unit-I	1, 2			5(a)	7(a)	
					5(b)	7(b)	
2	Unit-II	3, 4			6(a)	8(a)	
					6(b)	8(b)	
Total Questions		4			4	4	
MID SEM –II EXAM							
S.No	Unit Name	R			U	A	
1	Unit-III	1, 2			5(a)	7(a)	
					5(b)	7(b)	
2	Unit-IV	3, 4			6(a)	8(a)	
					6(b)	8(b)	
Total Questions		4			4	4	
SEMESTER END EXAMINATION							
Sl No	Unit No.	R			U	A	
1	Unit-I	4	1		9(a)	13(a)	
2	Unit-II						
3	Unit-III		2		10(a)	14(a)	
4	Unit-IV						
5	Unit-V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	Unit-IV			7,8	10(b)	14(b)	
		12(a)			16(a)		
		12(b)			16(b)		
Total Questions		8			8	8	
Legend		Remembering (R)				1 Mark	
		Understanding (U)				3 Marks	
		Application (A)				5 Marks	

BOARD DIPLOMA EXAMINATION, (C-18)
MID EXAM -I
DTT– IV SEMESTER EXAMINATION
Model Question Paper
18TT-402C, YARN MANUFACTURE

Time: 1 Hours

Total

Marks: 20

PART-A

04X01=04

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Mention the main draft and break draft
2. List different forms of travellers commonly used
3. List the motors used in practice for machine drive
4. Write the causes of end breakages in Ring spinning

PART-B

2X3=6

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

5. (a). State the characteristics of good ring
OR
(b)Mention different Wire profiles of the traveller
- 6 (a) Explain the Winding principle in winding process
OR
(b). Enumerate the salient features of modern ring frame

PART-C

2X5=10

- Instructions :**
1. Answer any **TWO questions**.
 2. Each question carries **FIVE** marks.

- 7(a). Explain the passage of material on a ring frame
OR
(b)Explain the types of creels
- 8 (a). Explain following Auxiliary equipment End breakage aspirator
OR
(b) Explain the causes of end breakages in Ring spinning

BOARD DIPLOMA EXAMINATION, (C-18)
MID EXAM -II
DTT– IV SEMESTER EXAMINATION
Model Question Paper
TT-402C, YARN MANUFACTURE

Time: 1 Hours

Total Marks: 20

PART-A

04X01=04

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. State the advantages of ring spinning
2. State the limitations of ring spinning
3. Define splicing
4. State the functions of Waxing device and anti patterning device

PART-B

2X3=6

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

- 5 (a). State the advantages and disadvantages of open end spinning systems
OR
(b) Compare the yarn characteristics of Rotor spun yarn and Ring spun yarn
- 6 (a). State the function of Balloon breaker / Unwinding accelerator
OR
(b) Explain different types of Stop motions

PART-C

2X5=10

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **FIVE** marks.

- 7(a) Explain the basic principle of yarn formation in rotor spinning
OR
(b) Explain the preparation and requirements of raw material for rotor spinning
- 8 (a) Explain different types of yarn clearers
OR
(b) Explain the principles of different Traversing methods

BOARD DIPLOMA EXAMINATION (C-18)
END SEMESTER EXAMINATION
MODEL QUESTION PAPER

DTT– IV SEMESTER
18TT-402C, YARN MANUFACTURE

Time: 2 Hours

Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Mention the main draft and break draft
2. State the limitations of ring spinning
3. Define open wind and close wind
4. State the characteristics of good ring
5. List some typical products of doubling / varieties of doubled yarns
6. State the objects of Reeling
7. State the principle of yarn formation in Friction spinning
8. Classify the friction spinning systems

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

9. (a) State the requirements of material of the traveller
(OR)
(b) Explain the Wet doubling process
10. (a) State the principle of yarn formation in open end spinning
(OR)
(b) Explain the process of Dref-II friction spinning
11. (a) Explain the Bundling press (mechanical bundling)
OR
(b).Explain the method of bundling weight correction
12. (a) Explain the principle of Electro static spinning
OR
(b).Explain the principle of Air Vortex spinning

PART-C

04X5=20

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **FIVE** marks.

13 (a). Explain the process of doffing in ring frame
(OR)

(b) Explain the Passage of material through ring doubler

14 (a) Explain the principles of different Traversing methods
(OR)

(b) Explain the principle of yarn formation by false twist

15. (a) Describe the yarn gassing process
(OR)

(b). Describe the Yarn Conditioning Process

16. (a) Explain operating principle of Air Jet spinning
(OR)

(b). Explain the principles of yarn formation twist less spinning systems

18TT-403C- ADVANCED FABRIC MANUFACTURE

Course Title :	Advanced Fabric Manufacture	Course Code	18TT-403C
Semester	IV	Course group	Core
Teaching Scheme in Periods (L/T/P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours	60 Pds
CIE Marks	60 Marks	SEE	40 Marks

Legends: L- Lecture, T- Tutorial, P-Practical

Pre Requisites

This course requires the knowledge of basic knowledge of fabric formation and mechanisms of a loom.

Course Outcomes

S. No	Course Outcome	Cognitive Levels	Teaching Periods
CO1	Identify the features of automatic shuttle loom and weft patterning	R	9
CO2	Explain different types of dobby mechanism and develop the pattern chain	R	9
CO3	Explain developments in dobby shedding	R /U	9
CO4	Explain different types of Jacquard shedding mechanisms	R / U	9
CO5	Identify the requirements of shuttle less looms	U	12
CO6	Explain the working principles of shuttles looms	U	12
	Total Periods		60

Course Contents

- 1. Automatic shuttle Looms and weft patterning** **Periods : 9 (L:7, T:2)**
Features of an automatic loom- Advantages of Automatic looms.-essential attachments for pirn changing automatic loom-mechanical weft feeler mechanism- electrical weft feeler mechanism- pirn changing mechanism on a automatic loom- bobbin loader mechanism- automatic loom winder -Classify multiple box looms- constructional parts of Eccle's 4×1 drop box motion.-working cycle of Eccle's 4×1 drop box motion.-pattern chain preparation for 4×1 drop box motion
- 2. Basics Dobby shedding** **Periods : 9 (L:7, T:2)**
Limitations of tappet shedding-importance of Dobby shedding-Comparision of doobby shedding with Tappet shedding-Classification doobby shedding machines- Single lift and double lift doobby- Positive and Negative Dobby- construction of Double lift double jack (Climax doobby)-working of Double lift double jack (Climax doobby)-Right hand and Left hand doobby-Position of feelers for right hand and left hand doobby -Heald reversing motion on negative doobby -pegging plan for doobby
- 3. Developments in Dobby Shedding** **Periods : 9 (L:7, T:2)**
Advantages of Cam doobby-mechanism of Northrop negative cam doobby - mechanism of Staubli paper pattern negative cam doobby -advantages of paper pattern cards over the wooden lags- mechanism of Staubli Positive cam doobby -Advantages of positive doobby-mechanism of Rotary doobby -Advantages of rotary doobby- mechanism of two cylinder Climax cross border doobby - different types of Pick finding devices for doobbies- different types of doobby mountings - mechanism of positive type of electronic doobby
- 4. Jacquard Shedding** **Periods : 9 (L:7, T:2)**
Different types of shed formations with their relative merits and demerits-functions of principal parts of Jacquard- Single lift Single cylinder Jacquard. Double lift, Single cylinder Jacquard- Double lift, Double cylinder Jacquard- various parts of Jacquard harness system -functions of various parts of harness system- two Systems of Harness mounting- Merits and demerits of two systems of harness mounting - different types of Jacquard harness Ties - different types of Jacquard harness Tie Ups-Sketching the design on point paper-importance of first hook of the Jacquard- Casting out principle-Preliminary steps to card cutting-preparation of pattern card on piano card cutting machine-Jacquard card lacing-Function of Jacquard card cradle- different methods of increasing the figuring capacity of a Jacquard-sequence of Staubli Electronic Jacquard.
- 5. Shuttle less Weaving - I** **Periods : 12 (L:9, T:3)**
Requirements and common features of Shuttleless looms - disadvantages and limitations of shuttle looms -Classification of shuttle less weaving machines - yarn quality requirements - common features of all shuttleless weaving machines -Weft accumulators - advantages of using weft accumulators - types of selvages on shuttleless looms -method of weft patterning in shuttleless looms - Projectile Looms- main features -advantages of projectile weaving -phases of weft insertion on a projectile loom -beat up mechanism on projectile loom - quality characteristics of projectile woven cloth – field of application of sulzer looms -the limitations of Sulzer weaving machines
- 6. Shuttle less Weaving – II** **Periods : 12 (L:9, T:3)**
Classify rapier looms - principles of double rapier weaving, two phase rapier - weft insertion and cyclic operations in Dewas system and Gabler system - methods of driving rigid rapier-merits and demerits of rapier weaving.-characteristics features of Air Jet looms-essential requirements for Air Jet weft insertion.- principle of Maxbo – Murata Air Jet loom- types of traverse aids for maintaining air flow-practical problems encountered during air jet weft insertion - merits and demerits of Air Jet loom- methods of weft insertion on a water jet loom -Merits and demerits of water jet looms -principle of multi phase weaving - methods of multi phase weaving- principle of

warp way multi phase weaving and weft way multi phase weaving-merits and demerits of multi phase weaving-principle of fabric formation on Circular weaving machines

Specific Learning Outcomes

1. Automatic shuttle Looms and Weft Patterning

- 1.1 Automatic looms
 - 1.1.1 State the features of an automatic loom
 - 1.1.2 State the Advantages of Automatic looms.
 - 1.1.3 List essential attachments for pirn changing automatic loom
 - 1.1.4 Explain the mechanical weft feeler mechanism
 - 1.1.5 Explain the electrical weft feeler mechanism
 - 1.1.6 Explain optical weft feeling mechanism
 - 1.1.7 Explain the pirn changing mechanism on a automatic loom
 - 1.1.8 Explain bobbin loader mechanism
 - 1.1.9 Explain automatic loom winder
- 1.2 Weft Patterning on shuttle loom
 - 1.2.1 Classify multiple box looms
 - 1.2.2 Explain the constructional parts of Eccle's 4×1 drop box motion.
 - 1.2.3 Explain the working cycle of Eccle's 4×1 drop box motion.
 - 1.2.4 Explain the pattern chain preparation for 4×1 drop box motion

2. Basic Dobby Shedding

- 2.1 State the Limitations of tappet shedding
- 2.2 State the importance of Dobby shedding
- 2.3 Compare dobby shedding with Tappet shedding
- 2.4 Classify dobby shedding machines
- 2.5 Define Single lift and double lift dobby.
- 2.6 Define Positive and Negative Dobby
- 2.7 Define Open shed and closed shed dobby
- 2.8 Negative dobby
 - 2.8.1 Explain the functions of principal parts of dobby shedding
 - 2.8.2 Explain the working of double lift single jack dobby (Keighley)
 - 2.8.3 Explain the working of Double lift double jack (Climax dobby)
 - 2.8.4 Define Right hand and Left hand dobby
 - 2.8.5 Explain arrangement of feelers for right hand and left hand dobby
 - 2.8.6 Explain heald reversing motion on negative dobby
 - 2.8.7 Explain the procedure of pegging plan for dobbies
 - 2.8.8 Mention common dobby settings

3. Developments in Dobby Shedding

- 3.1 Cam dobby
 - 3.1.1 State the advantages of Cam dobby
 - 3.1.2 Explain the working mechanism of negative cam dobby
 - 3.1.3 Explain the working mechanism of paper pattern negative cam dobby
 - 3.1.4 Write the advantages of paper pattern cards over the wooden lags
 - 3.1.5 Explain the mechanism of Cross border dobby
- 3.2 Other Dobby mechanisms
 - 3.2.1 Explain the working mechanism of Positive cam dobby
 - 3.2.2 Advantages of positive dobby
 - 3.2.3 Explain the working mechanism of Rotary dobby

- 3.2.4 Advantages of rotary dobby
- 3.3 Write different types of Pick finding devices for dobbies
- 3.4 Explain different types of dobby mountings
- 3.5 Explain the mechanism of positive type of electronic dobby

4. Understand Jacquard Shedding

- 4.1 Classify of Jacquards
- 4.2 Methods of Ornamentation of woven fabrics
- 4.3 Identify the figuring capacity of the jacquards
- 4.4 List the principal parts of Jacquards
- 4.5 Explain the functions of principal parts of Jacquard
- 4.6 Explain Single lift Single cylinder Jacquard.
- 4.7 Explain Double lift, Single cylinder Jacquard
- 4.8 Explain Double lift, Double cylinder Jacquard
- 4.9 Harness
 - 4.9.1 Describe functions of various parts of harness system
 - 4.9.2 Explain the two Systems of Harness mounting
 - 4.9.3 Relative Merits and demerits of two systems of harness mounting
 - 4.9.4 Explain different types of Jacquard harness Tie Ups
- 4.10 Pattern card preparation
 - 4.10.1 Sketch the design on point paper
 - 4.10.2 State the Casting out principle
 - 4.10.3 List the Preliminary steps to card cutting
 - 4.10.4 Explain preparation of pattern card on piano card cutting machine
 - 4.10.5 Method of Jacquard card lacing
 - 4.10.6 Function of Jacquard card cradle
- 4.11 Write different methods of increasing the figuring capacity of a Jacquard
- 4.12 Construction and working of Open shed jacquard
- 4.13 Explain the working principle of cross border jacquard
- 4.14 Explain the working sequence of Staubli Electronic Jacquard.

5. Shuttle less looms -1

- 5.1 Requirements and common features of Shuttleless looms
 - 5.1.1 List the disadvantages and limitations of shuttle looms
 - 5.1.2 Classification of shuttle less weaving machines
 - 5.1.3 Explain yarn quality requirements for shuttleless looms
 - 5.1.4 Tabulate shuttleless looms with respect to width, maximum speed, weft insertion rate and field of application
 - 5.1.5 List out common features of all shuttleless weaving machines
 - 5.1.6 Explain the working of Weft accumulator with measuring system
 - 5.1.7 List the advantages of using weft accumulators
 - 5.1.8 Explain the types of selvages formed on shuttleless looms
 - 5.1.9 Explain the method of weft patterning in shuttleless looms
- 5.2 Projectile Looms
 - 5.2.1 Enumerate the main features of sulzer projectile weaving machine
 - 5.2.2 State the advantages of projectile weaving
 - 5.2.3 Explain Different phases of weft insertion on a projectile loom
 - 5.2.4 Explain beat up mechanism on projectile loom
 - 5.2.5 Mention the quality characteristics of projectile woven cloth.
 - 5.2.6 Mention the field of application of sulzer looms
 - 5.2.7 State the limitations of Sulzer weaving machines

6. Shuttle less Looms – 2

6.1 Rapier looms

- 6.1.1 Classify rapiers and rapier looms
- 6.1.2 State the principle of double rapier weaving
- 6.1.3 Explain the working principle of single phase single rapier loom
- 6.1.4 Explain the working principle of two phase rapier weaving machine
- 6.1.5 Explain the Method of weft insertion and cyclic operations in Dewas system
- 6.1.6 Explain the Method of weft insertion and cyclic operations in Gabler system
- 6.1.7 Mention different methods of driving rigid rapier
- 6.1.8 State the merits and demerits of rapier weaving.

6.2 Weft Insertion by Air Jet and Water Jet

- 6.2.1 Give the characteristics features of Air Jet looms
- 6.2.2 Explain essential requirements for Air Jet weft insertion.
- 6.2.3 Explain the working principle of Maxbo – Murata Air Jet loom
- 6.2.4 Explain the two types of traverse aids for maintaining air flow
- 6.2.5 List the practical problems encountered during air jet weft insertion
- 6.2.6 Mention the merits and demerits of Air Jet loom
- 6.2.7 Explain the methods of weft insertion on a water jet loom
- 6.2.8 State the Merits and demerits of water jet looms

6.3 Multi phase weaving

- 6.3.1 State the principle of multi phase weaving
- 6.3.2 Explain the working principle of warp way multi phase weaving machine
- 6.3.3 Explain the working principle of Flat weft way multi phase weaving
- 6.3.4 State the merits and demerits of multi phase weaving

6.4 Circular weaving

- 6.4.1 Explain circular weaving machine with horizontal shed formation
- 6.4.2 Explain circular weaving machine with vertical shed formation

Suggested Student Activities

1. Prepare a chart for the standard pattern card for changing the shuttle from one box to the other.(PO2,PO3)
2. Visit a convention shuttle loom shed having both non automatic and automatic looms, observe the loom running efficiency, man power requirement, fabric quality and submit a report .(PO3,PO4,PO5,PO10)
3. Prepare a paper pattern chain for any weft pattern. .(PO3)
4. Prepare a paper pattern chain for any dobby design .(PO3)
5. Prepare a pattern chain for any jacquard design.(PO3)
6. Prepare a chart showing the main parts of Dobby shedding machine.(PO2,PO4)
7. Prepare a chart showing the main parts of Jacquard shedding machine .(PO2,PO4)
8. Obtain few fabric samples woven on Dobby loom, multiple box loom and jacquard loom.(PO8)
9. Collect the fabrics of different selvages .(PO8)

Recommended Books

1. Weaving – Methods, Machines and mechanism ---- Talukdar&Sriramulu
2. Woven Fabric Production – II ---- NCUTE.
3. Weaving Mechanism – I & II ---- N.N. Benarjee.
4. Fancy Weaving Mechanism ----- K.T.Ashwani

Suggested e-Learning References

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. www.fibre2fashion.com
4. <https://www.onlinetextileacademy.com>
5. <https://www.slideshare.net>
6. <https://textilechapter.blogspot.com>
7. <https://www.onlinetextileacademy.com>

CO-PO Attainment Matrix

Course: Advanced Fabric Manufacture											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3		2	2						2,4,5
CO2		3			1						2,5
CO3		3			1						2,5
CO4		3			1						2,5
CO5		3			2						2,5
CO6		3			2						2,5
Activities		2	2	2	1			1		1	2,3,4,5,8,10

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

Blue print of Marks and Questions for MSE and SEE

MID SEM – I EXAM							
Sl.No	Unit Name	R			U	A	
1	Unit-I	1, 2			5(a)	7(a)	
					5(b)	7(b)	
2	Unit-II	3, 4			6(a)	8(a)	
					6(b)	8(b)	
Total Questions		4			4	4	
MID SEM –II EXAM							
S.No	Unit Name	R			U	A	
1	Unit-III	1, 2			5(a)	7(a)	
					5(b)	7(b)	
2	Unit-IV	3, 4			6(a)	8(a)	
					6(b)	8(b)	
Total Questions		4			4	4	
SEMESTER END EXAMINATION							
Sl No	Unit No.	R			U	A	
1	Unit-I	4	1		9(a)	13(a)	
2	Unit-II						
3	Unit-III		2		10(a)	14(a)	
4	Unit-IV						
5	Unit-V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	Unit-IV			7,8	10(b)	14(b)	
					12(a)	16(a)	
					12(b)	16(b)	
Total Questions		8			8	8	
Legend		Remembering (R)				1 Mark	
		Understanding (U)				3 Marks	
		Application (A)				5 Marks	

Model Question Papers

BOARD DIPLOMA EXAMINATION, (C-18) MID SEM EXAMINATION –I Model Question Paper

DTT– IV SEMESTER TT-403C, ADVANCED FABRIC MANUFACTURE

Time :1 Hours]

[Total Marks: 20

PART-A

04X01=04

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. What is multiple box looms
2. Define Automatic loom
3. Define positive and negative dobby
4. Define open shed and closed dobby

PART-B

02X03=06

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **THREE** marks.

- 5 (a) State the features of an automatic loom
(OR)
(b) State the advantages of automatic loom
6. (a) State the limitation of tappet shedding
(OR)
(b) State the importance of dobby shedding

PART-C

02X5=10

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **FIVE** marks.

7. (a) Explain the mechanical weft feeler mechanism
(OR)
(b) Explain the automatic loom winder
8. (a) Explain the functions of principal parts of dobby shedding
(OR)
(b) Explain the working of double lift single jacquard dobby (Keighly)

BOARD DIPLOMA EXAMINATION, (C-18)
MID SEMESTER EXAMINATION-II
DTT- IV SEMESTER EXAMINATION

TT- 403C, ADVANCED FABRIC MANUFACTURE

Time :1 Hours]

[Total Marks: 20

PART-A

04X01=04

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. What is cam doobby?
2. What is meant by positive doobby?
3. What is meant by casting out principle?
- 4 .Write any two methods of jacquard card cutting

PART-B

02X03=06

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **THREE** marks.

5. (a) State the advantages of cam doobby
(OR)
(b)State the advantages of rotary doobby
6. (a) Methods of ornamentation of woven fabrics.
(OR)
(b) List the principle parts of jacquard

PART-C

02X5=10

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **FIVE** marks.

- 7.(a)Explain the mechanism of positive type of electronic doobby
(OR)
(b) Explain the working mechanism of negative cam doobby
8. (a)Explain single lift single cylinder jacquard
(OR)
(b) Explain double lift, double cylinder jacquard

BOARD DIPLOMA EXAMINATION, (C-18)
END SEMESTER EXAMINATION

DTT- IV SEMESTER EXAMINATION
TT-403C, ADVANCED FABRIC MANUFACTURE

Time :2 Hours]

[Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Define automatic looms.
2. Classify multiple box looms.
3. Define Negative Dobby
4. What are the parts of Jacquard?
5. Write four types of shuttleless looms?
6. List out common features of all shuttleless weaving machines
7. What are the two types of harness mounting?
8. Define tie-up?

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

9. (a) Tabulate the differences between tappet shedding and dobby shedding
(OR)
(b) State the advantages of automatic looms
10. (a) Define
 - a) Right hand dobby
 - b) Positive dobby
 - c) Jacquard(OR)
(b) Compare single lift dobby and double lift dobby
11. (a) State the advantages of cam dobby.
(OR)
(b) What are the advantages of rotary dobby?
12. (a) What are different kinds of tie-ups?
(OR)
(b) Define pattern card and give a simple example

PART-C

04X5=20

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **FIVE** marks.

13. (a) Explain climax dobby with a sketch
(OR)
(b) Explain Keighley dobby with a sketch.
14. (a) Explain single lift Jacquard with a sketch
(OR)
(b) Explain double life single cylinder jacquard with a sketch.
15. (a) Explain Gabler system of rapiers with a sketch
(OR)
(b) Explain dewas system of rapier insertion with a simple sketch.
16. (a) State the casting out principle?
(OR)
(b) Enumerate the main features of sulzer projectile weaving machine

18TT-404C, ADVANCED TEXTILE CHEMICAL PROCESSING

Course Title :	Advanced Textile Chemical Processing	Course Code	18TT-404C
Semester	IV	Course group	Core
Teaching Scheme in Periods (L/T/P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours	60 Pds
CIE Marks	60 Marks	SEE	40 Marks

Legends: L- Lecture, T- Tutorial, P-Practical

Pre Requisites

This course require basic knowledge on Textile Fibres and Process flow chart of Textile Chemical processing

Course Outcomes

At the end of the course, student will have the ability to

S. No	Course Outcome	Cognitive Levels	Teaching Periods
CO1	Outline the procedure of preparing and dyeing of textiles made by bast fibres, wool and silk	R	9
CO2	Outline the step by step procedure of dyeing man made textiles	R	9
CO3	Explain the process of mass colouration, dyeing of blends and dyeing methods using natural dyes	R / U	9
CO4	Explain dyeing methods for garments and identify quality aspects of dyeing	R / U	9
CO5	Outline different methods and styles of printing	U	12
CO6	Outline different types of finishes applied to the textiles	U	12
	Total Periods		60

Course Outcomes

1. Dyeing of Bast fibres, Wool and Silk

Duration: 9 Periods (L:7 – T:2)

Process of dyeing bast (Ligno cellulose) fibres – dyes used for wool and silk preparatory sequence and dyeing of wool -application of acid dyes on wool - application of metal complex dyes on wool - preparatory sequence and dyeing of Silk textiles - application of basic dyes on silk - procedure of application of reactive dyes on silk- dyes applied on viscose and acetate - preparation and dyeing of Viscose textiles and Acetate textiles

2. Dyeing of Manufactured Textiles

Duration: 9 Periods (L: 7– T:2)

-Preparatory sequence for polyester textiles -carriers used in dyeing of polyester -carrier method of dyeing polyester and its advantages and disadvantages -Thermosol method of dyeing polyester - method of High pressure high temperature beam dyeing and state advantages and disadvantages of beam dyeing -advantages of Jet dyeing -Preparatory sequence for Nylon textiles -dyes used for nylon -procedure of application of acid dyes on nylon -procedure of application of disperse dyes on nylon -procedure of application of metal complex dyes on nylon -Preparatory sequence for Acrylic textiles -dyes used for acrylic fibres dyeing processes used for Acrylics fabrics

3. Mass coloration, dyeing of blends

Duration: 9 Periods (L: 7– T: 2)

advantages and disadvantages of mass colouration of textiles -different methods of mass coloration - methods of mass coloration of textiles -method of dyeing of Polyester cotton blends - method of Dyeing of Polyester and wool blends -method of dyeing acrylic cellulose blends - process of dyeing with common natural dyes

4. Dyeing of Garments and Quality aspects in dyeing

Duration: 9 Periods (L: 7 – T:3)

process flow chart for dyeing of woven garments, knitted garments -advantages of Garment dyeing -process of dyeing cotton garments -process of dyeing woollen garments -process of dyeing Polyester garments -fastness properties -requirements of fastness properties for different materials -common fastness properties of cellulose, protein and synthetic textiles - dyeing faults

5. Printing

Duration: 12 Periods (L:9– T:3)

Styles of printing - principles of Direct style of printing , discharge style of printing, Resist style of printing, Discharge cum Resist style of printin - methods of printing - Block printing Roller printing -Stencil printing -Flat Screen printing - Rotary screen -Automatic flat bed transfer printing -Batik printing -List the essential ingredients used in printing paste -functions of essential ingredients used in printing paste -List the thickeners used in print paste -List various after treatments carried out for printed goods -State the principles of following styles of printing - Conversion style, Dyed style, Madder style, Carbonised style of printing, Brosso style, Raised style printing, Kalamkari, Foam , Flock, Damask -identifying features of various methods of printing

6. Finishing

Duration: 12 Periods (L:9 – T3)

objects of finishing -Classify the finishes - principles of mechanical means of removing water - principles removing water by application of heat -principles of Cylinder drying, felt calendar, stenter, hot air drying, butidier - processes used for permanent set to wool -mechanism and process of heat setting of synthetics - principles of lustre improving finishes - principles of following functional finishes –Sanforising, Anti crease, Wash and wear, Durable press ,Water repellence, Water proofing , Softening and stiffening, Soil release and stain release finish, Parchmentising, Flame proofing, process sequence of garment finishing

Specific Learning Outcomes

1 Dyeing of Bast fibres, Protein fibres and semi synthetic fibres

- 1.1 Explain the process of dyeing bast (Ligno cellulose)fibres
- 1.2 Explain the preparatory sequence of wool textiles
- 1.3 List the dyes that can be applied on wool
- 1.4 Explain the method of application of acid dyes on wool
- 1.5 Explain the method of application of metal complex dyes on wool
- 1.6 Explain the preparatory sequence of Silk textiles
- 1.7 List the dyes that can be applied on silk
- 1.8 Explain the procedure of application of basic dyes on silk
- 1.9 Explain the procedure of application of reactive dyes on silk
- 1.10 Explain preparation and dyeing of Viscose textiles
- 1.11 Explain preparation and dyeing of Acetate textiles

2 Dyeing of Synthetic Textiles

- 2.1 Explain the Preparatory sequence for polyester textiles
- 2.2 Explain carrier method of dyeing polyester
- 2.3 List the carriers used in dyeing of polyester
- 2.4 State the advantages and disadvantages of carrier dyeing
- 2.5 Explain Thermosol method of dyeing polyester
- 2.6 Explain the method of High pressure high temperature beam dyeing
- 2.7 State the advantages and disadvantages of beam dyeing
- 2.8 Explain the method of High pressure high temperature Jet dyeing
- 2.9 State the advantages of Jet dyeing
- 2.10 Explain the Preparatory sequence for Nylon textiles
- 2.11 List the dyes used for nylon
- 2.12 Explain the procedure of application of acid dyes on nylon
- 2.13 Explain the procedure of application of disperse dyes on nylon
- 2.14 Explain the procedure of application of metal complex dyes on nylon
- 2.15 Explain the Preparatory sequence for Acrylic textiles
- 2.16 List the dyes used for acrylic fibres
- 2.17 Explain the dyeing processes used for Acrylics fabrics

3 Mass coloration, Dyeing of Blends and dyeing with natural dyes

- 3.1 State the advantages and disadvantages of mass colouration of textiles
- 3.2 Mention different methods of mass coloration
- 3.3 Explain the methods of mass coloration of textiles
- 3.4 Explain the method of dyeing of Polyester cotton blends
- 3.5 Explain the method of Dyeing of Polyester and wool blends
- 3.6 Explain the method of dyeing acrylic cellulose blends
- 3.7 Outline the process of dyeing with common natural dyes

4 Dyeing of Garments and Quality aspects in Dyeing

- 4.1 Draw the process flow chart for dyeing of woven garments
- 4.2 Draw the process flow chart for dyeing of knitted garments
- 4.3 Write the advantages of Garment dyeing
- 4.4 Outline the process of dyeing cotton garments
- 4.5 Outline the process of dyeing woollen garments

- 4.6 Outline the process of dyeing Polyester garments
- 4.7 Describe the fastness properties
- 4.8 Write the requirements of fastness properties for different materials
- 4.9 Tabulate common fastness properties of cellulose, protein and synthetic textiles
- 4.10 Define common dyeing faults

5 Printing

- 5.1 List different styles of printing
- 5.2 Explain the principle of Direct style of printing
- 5.3 Explain the principle of discharge style of printing
- 5.4 Explain the principle of Resist style of printing
- 5.5 Explain the principle of Discharge cum Resist style of printing
- 5.6 Define digital, heat transfer, electrostatic, differential and foil styles of printing
- 5.7 Explain the method of Block printing
- 5.8 Explain the method of Roller printing
- 5.9 Explain the method of Stencil printing
- 5.10 Explain the method of Flat Screen printing
- 5.11 Explain the method of Rotary screen
- 5.12 Explain the method of Automatic flat bed
- 5.13 Explain the method of transfer printing
- 5.14 Explain the method of Batik printing
- 5.15 List the essential ingredients used in printing paste
- 5.16 Explain the functions of essential ingredients used in printing paste
- 5.17 List the thickeners used in print paste
- 5.18 List various after treatments carried out for printed goods
- 5.19 State the principles of following styles of printing -Conversion style, Dyed style, Madder style, Carbonised style of printing, Brosso style, Raised style printing, Kalamkari, Foam , Flock, Damask
- 5.20 Tabulate the identifying features of various methods of printing

6 Finishing

- 6.1 State the objects of finishing
- 6.2 Classify the finishes
- 6.3 Explain the principles of mechanical means of removing water
- 6.4 Explain the principles removing water by application of heat
- 6.5 Explain the principles of Cylinder drying, felt calendar, stenter, hot air drying, butidier
- 6.6 Explain the processes used for permanent set to wool
- 6.7 Explain the mechanism and process of heat setting of synthetics
- 6.8 Explain the principles lustre improving finishes
- 6.9 Explain the principles of following functional finishes
 - 6.9.1 Sanforising
 - 6.9.2 Anti crease, Wash and wear, Durable press
 - 6.9.3 Water repellence, Water proofing
 - 6.9.4 Softening and stiffening
 - 6.9.5 Soil release and stain release finish
 - 6.9.6 Parchmentising
 - 6.9.7 Flame proofing
- 6.10 Give the process sequence of garment finishing

Suggested Student Activities

1. Prepare a flow chart of chemical preparatory sequence for Wool textiles and define each process stage. .(PO2)
2. Prepare a flow chart of chemical preparatory sequence for Silk textiles and define each process stage. .(PO2)
3. Prepare a flow chart of chemical preparatory sequence for semi synthetic textiles and define each process stage. (PO2)
4. Prepare a flow chart of chemical preparatory sequence for Synthetic textiles and define each process stage. .(PO2)
5. Prepare a chart showing all possible dyes that can be used for protein and semi synthetic and synthetic textiles.(PO2)
6. Prepare a chart for different styles and methods of printing.(PO2)
7. Collect few fabrics of printed design and identify the style and method of printing that was used. .(PO2,PO4)
8. Collect the photographs of chemical processing machines from the internet / brochure and present in the class with a power point. .(PO2,PO9)
9. Prepare a flow chart showing chemical processing sequence of garments.(PO2)
10. Visit a fabric printing cottage unit / industry, identify the ingredients, tools and procedures used and submit a report.(PO2,PO3,PO8)
11. Visit a cloth banner / flag printing cottage and submit a report on fabric type, raw material sources, raw material cost and methods and tools used. (PO2,PO3,PO8)

Recommended Books

- 1) Science and Technology of Textile dyeing and Coloration – S.P.Mishra
- 2) Bleaching Dyeing and Chemical Technology of Textile Fibres -E.R Trotman
- 3) Dyeing of Wool. Silk and Manmade fibres - RS Prayag
- 4) Printing -- R.S Prayag
- 5) Finishing -- R S prayag
- 6) Treatment of Textile processing effluents - N. Manivasakam (NCUTE)

Suggested e-Learning Resources

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. www.fibre2fashion.com
4. <https://www.onlinetextileacademy.com>
5. <https://www.slideshare.net>

CO-PO Attainment Matrix

Course: Advanced fabric manufacture											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3		2	2						2,4,5
CO2		3			1						2,5
CO3		3			1						2,5
CO4		3			1						2,5
CO5		3			2						2,5
CO6		3			2						2,5
Activities		2	2	2	1			1		1	2,3,4,5,8,10

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

Blue print of Marks and Questions for MSE and SEE

MID SEM – I EXAM							
Sl.No	Unit Name	R			U	A	
1	Unit-I	1, 2			5(a)	7(a)	
					5(b)	7(b)	
2	Unit-II	3, 4			6(a)	8(a)	
					6(b)	8(b)	
Total Questions		4			4	4	
MID SEM –II EXAM							
S.No	Unit Name	R			U	A	
1	Unit-III	1, 2			5(a)	7(a)	
					5(b)	7(b)	
2	Unit-IV	3, 4			6(a)	8(a)	
					6(b)	8(b)	
Total Questions		4			4	4	
SEMESTER END EXAMINATION							
Sl No	Unit No.	R			U	A	
1	Unit-I	4	1		9(a)	13(a)	
2	Unit-II						
3	Unit-III		2		10(a)	14(a)	
4	Unit-IV						
5	Unit-V		3	5, 6	9(b)	13(b)	
					11(a)	15(a)	
					11(b)	15(b)	
6	Unit-IV			7,8	10(b)	14(b)	
		12(a)			16(a)		
		12(b)			16(b)		
Total Questions		8			8	8	
Legend		Remembering (R)				1 Mark	
		Understanding (U)				3 Marks	
		Application (A)				5 Marks	

BOARD DIPLOMA EXAMINATION, (C-18)
MID EXAM-I
DTT– IV SEMESTER EXAMINATION

ADVANCED TEXTILE CHEMICAL PROCESSING

Time :1 Hours]

[Total Marks: 20

PART-A

04X01=04

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Write the names of dyes that can be applied on wool
2. Write the names of dyes that can be applied on silk
3. What is the use of carriers in dyeing of polyester
4. Write the names of dyes used for nylon

PART-B

02X03=06

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **THREE** marks.

- 5 (a) Explain the preparatory sequence of wool textiles
(OR)
(b) Explain the preparatory sequence of silk textiles
- 6 (a) State the advantages and disadvantages of carrier dyeing
(OR)
(b) State the advantages and disadvantages of beam dyeing

PART-C

02X5=10

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **FIVE** marks.

- 7 (a) Explain the method of application of Acid dyes on wool
(OR)
(b) Explain the procedure of application of Basic dyes on silk
- 8 (a) Explain the preparatory sequence for Polyester textile
(OR)
(b) Explain the method of High pressure High Temperature Beam dyeing

BOARD DIPLOMA EXAMINATION, (C-18)
MID EXAM-II
DTT- IV SEMESTER EXAMINATION

ADVANCED TEXTILE CHEMICAL PROCESSING

Time :1 Hours]

[Total Marks: 20

PART-A

04X01=04

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Define mass colouration
2. Write method of dyeing of Polyester Cotton blends
3. Define common dyeing faults
- 4 Define the term fastness in dyeing

PART-B

02X03=06

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **THREE** marks.

5. (a) Mention different methods of mass colouration
(OR)
(b) Outline the process of dyeing with common natural dyes
6. (a) Outline the process of dyeing cotton garments.
(OR)
(b) Outline the process of dyeing woollen garments

PART-C

02X5=10

- Instructions :**
1. Answer any **TWO** questions.
 2. Each question carries **FIVE** marks.

- 7.(a) Explain the method of dyeing of polyester and wool blends
(OR)
(b) Explain the method of dyeing Acrylic cellulose blends
- 8.(a) Draw the process flow chart for dyeing woven garments
(OR)
(b) Draw the process flow chart for dyeing Knitted garments

BOARD DIPLOMA EXAMINATION, (C-18)
END MODEL EXAM PAPER
DTT– IV SEMESTER EXAMINATION

ADVANCED TEXTILE CHEMICAL PROCESSING

Time :2 Hours]

[Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. Write the dyes that can be applied on wool
2. Define mass colouration
3. Define common dyeing faults
4. Write the method of dyeing of polyester cotton blends
5. What is meant by thickness used in print paste
6. Write the different styles of printing
7. What is meant by finishing
8. Define the term sanforising

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

9. (a) Explain the preparation in dyeing of viscose textiles

(OR)

- (b) Explain the principle of Direct style of printing

10. (a) Explain the method of dyeing of Polyester and wool blends

(OR)

- (b) Explain the process used for permanent set to wool

11. (a) Explain the method of Block printing

(OR)

- (b) Explain the method of Roller printing,

12. (a) Explain the principle of mechanical means of removing water

(OR)

- (b) Explain the mechanism and process of heat setting of synthetics

PART-C

04X5=20

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **FIVE** marks.

13. (a) Explain the preparation and dyeing of viscose textiles

(OR)

(b) Explain the method of Roller printing

14. (a) Explain the method of dyeing Acrylic cellulose blends

(OR)

(b) Explain the principles of Flame proofing functional finishes

15. (a) Explain the functions of essential ingredients used in printing paste

(OR)

(b) Explain the method of Batik printing

16. a) Explain the principle lustre improving finishes

(OR)

(b) Explain the principles removing water by application of heat

18TT-405C- TEXTILE TESTING

Course Title :	Textile Testing	Course Code	18TT-405C
Semester	IV	Course group	Core
Teaching Scheme in Periods (L/T/P)	3:1:0	Credits	3
Methodology	Lecture + Assignments	Total Contact Hours	60 Pds
CIE Marks	60 Marks	SEE	40 Marks

Legends: L- Lecture, T- Tutorial, P-Practical

Pre Requisites

This course require basic knowledge on Textile Fibres, Yarns and Fabric

Course Outcomes

At the end of the course, student will have the ability to

S. No	Course Outcome	Cognitive Levels	Teaching Periods
CO1	Select the laboratory sample form the given raw material and measure moisture	R	9
CO2	Measure the fibre properties	R	9
CO3	Measure the yarn properties	R / U	9
CO4	Measure the fabric properties	R / U	9
CO5	Measure the tensile properties of fibre, yarn and fabric	U	12
CO6	Measure serviceability of the fabric and dyed fabric properties	U	12
	Total Periods		60

1. Sampling and Humidity relations **Periods:9 (L:7, T:2)**

Objects of textile testing -need for standardization of testing - Routine tests conducted in textile mills and the method or instrument used -Define the terms used in sampling and testing - sampling methods for fiber, yarn and fabric -method of Measuring Relative humidity by Wet and Dry bulb hygrometer - method of measuring moisture using moisture oven-Factors affecting moisture regain of textile material - influence of moisture (regain of fibre)on physical properties of textile fibres and on processing of textile material - formula to find standard regain of a blend - method of Correction of invoice weight - principle of Controlling testing room atmosphere - procedure of Conditioning of samples for testing

2. Measurement of Fibre Parameters **Periods:9 (L:7, T:2)**

Different methods and instruments used for measurement of fibre length, fineness and maturity - importance of cotton fibre maturity - different units of expressing fibre fineness and maturity - standards for maturity results obtained from different methods - procedure of measuring fibre length on Baer sorter - working principle of digital fibro graph- procedure of measuring fibre fineness using ATIRA fineness Tester -caustic soda swelling method of measuring fibre maturity - methods of estimating neps - Nep content of some Indian cotton varieties - principle of Opto-electrical method on HVI and AFIS - procedure of measuring fibre parameters on HVI and AFIS instruments and the parameters obtained

3. Measurement of Yarn properties **Periods: 9 (L:7, T:2)**

Measurement of yarn count using Quadrant Balance, using Wrap reel and electronic balance – measurement of Twist -expression for TPI- working principle of Twist tester-working principle of yarn hairiness tester-factors affecting yarn hairiness - Capacitance principle of measuring unevenness short, medium and long term variations -meaning of U% or CV% given by evenness tester -working principle of Uster evenness tester -Interpretation of unevenness test results -Define Index of irregularity Testing of Imperfections – testing of imperfections on Uster Classimat - factors influencing Classimat faults - Measurement of yarn appearance by ASTM method

4. Testing of Tensile properties **Periods: 9 (L:7, T:2)**

Definitions of terms related to tensile properties -Stress – strain curves for different textile fibres different principles of tensile testing - CRL, CRE, CRT -methods of measuring Fibre strength and the instruments used -methods of measuring yarn strength and the instruments -

CSP -common values of CSP for different count ranges-Measurement of fabric strength ,
Define Grab test, Ravelled strip test and Cut strip test - method of sampling for tensile tests -
method of measuring fabric Tensile strength -principles of measuring tearing strength- method
of measuring single rip ballistic tear strength on Elmendorf Tester

5. Testing of Fabric properties

Periods: 12 (L:9 T:3)

parameters of fabric construction – measurement of basic Fabric constructional particulars-
length, width, GSM, thread density, crimp and thickness - measuring count of yarn in a fabric
using Beasley balance - different properties which specifies fabric handle-fabric Stiffness and
its formula - fabric Drape and write the formula - fabric comfort properties -measuring air
permeability of the fabric - different methods of measuring water repellency of the fabric –
measurement of thermal insulation property, thermal conductivity and flammability of the
fabric - factors that contribute to thermal properties of fabric -measuring flammability of the
fabric by ATLAS - principle of vertical flame tester

6. Testing of Serviceability and dyed fabric properties

Periods: 12 (L:9, T:3)

Serviceability properties -importance of choice of instrument and choice of Abradant - the
purpose of testing fabric wear-causes of abrasive wear- working principle of Flat Abrasion
tester and Flex Abrasion tester , Martindale Abrasion and pilling tester-importance of pilling
in fabric quality -pilling rating factors -measurement of fabric pilling on ICI pilling and
image analysis - Principles of testing dyed fabric - grey scale, Fastness to light, Fastness to
washing or laundering , fastness to dry cleaning, fastness to hot pressing, Fastness to sea
water and hot water, Fastness to chlorination or bleaching , Colour fastness to crocking /
rubbing Colour fastness to perspiration, Colour fastness to water spotting, method of testing
for class of dye in the dyed fabric , method of Identification of dye stuff in the dyed fabric

1.0 Understand Sampling and Humidity relations

- 1.1 State the reasons for textile testing / objects of textile testing
- 1.2 Explain the need for standardisation of testing
- 1.3 Tabulate Routine tests conducted in textile mills and the method or instrument used for each
- 1.4 Define the terms used in sampling – consignment, test lot, sampling, random sample, biased sample, bulk sample, basic sample, laboratory sample, test specimen, package, container (case)
- 1.5 Explain different sampling methods for fibre
- 1.6 Explain different sampling methods for yarn
- 1.7 Explain different sampling methods for fabrics
- 1.8 Explain the method of Measuring Relative humidity by Wet and Dry bulb hygrometer
- 1.9 Explain the method of measuring moisture using moisture oven
- 1.10 Explain the Factors affecting moisture regain of textile material
- 1.11 Explain the influence of moisture (regain of fibre) on physical properties of textile fibres
- 1.12 Explain the influence of moisture on processing of textile material
- 1.13 Give the formula to find standard regain of a blend
- 1.14 State the method of Correction of invoice weight
- 1.15 State the principle of Controlling testing room atmosphere
- 1.16 Explain the procedure of Conditioning of samples for testing

2.0 Understand Measurement of Fibre parameters

- 2.1 List different methods and instruments used for measurement of fibre length, fineness and maturity
- 2.2 State the importance of cotton fibre maturity
- 2.3 List and define different units of expressing fibre fineness and maturity
- 2.4 List the standards for maturity results obtained from different methods
- 2.5 Explain the procedure of measuring fibre length on Baer sorter
- 2.6 Explain the working principle of digital fibro graph
- 2.7 Explain the procedure of measuring fibre fineness using ATIRA fineness Tester
- 2.8 Explain the caustic soda swelling method of measuring fibre maturity
- 2.9 List different methods of estimating neps

- 2.10 Mention Nep content of some Indian cotton varieties
- 2.11 Explain the principle of Opto-electrical method on HVI and AFIS
- 2.12 Explain the procedure of measuring fibre parameters on HVI instrument and the parameters obtained
- 2.13 Explain the procedure of measuring fibre parameters on AFIS instrument and the parameters obtained

3.0 Understand Measurement of yarn dimensions and properties

- 3.1 Explain the Measurement of yarn count using Wrap reel
- 3.2 Define S twist and Z twist
- 3.3 Derive the expression for TPI
- 3.4 Explain the working principle of Twist tester
- 3.5 Explain the working principle of yarn hairiness tester
- 3.6 Explain the principle of testing yarn abrasion
- 3.7 Define short, medium and long term variations
- 3.8 Define Index of irregularity
- 3.9 Explain Capacitance principle of measuring unevenness
- 3.10 Explain the working principle of evenness tester
- 3.11 State the meaning of U% or CV% given by evenness tester
- 3.12 Explain the principle of testing imperfections on Uster Classimat
- 3.13 Explain the principle of Measuring yarn appearance

4.0 Understand Tensile testing of textiles

- 4.1 Define the terms related to tensile properties
- 4.2 Explain different principles of tensile testing - CRL, CRE, CRT
- 4.3 Draw the Stress – strain curves for different textile fibres and explain
- 4.4 Explain the working principle of Stelometer
- 4.5 Explain the working principle of Presley fibre bundle strength tester
- 4.6 Explain the working principle of single yarn strength tester
- 4.7 Explain the working principle of lea strength tester
- 4.8 Explain the influencing parameters of yarn strength and elongation
- 4.9 Define the term CSP
- 4.10 Write the common values of CSP for different count ranges
- 4.11 Mention different types of measuring fabric strength
 - 4.11.1 Define Grab test, Ravelled strip test and Cut strip test
 - 4.11.2 State the method of sampling for tensile tests
 - 4.11.3 Explain the method of measuring fabric Tensile strength

- 4.11.4 Explain different principles of measuring tearing strength
- 4.11.5 Explain the working principle of fabric busting strength tester
- 4.11.6 Explain the method of measuring single rip ballistic tear strength on Elmendorf Tester

5.0 Understand Testing of fabric dimensions and comfort properties

- 5.1 List basic parameters of fabric construction and define
- 5.2 Explain the procedure of measuring fabric thickness
- 5.3 Explain the method of measuring count of yarn in a fabric using Beasley balance
- 5.4 Explain the procedure of measuring fabric cover factor
- 5.5 List different properties which specifies fabric handle and define
- 5.6 Explain the method of fabric Drape
- 5.7 Explain the method of measuring fabric Stiffness
- 5.8 Explain the method of measuring fabric crease recovery
- 5.9 Describe the mechanical properties of fabric by KESF
- 5.10 Explain the method of measuring air permeability of the fabric
- 5.11 Explain the principles of measuring water repellence of the fabric
- 5.12 Define the terms thermal insulation property of the fabric
- 5.13 Define thermal conductivity and flammability of the fabric
- 5.14 List the factors that contribute to thermal properties of fabric
- 5.15 Explain the measurement of thermal insulation value of the fabric
- 5.16 Explain the method of measuring fabric pilling

6.0 Understand Measurement of Serviceability and dyed fabric properties

- 6.1 Serviceability properties
 - 6.1.1 State the importance of choice of instrument and choice of Abradant
 - 6.1.2 State the purpose of testing fabric wear
 - 6.1.3 List the causes of abrasive wear
 - 6.1.4 Explain the working principle of Flat Abrasion tester
 - 6.1.5 Explain the working principle of Flex Abrasion tester
 - 6.1.6 Explain the working principle of Martindale Abrasion and pilling tester
 - 6.1.7 State the importance of pilling in fabric quality
 - 6.1.8 Mention the fabric pilling rating factors
 - 6.1.9 Explain the measurement of fabric pilling on ICI pilling box
 - 6.1.10 State the principle of measuring fabric pilling by image analysis
- 6.2 Explain following principles of Testing dyed fabric
 - 6.2.1 grey scale

- 6.2.2 Fastness to light
- 6.2.3 Fastness to washing or laundering
- 6.2.4 Colour fastness to dry cleaning and hot pressing
- 6.2.5 Fastness to sea water and hot water
- 6.2.6 Fastness to chlorination or bleaching
- 6.2.7 Colour fastness to crocking / rubbing
- 6.2.8 Colour fastness to perspiration
- 6.2.9 Colour fastness to water spotting
- 6.2.10 Testing for class of dye in the dyed fabric
- 6.2.11 Identification of dye stuff in the dyed fabric

Student Activities

1. Prepare a chart showing routine tests conducted for fibres, yarns, fabrics and garments and the instrument used for the same.(PO2,PO3,PO4)
2. Visit a spinning mill and take a note of sampling methods and number of tests conducted for testing different fibre, yarn and fabric.(PO2,PO3)
3. Take a hygrometer from the lab, find out the relative humidity in different laboratories in the department(PO1,PO3)
4. Go to a ginning mill, Collect a sample of cotton from the loose cotton storage area and from stored bale, find out the moisture % in the laboratory and compare. Report the observations.(PO3,PO8)
5. Prepare a chart showing fastness ratings of dyed fabrics for different media of colour fading. .(PO2,PO3,PO6)
6. Measure the moisture regain of the cotton and polyester yarns individually and also measure the moisture regain of blended yarn. Compare these values to check the formula for moisture regain of blend component. .(PO2,PO10)
7. Collect suiting and shirting fabrics, compare their properties by measurement and submit a report Collect Polyester and cotton fabrics, compare their properties by measurement and submit a report .(PO2,PO3)

Recommended Books

- | | |
|---|-----------------------|
| 1. Textile Testing : Fibre, Yarn and Fabric | - Arindam Basu, SITRA |
| 2. Principles of Textile testing | - JE Booth |
| 3. Physical Testing of Textiles | - BP Saville |
| 4. Textile Testing | - Angappan |

Suggested e-Learning References

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. <https://www.onlinetextileacademy.com>
4. <https://www.slideshare.net>
5. <https://textilechapter.blogspot.com>

CO-PO Attainment Matrix

Course: Textile testing											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3	1	1							2,3,4
CO2		3	2	2							2,3,4
CO3		3	1	1							2,3,4
CO4		3	1	1							2,3,4
CO5		3	1	1							2,3,4
CO6		3	1	1	1	2					2,3,4,5,6
Activities		3	3	1		1		1		1	2,3,4,6,8,10

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

Blue print of Marks and Questions for MSE and SEE

MID SEM – I EXAM								
Sl.No	Unit Name	R			U	A		
1	Unit-I	1, 2			5(a)	7(a)		
					5(b)	7(b)		
2	Unit-II	3, 4			6(a)	8(a)		
					6(b)	8(b)		
Total Questions		4			4	4		
MID SEM –II EXAM								
S.No	Unit Name	R			U	A		
1	Unit-III	1, 2			5(a)	7(a)		
					5(b)	7(b)		
2	Unit-IV	3, 4			6(a)	8(a)		
					6(b)	8(b)		
Total Questions		4			4	4		
SEMESTER END EXAMINATION								
Sl No	Unit No.	R			U	A		
1	Unit-I	4	1		9(a)	13(a)		
2	Unit-II							
3	Unit-III		2		10(a)	14(a)		
4	Unit-IV							
5	Unit-V		3	5, 6	9(b)	13(b)		
					11(a)	15(a)		
					11(b)	15(b)		
6	Unit-IV			7,8	10(b)	14(b)		
					12(a)	16(a)		
					12(b)	16(b)		
Total Questions		8			8	8		
Legend		Remembering (R)				1 Mark		
		Understanding (U)				3 Marks		
		Application (A)				5 Marks		

Model Question Papers

BOARD DIPLOMA EXAMINATIONS, (C-18)

IV SEMESTER – MID SEM I

Model Question Paper

[Time Duration: 1 Hour]

[Total Marks : 20]

Sub Name : TEXTILE TESTING

Sub Code : 18TT-405C

PART-A

Answer **ALL** questions and each question carries **01** Marks

04×01=4

- 1 State the objects of textile testing
- 2 Define the terms used in sampling – , random sample ,laboratory sample
- 3 List different methods and instruments used for of fibre length measurement
- 4 Mention Nep content of some Indian cotton varieties

PART-B

Answer any **TWO** questions and each question carries **03** Marks.

02×03=6

- 5 (a) Explain different sampling methods for fibre s
(OR)
(b) Explain the method of measuring moisture using moisture oven
- 6 (a) Classify different methods of measuring fibre maturity
(OR)
(b) Explain the principle of Measuring fibre parameters on HVI

PART-C

Answer any **TWO** questions and each question carries 5 Marks.

02×5=10

- 7 (a) Explain the Factors affecting moisture regain of textile material
(OR)
(b) Explain the procedure of Conditioning of samples for testing
- 8 (a) Explain the principles of Measuring trash by Opto electrical methods (HVI and AFIS)
(OR)
(b) Explain the method of Nep measurement on AFIS

BOARD DIPLOMA EXAMINATIONS, (C-18)

IV SEMESTER – MID SEM II

Model Question Paper

[Time Duration: 1 Hour]

[Total Marks : 20]

Sub Name : TEXTILE TESTING

Sub Code : 18TT-405C

PART-A

Answer **ALL** questions and each question carries **01** Marks

04×01=4

- 1 Define S twist and Z twist
- 2 State the meaning of U% or CV% given by evenness tester
- 3 Mention different principles of tensile testing
- 4 State the method of sampling for tensile tests

PART-B

Answer any **TWO** questions and each question carries **03** Marks.

02×03=6

- 5 Explain the working principle of yarn hairiness tester
(OR)
(b) Explain the principle of testing yarn abrasion
- 6 {a) Explain the working principle of Stelometer
(OR)
(b) Explain the working principle of lea strength tester

PART-C

Answer any **TWO** questions and each question carries 5 Marks.

02×5=10

- 7 (a) Explain Capacitance principle of measuring unevenness
(OR)
(b) Explain the principle of testing imperfections on UsterClassimat
- 8 (a) Explain the method of measuring fabric Tensile strength
(OR)
(b) Explain the working principle of fabric busting strength tester

BOARD DIPLOMA EXAMINATION (C-18)
END SEMESTER EXAMINATION
MODEL QUESTION PAPER

DTT-IV SEMESTER
TEXTILE TESTING

Time: 2 Hours

Total Marks: 40

PART-A

08X01=08

- Instructions :**
1. Answer **ALL** questions.
 2. Each question carries **ONE** mark.

1. State the method of Correction of invoice weight
2. Define S twist and Z twist
3. State the purpose of testing fabric wear
4. Define Index of irregularity
5. Define thermal conductivity and flammability of the fabric
6. List the factors that contribute to thermal properties of fabric
7. State the purpose of testing fabric wear
8. List the causes of abrasive wear

PART-B

04X03=12

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **THREE** marks.

9. (a) Explain the need for standardisation of testing
(OR)
(b) Explain the procedure of measuring fabric cover factor
10. (a) Explain the principle and working of Twist tester
(OR)
(b) Explain the working principle of Flat Abrasion tester
11. (a) Explain the method of fabric Drape
OR
(b) Explain the method of measuring fabric crease recovery
12. (a) Explain the working principle of Martindale Abrasion tester
OR
(b) Explain the measurement of fabric pilling on ICI pilling box

PART-C

04X5=20

- Instructions :**
1. Answer any **FOUR** questions.
 2. Each question carries **FIVE** marks.

13 (a) Explain the working principle of digital fibro graph
(OR)

(b) Explain the method of measuring air permeability of the fabric

.

14 (a).Explain the working principle of evenness tester

(OR)

(b) Explain following principles of Testing dyed fabric Fastness to light

15. (a) Explain the measurement of thermal insulation value of the fabric
OR

(b).Explain the method of measuring fabric pilling

16. (a) Explain the method of testing for class of dye in the dyed fabric
OR

(b).Explain the method of Identification of dye stuff in the dyed fabric

18TT-406P YARN MANUFACTURE LAB PRACTICE

Course Title : Yarn Manufacture Lab Practice	Course Code : 18TT-406P
Semester : IV	Core / Elective : Core
Teaching Scheme in Periods (L/T/P): 15:0:30	Credits : 1.5
Methodology : Lecture + Practical	Total Hours : 60
CIE : 60 Marks	SEE : 40 Marks

Pre Requisites

This course requires the basic knowledge of Simplex process in Yarn manufacturing and the functions of machines like Simplex, Ring frame, Rotor spinning, TFO etc.,

Course Outcomes

	Course Outcome	Linked Experiment	Periods
CO1	Identify major parts of Ring frame & draw the gearing diagram	1- 9	9
CO2	Calculate twist and draft and constants of draft, twist and production	1 – 6	9
CO3	Identify the parts of machinery related other spinning systems	7-10	12
CO4	Identify the parts of Autoconer and Reeling machine	11-12	6
CO5	Identify the parts of doubling frame, ring doubler and TFO	13-15	9
	TOTAL		45

Specific Skills to be developed

Intellectual Skills

1. Identify various change places at ring frame, TFO, Autoconer
2. Calculate the speed of rotor, TPI, production.
3. Differentiate between ring and rotor yarns.

Motor Skills

1. Draw the gearing diagram of Ring frame, TFO, Winding machine.
2. Draw the sketches of parts of non conventional spinning machines
3. Follow the standard setting procedure for these machines

List of Experiments

Ring frame

- 1) Identify major constructional parts of Ring frame and finding their functions
- 2) Assembling and disassembling of drafting system & Spindle of a Ring frame
- 3) Draw a gearing diagram showing the drives, calculate the speeds of all rotating parts
- 4) Draw the gearing diagram and calculate all types of drafts and draft constants
- 5) Draw the gearing diagram and calculate the twist, twist constant
- 6) Draw the gearing diagram and calculate production constant

Other Spinning Methods

- 7) Identify the major constructional parts Rotor spinning machine and assembling and disassembling of parts
- 8) Identify the major constructional parts Friction spinning machine and assembling and disassembling of parts
- 9) Identify the major constructional parts Self twist spinning machine and assembling and disassembling of parts
- 10) Identify the major constructional parts Air jet spinning machine and assembling and disassembling of parts

Finishing

- 11) Identification of major parts of Autoconer machine and finding their functions
- 12) Identification of major parts of Reeling machine and finding their functions
- 13) Identification of major parts of Doubler winder and finding their functions
- 14) Identification of major parts of Ring doubler and finding their functions
- 15) Identification of major parts of TFO and finding their functions

References

1. Manual of Textile Technology : Short staple spinning series: Vol 1, 3, 4 – W.Klein
2. Elements of Combing - Dr. A.R. Khare
3. Elements of Ring spinning and Doubling - Dr.A.R.Khare
4. Spun Yarn Technology – A.Venkatasubramani

Specific e – Learning Resources

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. www.fibre2fashion.com
4. <https://www.onlinetextileacademy.com>
5. <https://www.slideshare.net>
6. <https://textilechapter.blogspot.com>
7. <https://www.onlinetextileacademy.com>

CO – PO Attainment Matrix

Course: Yarn Manufacture Lab Practice											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3	2	3							2,3,4
CO2		3	2	3							2,3,4
CO3		3	2	3							2,3,4
CO4		3	2	3							2,3,4
CO5		3	2	3							2,3,4

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

18TT-407P ADVANCED FABRIC MANUFACTURE LAB PRACTICE

Course Title : Advanced Fabric Manufacture Lab Practice	Course Code : 18TT-407P
Semester : IV	Core / Elective: Core
Teaching Scheme in Periods (L/T/P): 15:0:30	Credits : 1.5
Methodology : Lecture + Practical	Total Hours : 60
CIE : 60 Marks	SEE : 40 Marks

Pre requisites

This course requires the basic knowledge of power loom, primary and secondary mechanisms of a power loom and different shedding mechanisms

Course Outcomes

	Course Outcome	Linked Experiment	Periods
CO1	Identify the parts, assemble and disassemble the parts of auxiliary motions of a power loom	1,2,3,4	12
CO2	Identify the parts of pick at will motion and weft accumulators	5,6	6
CO3	Develop the pattern chain for a given motif on Dobby Shedding machine	7,8,9,10,11	15
CO4	Develop the pattern chain for a given motif on Jacquard shedding machine	12,13	6
CO5	Identify the parts of Shuttleless looms	14,15	6
			45

Specific Skills to be Developed

Intellectual Skills

1. Select fabric and suitable loom for its production
2. Draw sketches of various motions of a loom

Motor Skills

1. Set the dobby, jacquard, drop box motions on a loom
2. Develop pattern chain for a given design on dobby
3. Develop pattern chain for a given design on a jacquard
4. Develop pattern chain for a given weft pattern of the fabric on drop box loom

List of Experiments

Auxiliary motions of a loom

- 1) Dismantling and assembling of centre weft fork motion and Identification of parts ,
- 2) Dismantling and assembling of Warp stop motion and identification of parts
- 3) Dismantling and assembling of Loose reed motion and identification of parts
- 4) Dismantling and assembling of Fast reed motion and identification of parts

Weft patterning

- 5) Identification of functional parts of Drop box mechanism
- 6) Develop a pattern chain for a given weft pattern

Dobby Shedding

- 7) Identify the functional parts of Climax Dobby
- 8) Identify the functional parts of Cam Dobby
- 9) Identify the functional parts of Rotary Dobby
- 10) Identify the functional parts of Cross border Dobby
- 11) Develop the pattern chain for a given warp (striped) pattern-1

Jacquard shedding

- 12) Identification of functional parts of Jacquard shedding mechanism
- 13) Develop a pattern chain for a given motif for a jacquard shedding

Shuttle less looms

- 14) Identification of functional parts of Rapier Loom
- 15) Identification of functional parts of Air Jet Loom

Reference

- | | |
|--|-------------------------|
| 1. Weaving – Methods, Machines and mechanism | ---- Talukdar&Sriramulu |
| 2. Woven Fabric Production – II | ---- NCUTE. |
| 3. Weaving Mechanism – I & II | ---- N.N. Benarjee. |
| 4. Fancy Weaving Mechanism | ----- K.T.Ashwani |

E Learning Resources & Suggested websites

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. www.fibre2fashion.com
4. <https://www.onlinetextileacademy.com>

5. <https://www.slideshare.net>
6. <https://textilechapter.blogspot.com>
7. <https://www.onlinetextileacademy.com>

CO-PO Mapping Matrix

Course: Advanced Fabric Manufacture Lab											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3	2	1							2,3,4
CO2		3	2	1							2,3,4
CO3		3	2	1							2,3,4
CO4		3	2	1							2,3,4
CO5		3	2	1							2,3,4

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

18TT-408P- ADVANCED TEXTILE CHEMICAL PROCESSING LAB PRACTICE

Course Title : Advanced Textile Chemical Processing Lab Practice	Course Code : 18TT-408P
Semester : IV	Core / Elective : Core
Teaching Scheme in Periods (L/T/P): 15:0:30	Credits : 1.5
Methodology : Lecture + Practical	Total Hours : 60
CIE : 60 Marks	SEE : 40 Marks

Pre requisites

This course requires the basic knowledge of fibres and flow chart of textile chemical processing and the chemicals used for each chemical treatment

Course Outcomes

	Course Outcome	Linked Experiment	Periods
CO1	Prepare the textiles made by Wool, Silk and Manmade fibres	1-5	15
CO2	Dye the fabrics made by wool	6	3
CO3	Dye the fabrics made by Silk	7	3
CO4	Dye the fabrics made by Synthetic fibres	8,9	6
CO5	Print the cotton fabrics by different methods	10,11,12	18
			45

Specific Skills to be developed

Intellectual Skills

1. Select chemicals
2. Calculate quantities of chemicals and auxiliaries
3. Understand dyeing process.
4. Learn after treatments.

Motor Skills

1. Dyeing protein fibre with different dyes.
2. To operate dyeing machine.
3. Programming of dyeing machine
4. Operation of dyeing machines
5. Observe quality of dyed substrate

List of Experiments

Preparation of protein fibres for dyeing

- 1) Scouring of wool fibres (3)
- 2) Bleaching of wool fibres (3)
- 3) Degumming of raw silk (3)
- 4) Scouring of Silk (3)
- 5) Bleaching of Silk (3)

Dyeing of protein fibres

- 6) Dyeing of wool (3)
- 7) Dyeing of Silk (3)

Dyeing of Manmade textiles

- 8) Dyeing of Polyester (3)
- 9) Dyeing of Nylon (3)

Printing

- 10) Printing of fabric by means of block printing.(6)
- 11) Printing of fabric using Screen printing machine (6)
- 12) Printing of fabric on Roller printing machine. (6)

Reference

1. M. L. Gulrajni - Dyeing of Polyester & Its Blends - I I T, Delhi Textile Department
2. K. V. Datye & A. A. Vaidya - Chemical Processing of Synthetic and Their Blends - Sevak Publication and A Wiley Interscience Publication
3. R. M. Mittal & S. S. Trivedi - Chemical Processing of Polyester/ Cellulosic Blends - ATIRA, Ahmedabad
4. Dr. V. A. Shenai - Tech. of Dyeing - Sevak Publication
5. R. S. Bhagwat - Handbook Of Textile Processing Machinery - Colour Publication, Mumbai

6. Dr. K.V. Datye & A. A. Vaidya- Chemical Processing of Synthetic and its Blends- A Wiley Inter Science Publication
7. L. W. C. Miles - Textile Printing - The Dyer Company Publication Trust
8. Dr. V. A. Shenai - Technology. Of Printing, Vol. IV - Sevak Publication
9. W. Clerke - An Introduction to Textile Printing - Newnes Butte

1. www.nptel.ac.in
2. www.textilelearner.blogspot.com
3. <https://www.onlinetextileacademy.com>
4. <https://www.slideshare.net>
5. <https://textilechapter.blogspot.com>
6. <https://www.onlinetextileacademy.com>

Course: Advanced Textile Chemical Processing Lab											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3	3	1							2,3,4
CO2		3	3	1							2,3,4
CO3		3	3	1							2,3,4
CO4		3	3	3							2,3,4
CO5		3	3	3							2,3,4

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

18TT-409P TEXTILE TESTING LAB PRACTICE

Course Title : Textile Testing Lab Practice	Course Code : 18TT-409P
Semester : IV	Core / Elective : Core
Teaching Scheme in Periods (L/T/P): 15:0:30	Credits : 1.5
Methodology : Lecture + Practical	Total Hours : 60
CIE : 60 Marks	SEE : 40 Marks

Pre requisites

This course requires the basic knowledge of principles of textile testing textile testing

Course Outcomes

On completion of this course the students will be able to

	Course Outcome	Linked Experiment	Periods
CO1	Measure the yarn dimensions	1-5	15
CO2	Measure the fabric dimensions and tensile properties	6-10	15
CO3	Measure the fabric comfort and serviceability properties	11-15	15
			45

Specific Skills to be developed

Intellectual Skills

1. Proper selection of measuring instruments depending upon the data and precision required.
2. Analyze properties of yarns and fabrics .
3. To interpret the results from observations and calculations.
4. To use these results for corrective actions in mechanical and wet processing

Motor Skills

1. Proper handling of instruments.
2. Measuring physical dimensions of yarns and fabrics accurately.

List of Experiments

A. Yarn dimensions and properties

- 1) Determination of hank of Roving using wrap block and electronic balance
- 2) Measurement of yarn count using wrap reel and electronic balance
- 3) Measurement of yarn twist using twist tester
- 4) Testing of yarn evenness, hairiness and appearance
- 5) Testing of yarn strength (single / Lea) and CSP

B. Fabric dimensions and tensile properties

- 6) Measurement of fabric dimensions - width, GSM, thickness crimp
- 7) Measurement of fabric cover factor by using fabric densi meter and Beesely balance
- 8) Determination of fabric Tensile strength
- 9) Determination of fabric Tear strength
- 10) Determination of fabric bursting strength

C. Fabric comfort and serviceability properties

- 11) Determination of fabric handle properties (Stiffness, Crease recovery, Drape)
- 12) Measurement of Fastness properties of the dyed fabric (light, Rubbing, wash fastness, water and perspiration)
- 13) Measurement of Air permeability of the fabric
- 14) Measurement of Water repellency of the fabric
- 15) Measurement of fabric abrasion and Pilling

References

1. Angappan - Textile Testing - SS Textile Inst,Coimbatore
2. J. E. Booth - Principles of Textile Testing --
3. Kothari - Testing and Quality Management - IAFL, New Delhi
4. B. P. Saville - Physical Testing of Textiles --
5. W.E. Morton &J.W.Hearle- Physical Properties of Textile Fibers'--
6. John Skinkle- Textile Testing, Physical, Chemical &Microscopic --
7. Hamby & Grover - Hand book of Textile Testing &QualityControl --
8. R. B. Beevers - Experiments in fibre physics --

Suggested e-Learning Resources

1. www.scribd.com
2. www.fibre2fashion.com
3. textilelearnersblogspot.com

CO-PO Attainment Matrix

Course: Fibres and Yarn Testing Lab Practice											
Course Outcomes	Program Outcomes										Mapped POs
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	
CO1		3	2	2							2,3,4
CO2		3	2	2							2,3,4
CO3		3	2	2							2,3,4
CO4		3	2	2							2,3,4

Note: Correlation levels of CO with PO are rated as 1, 2 or 3 and are defined below:
3: Substantial (High), 2: Moderate (Medium), 1: Slight (Low), blank indicates no correlation

Advanced Communication Skills and Life Skills

Course Title	Advanced Communication Skills and Life Skills	Course Code	18 Common 410 P
Semester	IV	Course Group	Foundation
Teaching Scheme in Periods- L:T:P	15:0:30	Credits	1.5
Methodology	Lecture + Practical	Total Contact Hours	45 Periods (3 Periods per Week)
CIE	60 Marks	SEE	40 Marks

Rationale:

This course is designed to impart writing skills and employability skills to the students of diploma which will help them in obtaining and maintaining the employment.

Prerequisites:

This course requires the basic knowledge of vocabulary, grammar and four language learning skills, viz. Listening, Speaking, Reading and Writing.

Course Outcomes:

Modules	At the end of the course the students will have the ability to:
Presentation Skills	Prepare a presentation. Use presentation aids effectively. Develop public speaking skills. Learn to make PowerPoint Presentations effectively. Present a Paper using appropriate body language.
Writing Reports	Learn kinds of reports. Learn the format of a report. Organise ideas. Develop essential vocabulary useful to write scientific and technical reports.
Interview Skills	Learn the techniques to face an interview. Learn the etiquette to communicate with employers. Learn the dos and don'ts of an interview.

	Learn the frequently asked questions in interviews. Use appropriate body language. Learn to face interviews telephonically. Gain the confidence to face an interview by attending mock interview.
Group Discussion	Learn the dos and don'ts of a Group Discussion. Participate in a Group Discussion in a healthy manner. Use effective non-verbal communication. Use appropriate phrases and expressions useful in a group discussion.
Workplace Awareness	Learn workplace etiquette. Identify the knowledge, skills and attributes useful at workplace. Build strong workplace relationships. Learn professional ethics. Understand gender equality at the workplace Develop a sense of responsibility towards the society.
Writing Skills Useful at Workplace	Learn various writing formats useful at workplace. Develop an ability to apply technical information in documentation. Revise and edit written documents effectively. Develop corresponding skills - learn the kinds of business letters - the format of a business letter. Learn effective e-mail writing skills. Learn Business Memos. Learn Notes and Narratives. Learn Forms and Applications. Prepare templates for different purposes. Prepare an agenda of a meeting. Prepare the minutes of a meeting. Prepare Notices / Circulars for various purposes. Prepare Press release.

CO-PO Matrix

	Course Outcome		Linked PO
CO 1	Making effective presentations	R/U/A	1, 2, 3,4, 5,6,7,8,9,10
CO 2	Writing scientific and technical reports	R/U/A	1,2,3,4, 5,6,7,8,9,10
CO 3	Learn to face oral and telephonic interviews	R/U/A	1,2,3,4, 7,9,
CO 4	Learn to face group discussion	R/U/A	1,2,3,7,8,9
CO 5	Learn to write various formats useful at workplace	R/U/A	1,2,3,5,7,8,9,10
CO6	Learn workplace etiquette and ethics	R/U/A	1,2,3,7,8,9,10

Course Contents:

I. Presentation Skills	Duration: 6 periods
II. Writing Reports	Duration: 9 periods
III. Interview Skills	Duration: 9 periods
IV. Group Discussion	Duration: 6 periods
V. Workplace Awareness	Duration: 6 periods
VI. Writing Skills Useful at Workplace	Duration: 9 periods

Suggested Student Activities:

- Paper Presentations
- Seminars
- Mock Interviews
- Telephonic Interviews
- Group Discussions
- Role Plays
- Creating advertisements
- Five-minute activities
- Creating a model of workplace

Evaluation Pattern:

I. Continuous Internal Examination:

60 Marks

a. Mid Sem - I

20 marks

Syllabus:

- i. Presentation Skills
- ii. Writing Reports

b. Mid – II:

20 Marks

Syllabus:

- i. Interview Skills
- ii. Group Discussion

c. Internal assessment:

20 marks

i. Seminars:

10 marks

ii. Assignments:

5 marks

iii. Lab record submission:

5 marks

II. Semester End Examination :

40 Marks

a. Write an essay on a given topic or participate in an activity:

15 Marks

b. Interview or Group Discussion:

15 Marks

c. *Viva Voce*

10 marks

References:

- Adair, John. *Effective Communication*. London: Pan Macmillan Ltd., 2003.
- Ajmani, J. C. *Good English: Getting it Right*. New Delhi: Rupa Publications, 2012.
- Amos, Julie-Ann. *Handling Tough Job Interviews*. Mumbai: Jaico Publishing, 2004.
- Collins, Patrick. *Speak with Power and Confidence*. New York: Sterling, 2009.
- Fensterheim, Herbert and Jean Baer. *Don't Say Yes When You Want To Say No*. New York: D
- Raman, Meenakshi & Sangeeta Sharma. *Technical Communication: Principles and Practice*. Second Edition. New Delhi: Oxford University Press, 2011

E-Learning Resources:

- <http://www.dailywritingtips.com/>
- <http://www.englishdaily626.com/c-errors.php>
- <http://www.owlnet.rice.edu/~cainproj/>
- <http://www.thehumorsource.com/>
- <http://www.indiabix.com/group-discussion/topics-with-answers/>
- <http://networketiquette.net/>
- <https://public.wsu.edu/~brians/errors>
- <http://www.bbc.co.uk/worldservice/learningenglish/radio/specials/15>

BOARD DIPLOMA EXAMINATION (C-18)
FOURTH SEMESTER COMMON-410P
ADVANCED COMMUNICATION SKILLS AND LIFE SKILLS
MID SEM - I

Time : 1 Hour

Total Marks: 20 Marks

Part – A

10 marks

Instruction: Answer any one of the following questions.

1. Write the guidelines for preparing a PowerPoint presentation.
2. How do you prepare yourself for presenting a technical paper?
3. Mention a few presentation aids and how do you use them effectively?

Part – B

10 marks

Instruction: Answer any one of the following questions.

4. Write the format of a report and describe it.
5. Write a report on the accident you have seen recently.
6. Give the outline of a project report and describe it.

BOARD DIPLOMA EXAMINATION (C-18)
FOURTH SEMESTER COMMON-410P
ADVANCED COMMUNICATION SKILLS AND LIFE SKILLS
MID SEM - II

Time : 1 Hour

Total Marks: 20 Marks

Part – A

10 marks

Instruction: Answer any one of the following questions.

1. What are the dos and don'ts for a formal interview?
2. What at least ten frequently asked questions in a formal interview?
3. How do you prepare for a telephonic interview?

Part – B

10 marks

Instruction: Answer any one of the following questions.

4. What are the dos and don'ts of a group discussion?
5. Mention some phrases and expressions commonly used in a group discussion.
6. Write a short paragraph on the steps you take while participating in a group discussion.

BOARD DIPLOMA EXAMINATION (C-18)
FOURTH SEMESTER 18 COMMON-410P
ADVANCED COMMUNICATION SKILLS AND LIFE SKILLS
SEMESTER END EXAM

Time : 3 Hours

Total Marks: 40 Marks

Part – A

10 marks

Instruction: Pick any one question from the given lot.

1. Prepare the outline of a project report and describe it.
2. Write the guidelines for preparing the slides of a PowerPoint presentation.
3. Write the minutes of the meeting conducted at the Principal's chamber to conduct the annual day celebrations. Prepare the agenda of the annual day celebrations.
4. Describe the workplace etiquette.
5. Prepare a press note for the '*Job Mela*' which is going to be conducted at your institute.

Part – B

15 marks

6. Interview / Group Discussion

Part – C

15 marks

7. *Viva Voce*

Other General Activities

COMMON ACTIVITIES FOR SKILL UPGRADATION

1. Yoga and Meditation
2. Swacha Bharat and SwachaTelangana
3. Plantation
4. Reports / Debate / Street Campaign / Street show / Quiz / Group discussion / Seminar
 - a) Protecting Environment
 - b) Conservation of Water and other natural resources
 - c) Our Social responsibilities
 - d) Social Services
 - e) Use of Technology
 - f) Nutritional food and Health
 - g) Traffic Rules and Road Safety
 - h) Media

RUBRICS for Assessing Student Activity

Model Rubrics for Visiting the field / Organization and Drawing a Process flow chart

Model Rubrics for collecting the data from the Journals / Library / internet (documents, photographs, animations, videos) and giving power point presentation						
S.No	Sub activity	Performance				
		excellent	Good	Satisfactory		Need improvement
1	Step-1	Data was collected from more than four sources.	Data was collected from three to four sources	Data was collected from two sources.		Data was collected only one source.
2	Step-2	All materials and data required for the activity were accurately prepared based on the data collected independently.	Almost all materials and data required for the activity were accurately prepared based on the data collected independently.	The materials and data required for the activity were accurately prepared based on the data collected with the help of teacher.		The materials and data required for the activity were inaccurately prepared
3	Step-3	Procedures were outlined in a step-by-step fashion that could be followed by anyone & performed the activity effectively.	Procedures were outlined in a step-by-step fashion, require explanation & performed the activity effectively.	Procedures that outlined were complete with 1 or 2 gaps and require explanation & performed the activity normally		Procedures that outlined were not sequential, & performed the activity in a poor way
4	Step-4	Presented/ explained the information about the activity in logical, interesting sequence with attractive visuals or diagrams.	Presented/ explained the information about the activity in logical sequence with visuals or diagrams.	Presented/ explained the information about the activity in logical sequence with less visuals or diagrams.		Presented/ explained the information about the activity without sequence and visuals or diagrams.
5	Conclusion / summary	Provided a detailed conclusion/ summary clearly based on the data and activity	Provided a conclusion / summary clearly based on the data and activity	Student provided a conclusion/ summary less effectively		Conclusions /summary was not relevant.

S.No	Sub activity	Performance				
		Excellent (5)	Very Good (4)	Good (3)	Satisfactory (2)	Need improvement
1	Use of visuals diagrams, symbols, directions	Excellent	Very Good	Good	Satisfactory	Need improvement
2	Correct sequence of machines	Excellent	Very Good	Good	Satisfactory	Need improvement
3	Identified major machines and processes and shown in the chart	Excellent	Very Good	Good	Satisfactory	Need improvement
4	Defined the major process / principle of working	Excellent	Very Good	Good	Satisfactory	Need improvement
5	Participation in the work	Lead the team	Took very active role	Took active role in the team	Participated in the team	Not participated in the team

Model Rubrics for Visiting the Field / Organization and Collection samples, Brochures, Test Report formats, Spare parts						
S. No	Sub activity		Performance			
		Excellent	Very Good (4)	Good	Satisfactory	Need improvement
1	Samples Collection	Data was collected from more than four sources	Data was collected from four sources	Data was collected from three sources	Data was collected from two sources.	Data was collected only one source.
2	Participation in the work	Lead the team	Jointly lead the team	Take active role in the team	Participated in the team	Not participated in the team
3	Relevance of the collection to the subject and use	Excellent	Very Good	Good	Satisfactory	Need improvement
4	Presentation about the collected material	Excellent	Very Good	Good	Satisfactory	Need improvement
5	Conclusion / summary / Usefulness	Excellent	Very Good	Good	Satisfactory	Need improvement

Model Rubrics for carrying out a brief study / experiment / survey on a particular problem or new ideas related to the subject and submitting a report					
S. No	Sub activity	Performance			
		Excellent	Good	Satisfactory	Need improvement
1	Data Collection	Data was collected from more than four sources.	Data was collected from three to four sources	Data was collected from two sources.	Data was collected only one source.
2	Standards of Conditions for experiment	Excellent	Good	Satisfactory	Need improvement
3	Usefulness of Study conducted	Excellent	Very Useful	Moderately Useful	Less Useful
4	Presented/ explained about the activity with attractive visuals or diagrams	Excellent	Good	Satisfactory	Need improvement
5	Conclusion / summary	Provided a detailed conclusion/ summary clearly based on the data and activity	Provided a conclusion / summary clearly based on the data and activity	Student provided a conclusion/ summary less effectively	Conclusions /summary was not relevant.

Model Rubrics for carrying out a test on materials on quality and analyzing or comparing the with the actuals / organization test results / norms

S. No	Sub activity	Performance			
		Excellent	Good	Satisfactory	Need improvement
1	Sample selection	Sample is selected randomly and size is as per the standards	A random sample selected from the lot but approximate dimensions	Sample selected from a group / category with no specific size	No specific procedure followed
2	Test method and procedure	Standard test method is followed, calibration of instrument done	Standard test method without calibration	Conventional instrument is used	A rough method is used and just estimated
	Result of the test	Excellent	Good	Satisfactory	Need improvement
3	Correlation of the values with norms	Excellent	Good	Satisfactory	Need improvement
4	Presentation and Conclusion	Excellent	Good	Satisfactory	Need improvement