1. Course Title :-**YARN MANUFACTURE-II**
2. Course Code :-**TT-301**
3. Semester :-**3rd (Third)**

4. Rationale of the subject/ Courses:- Yarn manufacture-II is a continuation of details study of spinning processes. This subjects covers carding and draw frame processes it deals with the study of principles and descriptions of these processes and functions of all machine's and their parts with related information's and skills.

5. COURSE OUTCOME:- The students will be able to:-

- State the object and function of Draw frame
- Identify the different parts of draw frame with the mechanism of draw frame.
- Identify the main parts of revolving carding machine
- Explain the application of draft and draft distribution in a draw frame and carding.
- State the mechanism and action of revolving flat carding machine in spinning process
- Calculate the speed, efficiency, draft and waste percentage of carding and draw frame.

6. Teaching Scheme (in hours) :- **90hrs**

Lecture	Tutorial	Practical	Total
42	03	45	90

7. Examination Scheme :

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
70	30	**100**	33	-	-	-	-

8. Detailed Course Content :

Chapter No	Chapter Title	Content	Duration (in hours)
1	CARDING	1.0.Principles and objects of carding 1.1.Revolving Flat Card(RFC), feeding zone. 1.2.R.F.C Carding zone. 1.3.R.F.C.Doffer zone. 1.4.R.F.C Coiler region 1.5. Speeds & Settings and their efficiency, Quality wastes 1.6.Card clothing's, Wire point specification. 1.7.Features of Semi- high production and high production cards, 1.8.Methods of Converting conventional cards to semi high production cards.	10
2	Modern trend in carding.	2.0.Modern developments in wires, feeding zone, carding zone,	3

		2.1.Drafting zone, Web purifier & Auto-leveller. 2.2.S.R.R.L Card, Tandam Card, Platt Card	
3	Maintenance	3.1 Cleaning Efficiency, Neps in Card-web, sliver irregularity. 3.2.Maintenance Schedule- Half Setting &Full Setting, grinding &tripping, Overhauling/ Semi-overhauling. 3.3 Defects of sliver and its Remedies, Performance Assessment.	5
4	Calculations	Calculations relating to speed, draft, production, waste and efficiency.	5
5	Drawing	5.1 Principles and objects of drawing. 5.2. Study of mechanism of draw frame andits make.	4
6	Drafting system	6.1 Study of-3 over3 system,2 over2 system,3 over 3 system,platte pressure- bar system, s.a.c.m 4 over 4, whitin 4 over 5system, sacolowell 3 over 4 system and Rieter 3 over 5 system. 6.2.Study of Weighting System 6.3.Study of draft distribution and roller setting for different classes of cotton.	8
7	Stop Motion	Study of stop motions- electrical & Mechanical.	1
8	Modern trend	Features of high speed draw frame, latest trends in draw, Auto-leveller, Semi- high production and high production Cards.	2
9	Defects	9.1 Defects in draw -frame process, their causes and remedies calculation. 9.2.Calculations relating to speed, draft,production and efficiency	1

9. Distribution of Marks:

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type	Short Questions	Descriptive Questions	
1	Carding	01	02	05	08
2	Modern trend in carding	02	02	03	07
3	Maintenance	01	02	05	08
4	Calculations	01	03	06	10
5	Drawing	01	02	04	07

6	Drafting system	01	02	07	10
7	Stop Motion	01	03	04	08
8	Modern trend	01	02	03	06
9	Defects	01	02	03	06
		10	20	40	70

ANNEXURE-I

Sr No	Topic (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	C	A	HA
1	CARDING	10	23.8%	1	2	5	
2	MODERN TREND IN CARDING	03	7.1%	2	2	3	
3	MAINTENANCE	05	11.9%	1	2	5	
4	CALCULATIONS	05	11.9%	1	3		6
5	DRAWING	04	9.5%	1	2	4	
6	DRAFTING SYSTEM	08	19.04%	1	2		7
7	STOP MOTION	01	2.3%	1	3	4	
8	MODERN TREND	02	4.7%	1	2	3	
9	DEFECTS	01	2.3%	1	2	3	
		42	100%	10	20	27	13

K= Knowledge C=Comprehension A= Application HA= Higher than Application

DETAILED TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic	Objective type				Short Answer Type				Essay type				
		K	C	A	T	K	C	A	T	K	C	A	HA	T
1	CARDING	1			1		2		2			5		5
2	MODERN TREND IN CATRDING		2		2		2		2		3			3
3	MAINTENANCE	1			1		2		2			5		5
4	CALCULATIONS	1			1			3	3				6	6
5	DRAWING	1			1		2		2		4			4
6	DRAFTING SYSTEM	1			1			2	2				7	7
7	STOP MOTION	1			1			3	3			4		4
8	MODERN TREND	1			1		2		2		3			3
9	DEFECTS	1			1		2		2		3			3
					10				20					40

	K=Knowledge C = Comprehension A=Application HA= Higher Than application T=Total		

- Suggested implementation Strategies :
- Suggested learning Resource :
- Books list

Sl.No.	Title	Author/Publisher
1	Cotton Carding & Drawing	Gilbert &Merrill
2	ATIRA cotton spinning.	A.R.Khare
3	Manual cotton spinning	William Taggort.

List of Journals :

1. Textile Research Journal,
2. Textile Trend
3. Textile Asia
4. Indian Textile Journal

INTENDED LEARNING OUTCOME:-

The Students will be able to:-

- ❖ Express the actual mechanism of revolving flat carding machine.
- ❖ Explain the difference between carding and stripping action.
- ❖ Relate the overall maintenance of carding machine.
- ❖ Differentiate the actual importance of carding machine in entire spinning process.
- ❖ Describe the heel and toe arrangement of flats in carding mavhine for proper carding action.
- ❖ Analyse the mechanism of draw frame.
- ❖ Express the principle of draw frame.
- ❖ Access the requirement of stop motions in draw frame.
- ❖ Explain the sliver defects of draw frame.
- ❖ Relate the sliver defects of carding machine.
- ❖ Knowledge about the modern trend in draw frame.
- ❖ Explain the modern trend in carding machine.
- ❖ Differentiate between flexible wire points and metallic wire points of carding machine.
- ❖ Explain the difference between old card and modern high production card.
- ❖ Compare the requirement of passages of draw frame in spinning process.

1. Course Title **:-YARN MANUFACTURE-II (PRACTICAL)**
2. Course Code **:-TT-301(P)**
3. Semester **:-3rd (Third)**

INTENDED LEARNING OUTCOME:-

The students will be able to:-
- ❖ Measure the diameter of pulley.
- ❖ Calculate draft , draft constant and production of machine through surface speed.
- ❖ Calculate surface speed of roller of drafting system of draw frame.
- ❖ Explain the maintenance points of carding machine.
- ❖ Access the maintenance points of draw frame machine.
- ❖ Have idea about the roller setting in drafting zone of draw frame.
- ❖ Explain the driving mechanism of carding and draw machine.
- ❖ Express the proper functioning of carding and draw frame machine.
- ❖ Relate the importance of maintenance in machine to maintain the quality of product.
- •

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	50	50	100	33

1.0 DRAW-FRAME

1.1 Study of working of draw frame and its components and their functions.

1.2 Study of stop motions, drafting system and roller setting for different staple lengths.

1.3 Practice in running of draw frame and piecing of drawing sliver and related operations.

2.0 **CALCULATIONS**

2.1 Calculation of speed, production, draft, hank from machine particulars.

3.0 **PERFORMANCE ASSESMENT**

3.1 Study of fibre arrangement in card and drawing-sliver

3.2 Testing of drawing sliver for uniformity.

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1. **Course Title** :**FABRIC MANUFACTURE -II**
2. **Course Code** :**TT-302**
3. **Semester** :**3rd (Third)**
4. Rationale: The textile manufacturing is done in various stages. In previous semester, we have experienced that this subject of fabric manufacture dealt with yarn preparation in winding and ordinary weaving on simple loom. In this second year, this subject deals with subsequent steps of yarn preparation andautomatic weaving. These are essential stages in the fabric production. This subject intends to impart knowledge and skills in the area of important weaving process, i.e. sizing operation and fabric production on dobby and jacquard looms.

5. Teaching Scheme(In hours)

Lecture	Tutorial	Practical	Total
45(Including 3hrs class test & 3hours tutorial	3	60	105

6. Examination Scheme

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
70	30	**100**	33	50	50	100	33

7. Details course content

Chapter No.	Chapter Title	Contents	Duration 42+3 (hours)
I	Dobby Shedding	Specific Objectives – The Student will be able to • Identify different types of sheds. • Select the dobby for desired design. • Set the timing of the dobby. • Reproduce the required design. • Understand working of new dobby. Content 1.1 Types of sheds (a) Open shed (b) Semi-open shed, (c) Bottom closed shed, (d) Centre closed shed, their formation, merit and demerits. 1.2 Types of Dobby, study of construction and working of double-lift, double jack (Climax Dobby). 1. 1.4 Heald reversing motion on looms with Dobby. Sub Topic – 2 : Modern Dobbies 1.6 Cam Dobby – construction and working of negative cam dobby, advantages. 1.7 Paper pattern Dobby – Comparison between	12 hours

		conventional Dobby and Cam Dobby, Paper Dobby. 1.8 Positive dobby – Construction and working of double lift positive dobby, advantages. 1.9 Rotary Dobby – features and advantages of Rotary Dobby.	
II	Multiple box motions	Content – 2.1 Object and types of Drop Box motions, parts of drop box mechanism	3 Hours
III	Jacquard	Specific Objectives – The Student will be able to – • Identify different types of jacquards. • Select jacquard for desired design • Reproduce the required design • Compare different types of jacquard • Understand working of new jacquard. Content – 3.1Introduction to ornamentation of fabrics, various effects produced in the woven fabric. 3.2Introduction to jacquard shedding – object, types of Jacquards, study of construction and working of Single Lift Single Jacquard, principle parts of jacquard, study of figuring, capacity of jacquard. 3.3 Study of construction and working of Single Lift single cylinder, 3.3.1 Study of construction and working of double lift single cylinder jacquard 3.3.2Study of construction and working of Double Lift Double cylinder jacquards, 3.3.3features, advantages and limitations of these jacquards. 3.4 Jacquard mounting, Harness building and Harness ties. 3.7 Methods of transferring design on graph paper from sketch and from fabric, selection of point paper 3. 8 Electronic Jacquards – Features of electronic jacquards, its advantages over mechanical jacquard	14 hrs
IV	Sizing	4.1 Objects of Sizing. 4.2 Kinds and functions of Sizing ingredients. 4.3 Cooking of size paste. Cooking of size paste with pressure cooker and storage. Study of Sizing Machine: 4.4 Creel types, their merits and demerits 4.5 Size box: All elements in size box, and their functions, squeeze roller and weighting system, immersion roller. 4.6 Drying zone: phenomena of multi-cylinder drying, Teflon coating, drive to cylinders, 4.7 Splitting zone 4.8 Winding zone: drive to the weavers beam. 4.9 Drive to sizing machine: complete machine drive 4.10. Definition and importance of stretch, 4.10 Size pick up: requirement of size pick up, size add-on, factors effecting size pickup. 4.11Calculations of efficiency, size mixture, count of sized warp.etc	13 hrs
		Total =	45 hrs

8. Distribution of marks:

Chapter No.	Chapter Title	Type of Question			Total Marks
		Objective Type (Compulsory)	Short Question	Descriptive Question	
I	Dobby Shedding	5	5	10	20
II	Multiple box motions	3	2	-	5
III	Jacquard	5	12	12	23
IV	Sizing	6	6	12	22
				Total=	70

Annexure-I

9.TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	C	A	HA
1	Dobby Shedding	12	29	10	9	1	20
2	Multiple box motions	3	7	3	2	-	5
3	Jacquard	14	33	10	10	3	23
4	Sizing	13	31	10	4	8	22
Total		Σ b	100				

K = Knowledge C = Comprehension A = Application
HA = Higher Than Application (Analysis, Synthesis, Evaluation)

DETAILED TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic	OBJECTIVE TYPE				SHORT ANSWER TYPE					ESSAY TYPE				
		K	C	A	T	K	C	A	HA	T	K	C	A	HA	T
1	Dobby Shedding	3	2	-	5	2	2	1		5	5	5			10
2	Multiple box motions	2	-	-	2	1	2	-		3	-	-			-
3	Jacquard	2	3	1	6	3	2	2		7	5	5			10
4	Sizing	3	2	3	8	3	2	2		7	4	3			7

Objective:

After undergoing this course the student should be able to

- Describe different kinds of shed
- Explain Dobby Mechanism of shedding
- Explain Jacquard shedding
- Explain the multiple box motion
- explain different size ingredients and their functions .

- elaborate on the slasher sizing m/c .
- calculate and solve problems related to pirn winding, warping, sizing,

1. Prerequisites:

Before undergoing this course the student should have basic knowledge of Weaving processes, weaving machines ,Yarn packages , pirn winding warping process etc.

Course Outcomes:

After completing the course the students will be able to :

- Explain Dobby system of shedding
- Explain Jacquard shedding
- Explain the multiple box motion
- explain different size ingredients and their functions .
- elaborate on the slasher sizing m/c .
- calculate and solve problems related to sizing, .

Intended Learning Objectives (ILOs)

CO 1- Explain Dobby system of shedding

- Classify dobby system
- Identify different types of sheds.
- Select a dobby for desired design
- Compare dobby with tappet shedding
- enlighten the working of single lift dobby
- Give explanation on the working of double lift dobby (climax dobby)
- Compare double lift dobby with single lift dobby
- Enlist the causes for dobby defects
- give explanation on modern cam dobby positive and negative
- Compare between conventional dobby and modern cam dobby
- Enlighten electronic dobby, Rotary dobby systems

CO 2 Explain Jacquard shedding

- Write the object of jacquard shedding ,
- Compare jacquard shedding with dobby shedding.
- List the types of Jacquard .
- Write the characteristics of single lift single cylinder jacquard .
- Explain the construction and working of single lift single cylinder jacquard .
- Write the characteristics of double lift jacquard.
- Explain the construction and working of double lift single cylinder jacquard.
- Cite the advantages and limitations of these jacquards.
- Point out the methods of Jacquard mounting, Harness building
- Differentiate different Harness ties.
- Enlist the methods of transferring design on graph paper from sketch and from fabric
- Explain the features of electronic jacquard and its advantages over mechanical jacquad
- Explain the working of piano card cutting m/c.

CO3 Explain the multiple box motion

- Describe the purpose of drop box motion
- Give the types of drop box motion

CO 4 Explain different size ingredients and their functions .

- Tell the Objects of Sizing.
- enlist the Sizing ingredients
- Write the functions of different Sizing ingredients
- be familiar with Cooking of size paste- number and quantity of sizing ingredients required sequence of addition of ingredients during cooking.
- be acquainted with Cooking of size paste with pressure cooker and storage.
- Enlist the advantages of pressure cooking of size paste.

CO5 elaborate on the slasher sizing m/c

- Describe different Creels for sizing m/c
- Discuss merits and demerits of different creels
- Draw a sow box and label it
- Explain the functions of all elements in size box,
- Tell the importance of size paste level control, temperature control
- Explain drying zone:
- Cite the advantages of multi-cylinder drying, removal of condensed water, Teflon coating, drive to cylinders,
- Draw the complete driving arrangement of sizing m/c
- Define stretch and its importance in sizing
- Enlighten on Size pick up--requirement of size pick-up
- Enlist the factors effecting size pickup.
- Calculate sizing effeciency %
- calculate count of sized warp
- Calculate problems on size mixtue

Text Books (T1, T2):

T1: Woven Fabric Production Vol .1
T2:Weaving Mechanism Vol 1
T3: Fabric Forming
T4:Yarn preparation vol 1l
T5 :Weaving Machine ,Mechanism and Management
T6 : Cotton sizing
T7 : Woven Fabric Production Vol .1l
T8: Weaving calculations

2. Reference Books(R1,R2,R3,R4):

R1Cotton Yarn Weaving:
R2:
R3:
R4:

4. Semester End Question Paper:

Questions to be set: 10 VSQ ,4-7 SQ and 4-8 Long type question

Questions to be answered: 10 VSQ , 4/5 short question , 3/4 Long type questions

5 .COURSE PLAN

a) Lecture Modules:

S.No	Course outcome	Intended Learning Outcome
1	Explain Dobby system of shedding	• Classify dobby system • Identify different types of sheds. • Select a dobby for desired design • Compare dobby with tappet shedding • enlighten the working of single lift dobby • Give explanation on the working of double lift dobby (climax dobby) • Compare double lift dobby with single lift dobby • Prepare a pattern lattice according to a weave • Enlist the causes for dobby defects • give explanation on modern cam dobby positive and negative • Compare between conventional dobby and modern cam dobby • Enlighten electronic dobby, Rotary dobby systems
2	Explain Jacquard shedding	• Write the object of jacquard shedding , • Compare jacquard shedding with dobby shedding. • List the types of Jacquard . • Write the characteristics of single lift single cylinder jacquard . • Explain the construction and working of single lift single cylinder jacquard . • Write the characteristics of double lift jacquard. • Explain the construction and working of double lift single cylinder jacquard. • Cite the advantages and limitations of these jacquards. • Point out the methods of Jacquard mounting, Harness building • Differentiate different Harness ties. • Enlist the methods of transferring design on graph paper from sketch and from fabric • Explain the features of electronic jacquard and its advantages over mechanical jacquad • Explain the working of piano card cutting m/c.

3	Explain the multiple box motion	• Describe the purpose of drop box motion • Give the types of drop box motion
4.	Explain different size ingredients and their functions .	• Tell the Objects of Sizing. • enlist the Sizing ingredients • Write the functions of different Sizing ingredients • State the types of size paste. • be familiar with Cooking of size paste- number and quantity of sizing ingredients required sequence of addition of ingredients during cooking. • be acquainted with Cooking of size paste with pressure cooker and storage. • Enlist the advantages of pressure cooking of size paste
5	Elaborate on the slasher sizing m/c	• Describe different Creels for sizing m/c • Discuss merits and demerits of different creels • Draw a sow box and label it • Explain the functions of all elements in size box, • Tell the importance of size paste level control, temperature control • Explain drying zone: • Cite the advantages of multi-cylinder drying, removal of condensed water, Teflon coating, drive to cylinders, • Draw the complete driving arrangement of sizing m/c • Define stretch and its importance in sizing • Enlighten on Size pick up--requirement of size pick-up • Mention the factors effecting size pickup.
6	Calculate to and solve problems related to sizing	• Calculate sizing efficiency % • calculate count of sized warp • Calculate problems on size mixture

9. Learning Resources:

Book List:

Sr. No	Author	Title	Publisher
1.	N.N.Banerjee	Weaving Mechanism Vol –I I	-
2.	Hasmukhrai	Fabric Forming	SSMInstitute of Textile Technology,Tamil Nadu
3.	M.K.Talukder, P.K.Shriramulu D.B.Ajgaonkar	Weaving Machines, Mechanism Management	Mahajan PublishersPvt.Ltd.,Ahmedabad
4.	R. Sengupta	Weaving Calculation	D,B,Taraporevasla Sons & Co. D.N.Road,Mumbai
5.	Wadekar	Sizing	Mahajan Publishers Pvt. Ltd., Ahmedabad
6.	ProfD.B.Ajgaonkar D.B.Ajgaonkar,	Sizing – Materials,Methods, Machines .	Mahajan Publishers Pvt. Ltd., Ahmedabad

	Dr. M.K.Talukdar, V.R.Wadekar		
7	R. Marks A.T.C. Robinsons	Principles of Weaving	Principles of Weaving(UK)

10.1List of Journals :

1. Textile Research Journal,
2. Textile Trend
3. Textile Asia
4. Indian Textile Journal

1. **Course Title** :**FABRIC MANUFACTURE –II (PRACTICAL)**
2. **Course Code** :**TT-302**
3. **Semester** :**3rd (Third)**

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	50	50	100	33

1. Draw the following weaves on point paper with drafting, lifting and tie-up plan and tie up the healds and treadle to get the weaves in the fabric and practice weaving.
   plain ,Twill, Diamond , Huck -a-back, Honey comb ,Double cloth
2. Identify the parts of a Climax Dobby, explain its working, Settings and timings of Climax Dobby.
3. Practice pegging for right and left hand dobby according to given motif .Prepare lattice, mount it and practice weaving the loom.

5.i) Draw a motif for extra weft design and prepare a phani .
ii) Make rings according to picks, select the rings and weave it using extra weft.

6 Identify the parts of single Lift single cylinder jacquard, distinguish Construction and working, function of various parts,driving arrangement, heald selection mechanism.

7. Work on Double Lift Double Cylinder Jacquard: Construction and working, list functions of various parts.
8. Operate Piano Card Cutting Machine, practice card punching and card lacing.
9. Prepare Sample on CAD package with print outs.
10. Demonstrate Electronic jacquard .

1.Course title : TEXTILE WET PROCESSING-I

2.Course code : TT-303

3.Semester : 3rd

4.Rationale of the course : Modern development of textile industries require more understanding of basic textile processing for Industrial purposes. This part of the Textile processing explains various fundamentals underlying the chemistry of textile processing, which will develop basic understanding and skill of the students.

5. Course Outcome **;** After completion of the course student will be able to

i) Explain different steps and objective of textile wet processing.

ii) Acquire knowledge of different types of textile preparatory processes like singeing desizing, scouring, bleaching etc.

iii) Acquire basic knowledge of dyeing of textile materials, including types of dye, different chemicals used in dyeing process etc.

iv) Explain the Concept of color mixing system and understanding of color index, colour mixing etc.

v) Explain the physical and chemical properties different types of dyes used in textile processing.

vi) Describe different dyeing methods used for different types of fibre.

6.Teaching scheme (in hours)

Lecture	Tutorial	Practical	Total
45 (including 3 class test)	8	50	103

7. Examination Scheme

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
70	30	**100**	33	25	25	50	17

8.Detailed Course Content :

Chapter No	Chapter Title	Content	Hours
Unit-I	INTRODUCTION TO TEXTILE WET PROCESSING	i) Aim and objective of textile processing ii)Why it is essential. iii)Sequence of Textile wet processing iv)Inspection of Grey Fabric Sorting, Stitching & marking	3

Unit-II	PREPARATORY PROCESSES OF TEXTILE WET PROCESSING	i)Aim and object of singeing ii)Different types of singeing processes and machineries. iii)Definition of Sizing iv)Aim and objective of Desizing v)Different types of Desizing processes vi) Objective of scouring. vii) Principle involved in scouring process. viii) Process of scouring by using Sodium Hydroxide And Soda Ash. ix) Machineries used for scouring.(Working principle of Kier Boiling Machineries) x)Aim and objective of Bleaching. xi) Chemicals used for bleaching. xii) Bleaching process of Cotton with Hydrogen Peroxide, Bleaching Powder and Potassium Permanganate. xiii) Degumming and weighting of silk xiv) Bleaching of Silk with Hydrogen Peroxide. xv) Carbonization, Felting and Bleaching of Wool xvi) Objective of Mercerization. xvii) Mechanism involved in Mercerization process. xviii) Process of Mercerization.	14
UNIT-III	BASIC CONCEPT OF DYEING.	i)Aim and objective of dyeing. ii)Classification of Dyes iii) Principle involved in dyeing processes. (How Dyes are fixed on fibre.) iv) Steps involved in dyeing process. v) Assistant & auxiliaries used in dyeing & Their functions. vi) Shade percentage of color and their calculation	6
UNIT-IV	INTRODUCTION TO COLOR CONCEPT.	i)Concept of color mixing system and understanding of color index. ii) Percentage shade of color and shade card. iii) Pantone color code, Color index, CI constitution number and CI generic number. iv) Commercial dyes and their nomenclature	3

UNIT-V	PROPERTIES AND APPLICATION OF SOLUBLE DYES	i)Physical and Chemical Properties of Direct Dyes ii)Application process of direct dye on cotton/Viscose iii)Application process of direct dye on Silk. iv) Object and methods of after treatment of direct dyestuff. i)Types of Reactive Dyes and their Physical and Chemical Properties. ii)Application process of Hot Brand Reactive dye on cotton/Viscose iii)Application process of Cold brand Reactive dye on Cotton/Viscose. iv) Application process of Reactive dye on Silk. i)Acid Dyes and their Physical and Chemical Properties ii)Concept of Acid chrome dyes and Metal Complex Dyes ii)Application process of Acid dye on Silk iii)Application process of Acid dye on Wool. iv)Application process of Metal complex dye on Nylon. i)Basic Dyes and their Physical and Chemical Properties. ii)Application process of Basic dye on Silk iii) Application process of Basic dye on Acrylic.	20

9. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type	Sort Questions	Descriptive Questions	
Unit I	Introduction to textile processing	1+1	3		5
Unit II	Preparatory processes of textile wet processing	3		17	20
Unit III	Basic concept of dyeing.	1	3	6	10
Unit IV	Introduction to color concept.	1+1	3		5
Unit V	Properties and application of soluble dyes	1+1+1+1+1+1+1	6	17	30
		15	15	40	70

10. TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	C	A	HA
1	INTRODUCTION TO TEXTILE WET PROCESSING	3	7	1	4		
2	PREPARATORY PROCESSES OF TEXTILE WET PROCESSING	12	29	6	14		
3	BASIC CONCEPT OF DYEING.	6	14	1	9		
4	INTRODUCTION TO COLOR CONCEPT.	3	7	1	4		
5	PROPERTIES AND APPLICATION OF SOLUBLE DYES	18	43	8	22		
	Total	42	100	17	53		

K = Knowledge C = Comprehension A = Application
HA = Higher Than Application (Analysis, Synthesis, Evaluation)

$$C = \frac{b}{\Sigma b} \text{ x } 100$$

11. DETAILED TABLE OF SPECIFICATIONS FOR THEORY

Sr. N	Topic	OBJECTIVE TYPE				SHORT ANSWER TYPE					ESSAY TYPE				
		K	C	A	T	K	C	A	HA	T	K	C	A	HA	T
1	Introduction To Textile Wet Processing	1	1		2		3			3					
2	Preparatory Processes Of Textile Wet Processing	1	2		3						5	12			17
3	Basic Concept Of Dyeing.	1			1		3			3		6			6

4	Introduction To Color Concept.	1	1		2		3			3					
5	Properties And Application Of Soluble Dyes	3	4		7		6			6	5	12			17

K = Knowledge C = Comprehension A = Application HA = Higher Than Application. T = Total

Intended Learning Outcome(ILO)

S.No	Course outcome	Intended Learning Outcome
1	Explain the different steps and objective of textile wet processing.	The student will be able to. i) Outline the sequence of wet processing. ii) Define and explain the sorting process of grey fabric. iii) Explain about the stitching and inspection of grey fabric. iv) Explain the mechanical method of cleaning of grey fabric.
2	Acquire knowledge of different types of textile preparatory processes like singeing desizing, scouring, bleaching etc.	The student will be able to. i) Define the singeing process. ii) Explain why this process is necessary in textile processing. iii) Draw and describe Plate singeing machine. iv) Draw and describe Roller singeing machine. v) Draw and describe Gas singeing machine. vi) Differentiate drawback and advantages of plate, roller and gas singeing machine. State and explain sizing process. Define desizing process. Describe different types of desizing process. Explain the process and chemistry of Root steep desizing. Explain the process and chemistry of Acid desizing. Explain the process and chemistry of Enzymatic desizing Explain process and chemistry of Chlorine desizing. Explain process and chemistry of Chlorite desizing. Explain process and chemistry of Bromite desizing. Compare advantages and disadvantages of different desizing processes. Define scouring process. Summarized the necessity of scouring process. Define the bleaching process. Describe the necessity of bleaching process. Explain chemistry of bleaching process. List the name of different bleaching agent.

3	Acquire the basic knowledge of dyeing of textile materials, including types of dye, different chemicals used in dyeing process etc.	i)Physical and Chemical Properties of Direct Dyes ii)Application process of direct dye on cotton/Viscose iii)Application process of direct dye on Silk. iv) Object and methods of after treatment of direct dyestuff. i)Types of Reactive Dyes and their Physical and Chemical Properties. ii)Application process of Hot Brand Reactive dye on cotton/Viscose iii)Application process of Cold brand Reactive dye on Cotton/Viscose. iv) Application process of Reactive dye on Silk. i)Acid Dyes and their Physical and Chemical Properties ii)Concept of Acid chrome dyes and Metal Complex Dyes ii)Application process of Acid dye on Silk iii)Application process of Acid dye on Wool. iv)Application process of Metal complex dye on Nylon. i)Basic Dyes and their Physical and Chemical Properties. ii)Application process of Basic dye on Silk iii)Application process of Basic dye on Acrylic.
4	Explain the Concept of color mixing system and understanding of color index, colour mixing etc.	i)Concept of color mixing system and understanding of color index. ii) Percentage shade of color and shade card. iii) Pantone color code, Color index, CI constitution number and CI generic number. iv) Commercial dyes and their nomenclature
5	Explain the physical and chemical properties different types of dyes used in textile processing.	i) Write the name different types of dyes. ii) Outline the categories of dyestuffs. iii) Classify the dyes according to their chemical composition. iv) Classify the dyes according to their uses. v) Give the examples of different trade name of dyes.

12. Suggested Implementation Strategies : The syllabus can be completed by regular classes, special classes using audio –visual aids, tutorial classes and providing writing materials. Practical classes in the laboratory helps students to understand the subject.
13. Suggested learning Resource :
    i) Technology of Bleaching by V A Shenai.
    ii) Technology of Mercerization by V A shenai.
    iii) A Glimpse on the chemical technology of Textile Fibre by R R Chakravertty.
    iv) Dyeing and Chemical Technology of textile fibre by E R Trotman.

v) Chemistry of dyes and principle of dyeing by V A Shenai.
vi) Technology of Dyeing by V A shenai.
viii) Chemical processing of cotton polyester blend by ATA.

1.Course title : TEXTILE WET PROCESSING-I(PRACTICAL)
2.Course code : TT-303(P)
3.Semester : 3rd
4 Objectives : At the end of the program the student will be able to dye the textile materials.

5. Teaching and Examination Scheme :

Lecture	Tutorial	Practical	Total
-	-	50	50

6. Examination Scheme

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
				25	25	50	17

7.Detailed Course Content :

Instructions		Examination		
Hours/week	Hours/Semester	Internal assessment	Practical examination	Total
2	50	25	25	50

8. Detailed Course Content :

Chapter No	Chapter Title	Name of the Topic	Hours
Unit-I	Preparatory Processes Of Textile Wet Processing	i) Desizing of Fabric by using sulphuric or hydrochloric acid. ii) Scouring of Yarn/Fabric by using sodium hydroxide and soda ash. iii) Bleaching of yarn/fabric by oxidation method. iv) Bleaching of yarn/fabric by Reducing method. v) Degumming and bleaching of silk by oxidation method. vi) Mercirization of cotton yarn/fabric by using sodium hydroxide.	10
Unit-II	Dyeing	i)Application of Direct Dye on cotton, Viscose and Silk. ii)Application of Basic dye on Silk and Acrylic. iii)Application of Acid dye on Silk and Wool. iv)Application of Reactive dye on Cotton, Viscose and Silk. v)Application of Metal Complex dye on Nylon.	14

Unit-III.	Shade Card Preparation	i)Preparation of stock color solution of different strength. ii)Dyeing of cotton/Viscose in different percentage shade and their comparison. iii)Dyeing of Silk in different percentage shade and their comparison. iv)Dyeing of Acrylic in different percentage shade and their comparison.	6

9. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type	Short Questions	Descriptive Questions	
Unit I	Preparatory Processes Of Textile Wet Processing				15
Unit II	Dyeing				15
Unit III	Shade Card Preparation				10
Unit IV	Viva				10

1. COURSE TITLE :FABRIC STRUCTURE &ANALYSIS-I
2. COURSE CODE :TT-304
3. SEMESTER : THIRD SEMESTER

4. Rationale of the course : This part of the course explains the fundamentals of Basic weave & colours which will develop basic understanding of the students.

Course Outcome ; After completion of the course student will be able to

i. Explain about the different basic weaves
ii. Explain & construct the plain weave & its derivatives
iii. Explain the twill weave , derivatives & construct
iv. Explain & construct the simple towelling & curtain fabric
v. Explain & calculate the different yarn numbering systems
vi. Explain & calculate the different the different heald count & reed count systems
vii. Able to construct the Bed ford cord design
viii. Able to explain the colour properties
ix. Able to analyze a fabric

6. **Teaching Scheme (per week)**

L	T	P	Credit point
3	1	-	3

7.Teaching Scheme (in hours)

Lecture	Tutorial	Practical	Total
42	3		45

8.**Examination Scheme :**

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
70	30	**100**	33	-	-	-	-

9. **Detailed Course Content :**

Chapter No	Chapter Title	Content	Duration (in hours)
1	Basic Weave / Concept	1.1. Introduction 1.2. Representation of weave 1.3. Use of Graph to represent textile design 1.4. Concept of design, drafting plane, lifting plane	2
2	Plain Weaves & its Derivatives	2.1. Construction of plain weave design 2.2. Construction of Warp rib weave design 2.3. Construction of Weft rib design	5

		2.4. Construction of matt design	
3	Twill Weave & its derivatives	3.1. Characteristics of Twill weave 3.2. Construction of twill weave 3.3. Re-arrange twill 3.4. Combined twill 3.5. Broken Twill 3.6. Zig-Zag twill 3.7. Heringbone twill 3.8. Diamond & diaper design 3.9. Influence of twist direction & angle of twill on appearance of twill 3.10. Satin twill	10
4	Simple Towelling & Curtain Fabrics	4.1. Ordinary honey comb design 4.2. Double stitched ordinary honey comb design 4.3. Straight draft honey comb design 4.4. Brighton Honey comb design 4.5. Mock-Leno & Huckaback Design	6
5	Bedford Cord & Pique Design	5.1. Plain faced bed ford cord design produced by pair of picks 5.2. Plain faced bed ford cord design produced by alternate picks 5.3. Twill faced bed ford cord design 5.4. Waded bed ford cord design 5.5. Loose back & Fast back pique	8
6	Theory of colour	6.1. Light Theory & Pigment theory 6.2. Colour contrast &Colour harmony 6.3. Modification of colour 6.4. Methods of generating different effects like continuous line, hair line, bird eye, step pattern & all over effect.	7
7	Analysis of Woven fabrics	7.1. Identification of Warp & Weft 7.2. Brief discussion about the analysing procedure 7.3 Heald Count & Reed Count calculation	4

10. Distribution of Marks

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type (Compulsory)	Short Questions	Descriptive Questions	
1	Basic Weave /Concept	2	--	--	2

2	Plain Weaves & its Derivatives	3	2	7	12
3	Twill Weave & its derivatives	3	2	10	15
4	Simple Towelling& Curtain Fabrics	2	3	5	10
5	Bedford Cord & Pique Design	2	3	5	10
6	Theory of colour	4	4	5	13
7	Analysis of Woven fabrics	2	1	5	8
		18	15	37	70

11. TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	C	A	HA
1	Basic Weave /Concept	2	5	1	1		
2	Plain Weaves & its Derivatives	5	12	2	3	7	
3	Twill Weave & its derivatives	10	24	4	3	8	
4	Simple Towelling& Curtain Fabrics	6	14	3	2	5	
5	Bedford Cord & Pique Design	8	19	3	2	5	
6	Theory of colour	7	17	4	4	5	
7	Analysis of Woven fabrics	4	9	2	1	5	
Total		Σ b	100	19	16	35	

K = Knowledge C = Comprehension A = Application HA = Higher Than Application (Analysis, Synthesis, Evaluation)

12**.** DETAILED TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic	OBJECTIVE TYPE				SHORT ANSWER TYPE					ESSAY TYPE				
		K	C	A	T	K	C	A	HA	T	K	C	A	HA	T
1	Basic Weave /Concept	1	1		2										
2	Plain Weaves & its Derivatives	1	2		3	1	1			2			7		7

3	Twill Weave & its derivatives	2	1		3	1	1			2	1	1	8		10
4	Simple Towelling& Curtain Fabrics	1	1		2	2	1			3			5		5
5	Bedford Cord & Pique Design	1	1		2	2	1			3			5		5
6	Theory of colour	2	2		4	2	2			4			5		5
7	Analysis of Woven fabrics	1	1		2	1				1			5		5

K = Knowledge C = Comprehension A = Application HA = Higher Than Application T = Total

13. Suggested learning Resources :

Sl. No.	Title	Author
1	Watsons Textile Design & Colour	Watson
2	Principles of Fabric Structure	AM Banerjee
3	Woven Cloth Construction	Marks & Robinsons

1.1 List of Journals :

1. Textile Research Journal,
2. Journal of Textile Institute, Manchester
3. Textile Trend
4. Textile Asia
5. Indian Textile Journal

1.Course Title : COMPUTER FUNDAMENTALS
2.Course code : TT-305
3.Semester : Third

4.Rationale of the course : Since early 21st Century the use of Computer has been so rapidly that it is difficult to think of an area where computers are not being used. It is very desirable that everyone should have good knowledge of computer.

Main purpose of this subject is give a details knowledge of computer, its characteristics, components, History and Classification, number system conversion, Computer memory, peripheral devices, Parogramming language and OS, about the computer viruses and internet browsing etc. It is a gateway to wonderful world of information and part of various applications.

Course Outcome: After completion of this course student will be able to-

CO1: State the basic concept of computer, functions, characteristics, various units, block diagram, hardware & software.
CO2: Explain history of computing, computer generation and classification of computers.
CO3: Define various number system, conversion, binary arithmetic and reason for using binary system in the design of computer.
CO4: Illustrate data representation in computer architecture, BCD, ASCII and EBCDIC form.
CO5: write need of memory, memory devices and storage hierarchy.
CO6: Describe the peripheral device and uses.

5.Teaching scheme (in hours)

Lecture	Tutorial	Practical	Total
45 (including 3 class test)	8	50	103

6. Examination Scheme

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
70	30	100	33	-	-	-	-

7. Detailed Course Content :

Chapter No	Chapter Title	Content	Hours
Unit-I	Introduction to Computer	Definition, uses of computer Data, Information and Data Processing Basic components of a Computer System. Central Processing unit Input unit Out put unit Types of Computer: Digital, Analog, Hybrid Computer Hardware and software	4
Unit-II	History, Generations and Classification of Computers	History of Computing a) Mechanical Calculators b) Charles Babbage - His difference engine c) Punched card d) First Digital Computer e) First Electronic Computer etc. Computer Generation a) First Generation b) Second Generation c) Third Generation d) Fourth Generation e) Fifth Generation Micro, Mini, Mainframe, Super computers	3
Unit-III	Binary Number System	Decimal, Binary System, Octal, Hexadecimal System - Conversion between number systems - Binary Arithmetic Addition Subtraction Multiplication Division	7
Unit-IV	Data Representation	Representation of Positive and Negative Integers i) Binary Coded Decimal (BCD) Representation of Characters EBCDIC ASCII	2

Unit-V	Computer Memory	Definition of Memory devices Need for Memory Types of Memory- Memory access ii) Volatile & non volatile Memory iii) Destructive & Non destructive Memory iv) Access Time, Random and Serial Access Memories v) ROM, PROM, EPROM and EEPROM vi) Magnetic Core storage & Semiconductor Storage- vii) Secondary Memory viii) Magnetic Tape ix) Magnetic Disk x) Floppy Disk xi) Optical Disk xii) Hard Disk A note on Storage Hierarchy	10
Unit-VI	Input/ Output Units	Input Units i) Paper Media, Magnetic Media, Optical Media ii) Magnetic Ink Character Reader iii) Direct Data Entry Devices iv) Pointing Devices Output Units i) Printers ii) Other forms of output Devices	4
Unit-VII	Classification of Programming Languages	Machine, Assembly & High Level Languages Translator (Compiler, Interpreter and Assembler) Debugging	4
Unit-VIII	Operating system	Definition & functions of OS Batch Processing Multiprocessing Time-sharing Multiprocessing Real Time Processing Network Operating System Popular Operating System MS-DOS, UNIX, Windows	5
Unit-IX	Computer Virus	What is Computer Virus Symptoms of a computer virus Types of Computer virus How to protect computer against viruses	1

Unit-X	Internet, email, E-commerce etc.	History of Internet, browsers, email, ecommerce etc.	2

8. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type	Sort Questions	Descriptive Questions	
Unit- I	Introduction to Computer	1+1	2	6	10
Unit -II	History, Generations and Classification of Computers	1+1 +1	0	5	8
Unit III	Binary Number System	1+1+1	2+2+2	0	9
Unit- IV	Data Representation	1+1	0	0	2
Unit- V	Computer Memory	1+1+1		5	8
Unit -VI	Input/ Output Units	1+1	2	4	8
Unit -VII	Classification of Programming Languages	1+1		4	6
Unit -VIII	Operating system	1+1	2	5	9
Unit –IX	Computer Virus	1	0	4	5
Unit -X	Internet, email, E-commerce etc.	0	0	5	5
		20	12	38	70

DETAILED TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic	OBJECTIVE TYPE				SHORT ANSWER TYPE					ESSAY TYPE				
		K	C	A	T	K	C	A	HA	T	K	C	A	HA	T
1	Introduction of Computer	1	1		2		1	1		2			6		6
2	History, Generations and Classification of Computers	1	1	1	3					0			5		5
3	Number System	2	1		3	2		4		6					0
4	Data Representation	1		1	2					0					0
5	Computer Memory	1	1	1	3					0			5		5
6	Input/ Output Units	1	1		2	1		1		2			4		4

7	Classification of Programming Languages	2			2					0			4		4
8	Operating system	1	1		2	1	1			2			5		5
9	Computer Virus	1			1					0			4		4
10	Internet, email, E-commerce etc.				0					0			5		5

K = Knowledge C = Comprehension A = Application HA = Higher Than Application T = Total

Annexure-I

TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	*C*	A	HA
1	Introduction of Computer	4	9.5	1	2	7	
2	History, Generations and Classification of Computers	3	7.1	1	1	6	
3	Binary Number System	7	16.7	4	1	4	
4	Data Representation	2	4.8	1		1	
5	Computer Memory	10	23.8	1	1	6	
6	Input/ Output Units	4	9.5	2	1	5	
7	Classification of Programming Languages	4	9.5	2	1	5	
8	Operating system	5	11.9	2	2	5	
9	Computer Virus	1	2.4	1		4	
10	Internet, email, E-commerce etc.	2	4.8			5	
Total		42	100				

K = Knowledge C = Comprehension A = Application HA = Higher Than Application (Analysis, Synthesis, Evaluation)

9. Suggested Implementation Strategies : The syllabus can be completed by regular classes, special classes using audio –visual aids, tutorial classes and providing writing materials. Practical classes in the laboratory helps students to understand the subject.

10. Suggested learning Resource :

1. Elements of Computer Science by S.K. Sarkar, Pub- S. Chand & Company Ltd.

2. Fundamentals of Computers by V. Rajaraman, Pub- Prentice Hall of India Pvt. Ltd.

3. A text book on Computer for beginners by- Dhanpat Rai & Sons, Pub- J.C. Capur for Dhanpat Rai & Sons, Delhi-6

1 Course Title : **COMPUTER FUNDAMENTALS (Practical)**
2 Course Code : **TT-305**
3 Semester : **Third**
4 Objectives : Main purpose of this subject is how to use a computer for basic needs. This subject covers application software like MS-Word for report writing, Project Preparation etc. MS-Excel to generate work sheet, data manipulation, graphs, for decision support system, MS-PowerPoint to prepare presentation, Internet for browsing data, communicate through email etc.

5. Examination Scheme :

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	25	25	50	17

Content	Hours
1. Introduction Windows OS (GUI, Mouse operation, Folder Creation, Microsoft Paint etc)	12
2. MS-OFFICE (MS WORD) (Creating Document, Save, Save as, Copy, Paste, Search and Replace,Page setup etc. Table, Mailing Labels and Mail Merge)	10
3. MS Excel (spread sheets, Formula, Auto Sum, Formatting the table, formulae, functions, Charts etc.)	8
4. MS Power Point (Presentation, Creating slides, Editing and arranging the slides, Built in effect, Sound Clips, Transition effect, Running the slides continuously)	5
5. Internet (Browsing, email ect.)	8

Books :

1. Learning Computer Fundamentals MS Office and Internet & Web Technology by- Dinesh Maidasani, Pub-Firewell Media
2. MS-Office by- Dr. S.S. Shrivastava, Pub-Firewell Media

1. **COURSE TITLE :-APPLIED MECHANICS**
2. **COURSE CODE :-TT 306**
3. **SEMESTER :-3RD(THIRD)**
4. **Rationale of the subject/ Courses:-** The Applied Mechanics explain basic mechanics use in the engineering field, for statics as well as dynamics part which will developed basics understanding and skill of the students
5. Course outcome:- student will be able to-

i. Identify the statics and dynamics parts and different type of forces and its unit.
ii. Solve numerical problems.
iii. Describe the harmful and useful effects of friction and can solve the problem
iv. Solve problem in application of belt, pulley, gear etc.
v. Solve problems regarding linear, circular and simple harmonic motion.
vi. Explain lubricants and its quality.

6. Teaching Scheme (in hours) :-

Lecture	Tutorial	Practical	Total
45 (3 Class Test)	8	45	98

7. Examination Scheme :

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
70	30	**100**	33	-	-	-	-

8. Detailed Course Content :

Chapter No	Chapter Title	Content	Duration (in hours)
1	Co- Planner Concurrent Forces	1.0.Scalar and Vector Quantities, representation of forces by vectors 1.1. Co-planner forces, concurrent forces, composition and resolution of forces, law of triangle and polygon of forces lamis theorem condition of equilibrium analytical and graphical methods of solution of problems of general engg. Type. 1.2.Analytical and graphical methods of solution of problems relating of textile machinery and process for example forces acting on heald shaft, ring spinning frame, calendar rollers, warper's beam etc.	
2	Moment	1.0. Moment of a force, moment of a system of forces, various theorem, couple, moment of couple. 1.1.Solution of problem relating to levers used in	

		textile machinery weighing levers of beam left-of motion squeezing roller and cloth strength tester.	
3	Co- Planner Non-Concurrent Forces	1.0. conditions of equilibrium of non-concurrent forces, funicular, of link polygon, simple structures.	
4	Centroid and centre of Gravity		
5	Linear Motion	1.0. Displacement, velocity, speed, displacement time, velocity time, acceleration time diagrams. 1.1. Problems of general engineering type problems relating to warping, motion of shuttles, carding engine, slur cocks.	
6	Curvilinear motions	1.0. Curvilinear motion of particle, compound motion tangential and normal acceleration, angular displacement, angular acceleration centripetal & centrifugal forces – problems of general engg. Type 1.1. Problems relating to ring frame traveller, doffer comb of carding engine, loom crankshaft, centrifugal drier.	
7	Simple Harmonic motion & reciprocating motion	1.0. Definition, frequency, amplitude, periodic time problems of simple type. 1.1.Basic concept of reciprocating motion and its application in textile machinery.	
8	Friction & Lubrication	1.0. Friction & Frictional force, useful & harmful effects of friction in textiles, co-efficient of friction, angle of friction, angle of repose, static dynamic and limiting frictions, laws of friction, screw friction. 1.1. Lubrication as means of reducing friction, characteristics of lubrications, the construction and advantages of ball roller and need to bearings. 1.2. Descriptive treatment of frictions clutches and brakes with particular reference to their use in textile machinery. 1.3. Problems of general engg. Type, problems of friction between loom swell and shuttle, loom shuttle and read, ring frame traveller and ring, disc and flange in a flange warpers bobbin etc. , problems on friction clutches used in beem warping machine and loom derives.	
9	Simple machines	1.0. Definition, mechanical advantages, velocity ratio, efficiency and their relations. Law of machine, different types of machines, pully blocks, included plane, simple screw, screw jack, wheel and axel. 1.1.Numerical Problems.	
10	Transmission of motion and power	1.0. Belt & pulley, types of belts, pulleys and drives, velocity ratio, length of belt, tension in belt, power transmission by belt, effect of creep, slip & centrifugal force. 1.1. Gears, types of gears, elements of supper gears, velocity ratio, determination of sizes of gears, gear	

		trains, power transmission by gear drive, warm and warm wheel.	
11	Work, Power & Energy	1.0. Work, work done by variable forces, work done by a torque, graphical representation of computations. 1.1. Power, energy, kinetic &potential energy, conservation of energy 1.2. Problems of general engg. Type, problem relating to textile machinery.	

9. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type (Compulsory)	Short Questions	Descriptive Questions	
1	Co- Planner Concurrent Forces	2	2	10	14
2	Moment	2	2	5	9
3	Co- Planner Non-Concurrent Forces	1	1	--	2
4	Centroid and centre of Gravity	1	2	5	8
5	Linear Motion	--	2	5	7
6	Curvilinear motions	--	1	--	1
7	Simple Harmonic motion & reciprocating motion	--	1	--	1
8	Friction & Lubrication	--		5	5
9	Simple machines	2	2	5	9
10	Transmission of motion and power	--	2	7	9
11	Work, Power & Energy	2	--	3	5
		10	15	45	70

10. Suggested implementation Strategies :Theory and practical classes ,interactions with students and close touch with our different workshops.

7. TABLE OF SPECIFICATIONS

Annexure-I

Sr. No	Topic (a)	Time allotted in hours(b)	Percentage Weightage (c)	K	C	A	HA
1	Scalar and vector quantities	2	4.65	1			
2	Force	5	11.62	2	6	5	
3	Basic mechanics	4	9.30	2			
4	Speed and velocity	4	9.30	2	4		

5	Newton's law of motion	4	9.30	2			
6	Circular motion, angular motion etc.	3	6.99	2	3		
7	Friction	3	6.99	3	3	6	
8	Simple machine	4	9.30	3		8	
9	Gravity and Gravitation	4	9.30	1		6	
10	Work, power and energy	4	9.30	3	2		
	Gear trains	2	4.65	1			
	Belt and pulleys	2	4.65	2			
	Lubrication	2	4.65	1	2		
Total		Σ b = 43	100	25	20	25	

K = Knowledge C = Comprehension A = Application HA = Higher Than Application (Analysis,

8. PROCESS OF CONTINUOUS EVALUATION

a) Components:

Component	Duration	Date	Weightage
Quiz-I	5 Mins	To be announced	2%
Sessional-I	1 Hr	To be announced	8%
Quiz-II	5 Mins	To be announced	2%
Sessional-II	1 Hr	To be announced	8%
Assignment	Home Task	To be announced	5%
Attendance		To be calculated at the end of semester	5%
End Semester Exam	3 Hrs	To be announced	70%

10. Books list :-TEXT BOOK OF ENGINEERING MECHANICS. By R.S.Khurmi.

11. List of Journals

12. Manuals

13. Others

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1. **COURSE TITLE** **:-APPLIED MECHANICS (PRACTICAL)**
2. **COURSE CODE** **:-TT 306**
3. **SEMESTER** **:-3RD**
4. **Examination Scheme** :

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	25	25	50	17

1.0 Co- Planner Concurrent Forces
1.1 Triangle of forces
1.2 Polygon of forces
2.0 Moment
2.1 Bell crank lever
3.0 Friction
3.1 Determination of co-efficient of friction
4.0 Machines
4.1 Simple pulleys
4.2 Differential pulleys
4.3 Screw jack
5.0 Centre of Gravity
5.1 centre of mass of a lamina
6.0 Lubrication
6.1 Determination of viscosity of a fluid
7.0 Gear Drivers
7.1 V.R. of simple gear driver
7.2 V.R. of compound gear driver

1.COURSE TITLE :PROFESSIONAL PRACTICS-I
2. COURSE CODE :TT-307
3. SEMESTER : THIRD SEMESTER
8.Examination Scheme :

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	25	25	50	17

Rational :

To develop general confidence, ability to communicate and attitude, in addition to basic technological concepts through Industrial visits, expert lectures, seminars on technical topics and group discussion.

Aim

The Student will be able to:

- Acquire information from different sources.
- Prepare notes for given topic.
- Present given topic in a seminar.
- Interact with peers to share thoughts.
- Prepare a report on industrial visit, expert lecture.

Activities

1. INDUSTRIAL VISITS: 10

Structured industrial visits be arranged and report of the same should be submitted by the individual student, to form part of the term work.

Visits to **any two** of the following:

- Nearby textile unit.
- Industrial visit outside Assam during educational excursion
- Visit entrepreneurs in the field of textile.

2. GUEST LECTURE (S) 6

Lectures by Professional / Industrial Expert / Student Seminars based on information searched, to be organized from any THREE of the following areas:

- Dye house effluent treatment plant.
- Air pollution related to textile industries.
- Safety rules observed in textile Mill.
- Awareness on carrer opportunités, communication in Industries, health awareness.

3. GROUP DISCUSSION: 6

The students should discuss in a group of six to eight students and write a brief report on the same as a part of term work. Two topics for group discussions may be selected by the faculty members. Some of the suggested topics are -

- Current News items
- Discipline and House Keeping in Industry.
- Role of maintenance for better productivity in a textile mill
- Role of human being towards environmental condition due to rapid technological change in Industries.

4. STUDENT ACTIVITIES: 8

The students in a group of 3 to 4 will perform any one of the following activities (others similar activities may be considered Activity :

- Study of different Industrial/ Textile lubricants.
- Local market survey of Muga, Silk and Eri type of yarn and fabric.
- Draw the carded and combed yarn production sequence of machineries.

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