1. COURSE TITLE : MATHEMATICS- II
2. COURSE CODE : TT -201
3. SEMESTER : 2nd

4.RATIONAL OF THE SUBJECT/ COURSE: This subject will develop basic understanding and skill of the Textile students in the field of using problem- solving strategies

* using mathematical and statistical models to solve problems
* making sensible estimates
- using and interpreting data
- evaluating mathematical and statistical information
- understand concept of engineering
- Derivative is helpful of finding slope, tangent line, and normal line to the curve.
- Integration provides area and volume of the curve.
- Measure of central tendency, Measure of Dispersion, correlation play an important role in Textile field.
- Contents of this subject will form foundation for further study in mathematics.

5. Course Outcome : After completion of the course students will be able to

- State the basic concept of functions, limits and continuity. characteristics, various type of function , domain , co-domain , range .Calculate the Problems related to Functions .Theorem on limits, some useful limits, and solve problems on limits and continuity .

- Define Derivative , State Geometrical meaning of Derivative of a function , different Methods of Finding out Derivatives. To find the distance with help of the chept." derivative as rate of measure"
- Understand Basic concept of Increasing and decreasing function, explain Maximum and minimum of a function. Calculate the problems regarding Maximum and minimum.
- Define Integration and definite integration . Explain different method of integration, Calculate Problems on integration by different methods, ToState the Geometrical meaning of definite integral
- Students will be able to represent and statistically analyse data both graphically and numerically. Describe concept of Central Tendency and Measure of dispersion. To compare among mean median and mode . Define and basic concept of Range, Quartile Deviation, Explain Mean Deviation and Standard deviation.
- Develop problem solving techniques needed to accurately calculate probabilities. They Apply problem solving techniques to solving real world events. They apply selected probability distributions to solve problem.

6. TEACHING SCHEME (IN HOURS) : 55 HOURS

LECTURE	TUTORIAL	PRACTICAL	TOTAL
45	10	---	55

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	30	-	-	-	-

8. DETAILED SYLLABUS

CHAPT. NO	CHAPT.NAME	CONTENT	HOURS
		GROUP-A (1.**Differential calculus)**	
1.1	Function	1.1.1Definition of Function and examples 1.1.2Different type of functions. 1.1.3Domain , co-domain and Range of functions 1.1.4Practice on problem of function.	2hrs
1.2	Limit of a function.	1.2.1 Basic concept on Limits 1.2.2 Definition of limit of a function from both analytic and geometric concepts. 1.2.3 Standard Limits- statement only. 1.2.4 Illustrative examples on limit.	3hrs
1.3	Continuity of a function at a Point.	1.3.1 Basic concept of Continuity of a function. 1.3.2 Neighbourhood of a real number 1.3.3 Definitionof Continuity of a function from both analytic and geometric point. 1.3.4 Simple examples on continuity.	2hrs
1.4	Differentiation or Derivative of a function	1.4.1. Basic concept of Derivative of a function from first Principle. 1.4.2. Geometrical interpretation of Derivative of a Function. 1.4.3 Derivative of Trigonometric , Exponential and Logarithmic function 1.4.4. Product and division formula for Differentiation. 1.4.5 Derivative of Implicit and Parametric function. 1.4.6. Derivative as a rate of measure. 1.4.7 Equation of Tangent and normal 1.4.8 Second order Derivative.	9hrs
1.5	Maxima and Minima of a function	1.5.1 Basic concept of increasing and decreasing function. 1.5.2 Basic concept of Maxima and Minima 1.5.3 Necessary condition for Maxima and Minima. 1.5.4 Determination of Maxima and Minima of an arbitrary function.	2hrs

GROUP-B (2.Integral Calculus)			
CHAPT. NO	CHAPT. NAME	CONTENT	HRS
2.1	Integration	2.1.1 Definition Integral , Integrand ,Primitive. 2.1.2 Integration is reverse process of differentiation—with examples. 2.1.3 Standard method of Integration. 2.1.4 Integration by parts. 2.1.5 Integration of Algebraic Fraction by Method of Partial Fraction. 2.1.6 Solve problem.	5HRS

2.2	Definite Integral	2.2.1 Fundamental Theorem on Integral Calculus 2.2.2 Interpretation of Definite Integral as Area. 2.2.3 Definite Integral as limit of Sum 2.2.4 Properties of Definite Integral. 2.2.5 Solve problems on Area.	4hrs
Group-c(3. STATISTICS)			
3.1	Measure of Central Tendency	3.1.1 Basic concept of Central Tendency 3.1.2 Average or Arithmetic mean or Mean 3.1.3 Median 3.1.4 Mode 3.1.5 solve Problem	4hrs.
3.2	Measure of Dispersion	3.2.1 Range 3.2.2 Quartile Deviation 3.2.3 Average deviation or mean deviation 3.2.4 Standard Deviation 3.2.5 co-efficient of variation 3.2.6 Solve Problem	4hrs
3.3	Correlation	3.3.1 Correlation. 3.3.2 Scatter Diagrams. 3.3.3 Karl Pearson's Co-efficient of Correlation.	3hrs
3.4	Probability	3.4.1 Basic concept of Probability. 3.4.2 Definition of Probability 3.4.3 Addition and Multiplication law of Probability. 3.4.4 Simple examples.	2hrs.

9. Distribution of Marks :

CHAPT. NO	CHAPTER NAME	TYPE OF QUESTION			TOTAL MARKS
		OBJECTIVE TYPE	SHORT QUESTION	DESCRIPTIVE QUESTION	
GROUP – A (1.Differential calculus)					
1.1	Function.	1+1=2	2		4
1.2	Limit of a function.	1+1=2	2+2+2		8
1.3	Continuity of a function at a Point.	1	2		3
1.4	Derivative of a function.	1+1=2		3+3+3=9	11
1.5	Maxima and Minima of a Function	1		4	5

GROUP – B (2. Integral Calculus)					
2.1	Integration	1+1=2		$4\times3=12$	14
2.2	Definite Integral	1		4	5
GROUP – C (3. Statistics)					
3.1	Measure of Central Tendency	1+1=2	$2\frac{1}{2}\times2=5$		7
3.2	Measure of Dispersion	1		4	5
3.3	Correlation	1		4	5
3.4	Probability			3	3
		15	15	40	70

TABLE OF SPECIFICATIONS FOR THEORY (Mathematics-1)

Sr. no	**Topic (a)**	**Time allotted in hours (b)**	**Percentage Weightage (c)**	**K**	**C**	**A**	**HA**
1.1	Function	2+1 hours	6.7	1+1		2	
1.2	Limit	3 hours	6.7	1+1		2+2	
1.3	Continuity of a function at a point	2+1 hours	6.7	1	2		
1.4	Differentiation	9 hours	20	1+1		3+3	3
1.5	Maxima and minima	2+1 hours	6.7	1		4	
2.1	Integration	5 hours	11	1+1		4+4	4
2.2	Definite integral	5 hours	11	1		4	
3.1	Measure of central tendency	4 hours	8.89	1+1		$2\frac{1}{2}+2\frac{1}{2}$	
3.2	Measure of dispersion	4 hours	8.89	1		4	
3.3	Correlation	3 hours	6.7	1		4	
3.4	Probability	2+1 hours	6.7				3
Total		Σ b=45	100				

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

$$c = \frac{b}{\sum b} \text{ x } 100$$

DETAILED TABLE OF SPECIFICATIONS FOR THEORY (Mathematics-1)

Sr. No	Topic	OBJECTIVE TYPE				SHORT ANSWER TYPE					ESSAY TYPE				
		K	C	A	T	K	C	A	HA	T	K	C	A	HA	T
1.1	Function	1		1	2			2		2					
1.2	limit	1		1	2			2+ 2+ 2		6					
1.3	Continuity of a function	1			1						2				2
1.4	Differentiation	1+ 1			2								3 + 3 + 3		9
1.5	Maximum and Minimum			1	1								4		4
2.1	Integration.	1		1	2								4 + 4 + 4		12
2.2	Definite integral	1			1								4		4
3.1	Measure of central tendency	1			1	2		2 $\frac{1}{2}$ +2 $\frac{1}{2}$		5					
3.2	Measure of dispersion	1			1								4		4
3.3	Correlation	1			1								4		4
3.4	Probability												3		3

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

10. Suggested Implementation Strategies: Students should be provided with opportunities, encouragement, and assistance to engagein thinking, reasoning, and sense making in the mathematics classroom. Consistent engagement in practices of mathematics may lead to a deeper understanding of mathematics . This will enhance classroom discussions, which would build students' capacity for mathematical thinking and reasoning. Mathematical Model can be used in some cases to translate a real world problem into a mathematical expression.

10.1 Book List :

1. Mathematics for Polytechnics by S.P Deshpande.

2. Engineering Mathematics by H.K Das.
3. Polytechnic Mathematics -II. Published ByMonimanik
4. Polytechnic Mathematics by Goswami and Goswami

10.2 List of Journals :

10.3 Manuals: Mathematical Dictionary/ encyclopaedia as a hand book. Mathematical model

10.4 Others: model question Paper/ question bank can be discussed with Help of internet

1.**Course Title : Chemistry-II**
2.Course Code : TT - 202
3.Semester : Second semester
4.**Rationale of the Course** : This part of the chemistry explains various aspects with regard to environment ,fuels, lubricants , and dye. This subject will develop basic understanding and skill of the students .
5**. Course objectives** : After completion of the course student will be able to
i. Identify the sources of air ,water and soil pollution, measure various parameters and suggest method for controlling of pollution.
ii. Prepare fuels and determine the parameters of solid, liquid and gaseous fuel.
iii. Describe lubricants and corrosion their classification, characteristic and prevention of Corrosion.
iv. Use laws of electrolysis to different industrial application.
v. Design methods for softening of water, preparation of municipal water, Estimation of hardness of water.
vi. Apply knowledge of dyes in textile industry.
6. Teaching scheme (per week)

L	T	P	Credit point
3	1	2	4

7. Teaching Scheme (in hours)

Lecture	Tutorial	Practical	Total
45(including 3 class test)	8	30	80

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	30	-	-	-	-

9. Detailed Course Content :

Chapter No	Chapter Title	Name of the Topic	Hours
Unit-I	Environmental Chemistry	1.1 Air Pollution Definition- Pollutants- harmful effects, Acid rain, Green house effect- Causes- Global warming- Ozone layer depletion- Control of air Pollution. 1.2. Water Pollution Definition, Causes- Pollutants, estimation. BOD, COD. Control of water Pollution. 1.3. Soil Pollution. Definition, Causes-Control of Soil Pollution- Solid waste management. 1.4. Green Chemistry Definition –Goals of green chemistry (Basic Ideas)	5
Unit-II	Fuel	2.1 Definition, Classification, Caloric value-	

		2.2 Solid fuel- Origin of Coal, Classification by rank, Pulverized Coal, Principle of carbonization of coal. 2.3 Liquid fuel-Petrolium- Classification, fractional distillation- fractions and uses. Flash point, Octane number. 2.4 Gaseous fuel- Compositions, properties and application of coal gas, water gas, producer gas, natural gas, natural gas and Biogas.Rocket propellants.	12
Unit-III.	Lubricants	3.1Definition, classification, Lubricating oil, greases, solid lubricants and lubricating emulsion with their application.	4
Unit-IV	Electro Chemistry	4.1 Electrolytic-Definition, example Electrolysis. 4.2 Laws of electrolysis, Problems, 4.3 Industrial application of electrolysis.	10
Unit-V	Corrosion	5.1Definition-causes of corrosion, types of corrosion, 5.2Methods of prevention of corrosion-Electroplating, Galvanization, Inorganic coating, Organic coating-paints, varnish-Definition-their function.	4
Unit-VI	Dyes	6.1Definition, Classification, -examples, Raw materials for the manufacture of dyes. Non-textile uses of dyes.	2
Unit-VII	Technology of Water	7.1 Sources- Hard water, Soft water, Disadvantages of hard water in boilers, Softening of hard water, 7.2 Preparation of Municipal water, 7.3 Estimation of hardness of water by EDTA method, 7.4 Basic idea of rain water harvesting.	8

10. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type	Short Questions	Descriptive Questions	
Unit I	Environmental Chemistry	1+1	1	6+5	14
Unit II	Fuel	1+1	4+4	6	16
Unit III	Lubricants	1+1		5	5
Unit IV	Electro Chemistry	1	4	4+4	10
Unit V	Corrosion	1			5

Unit VI Unit VII	Dye Technology of Water	1+1 10	2 15	3 6+6 45	4 16 70

11. TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	**Topic** (a)	**Time allotted in hours (b)**	**Percentage Weightage% (c)**	**K**	**C**	**A**	**HA**
1	Environmental Chemistry	5	11	4	10		
2	Fuel	12	27	4	8		3
3	Lubricants	4	9	1	4		
4	Electrochemistry	10	22	2	5	3	
5	Corrosion	4	9	1	4		
6	Dye	2	4	2	3		
7	Technology of Water	8	18	3	13		
Total		Σ b	100				

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	Environmental Chemistry	1+1	1		3		1			1	2	4+4			10
2	Fuel	1+1	1		3		2			2	2	5		3	10
3	Lubricants	1	1		2		3			3					
4	Electrochemistry	1	1		2						1	4	3		8
5	Corrosion	1	1		2		3			3					
6	Dye	1			1	1	3			4					
7	Technology of water	1	1		2		2			2	2	5+5			12

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

13.Suggested Implementation Strategies : By theory and practical classes.
14.Sugested Learning Resource :

1. Industrial Chemistry- By B. K. Sharma, Goal Publishing House,Meerut.
2. Senior Secondary Chemistry- Part I and Part II,ByKamaleshChoudhury, Satyendra Kumar Choudhury.
3. A Text Book of Polytechnic Chemistry- By VedPrakash Mehta, Jain Brothers, New Delhi.
4. Engineering Chemistry-By Jain& Jain, DhanpatRai Publishing Co.

5. A text book of Engineering Chemistry- By S. S. Dara, S. Chand & Company Ltd.
6 Simplified Polytechnic Chemistry, Vol-II ,ByVinayYadav.
7. Chemistry for Polytechnic ,Vol-II, by Jyotishmoy Borah and RajuOjah.

S.No	Course outcome	Intended Learning Outcome
1.	Describe water, air and soil pollution , pollutants, causes of pollution ,its control, BOD,COD, greenhouse effect and ozone layer depletion	a. Define pollution. Explain different types of pollution. b. Explain causes and control of water pollution c. Explain causes and control of air pollution d. Explain causes and control of soil pollution e. Define BOD and COD. Describe green houseeffect . f. Describe ozone layer depletion.
2.	Explain about fuel its properties ,uses and manufacture**.**	1) Define a fuel. 2) List various types of fuel. 3) Define Ignition temperature ,Flash point, Fire point and Calorific value . 4) Explain Octane number of fuel. 5) Describe carbonization of coal . 6) Explain fractional distillation of crude petroleum. 7) List the composition and uses of producer gas, water gas, coal gas, natural gas and gobar gas. 8) Describe manufacture of producer gas and water gas. 9) Write advantages and disadvantages of solid fuel over liquid fuel ,liquid fuel over gaseous and gaseous fuel over solid and liquid fuel.
3.	Define lubricants, its classification and characteristics.	a. Define lubricants and lubrication. b. List the different classes of lubricants. c. Point out important characteristics of a good lubricating oil. d. Define Pour point, Aniline point, Precipitation Number and viscosity. e. Describe lubricating emulsions.
4.	Describe corrosion, its causes and control.	a. Define corrosion. b. Explain causes of corrosion c. List the different types of corrosion d. Explain Direct chemical corrosion e. Explain Electrochemical corrosion. f. Describe methods for control of corrosion.
5.	Describe methods for softening of water, Preparation of municipal water, Estimation of hardness of water.	a. Define hard water and soft water. b. Explain causes of hardness. c. Explain bed effects of using hard water in steam boiler. d. Explain process for removal of temporary hardness. e. Explain process for removal of permanent hardness. f. Describe process for treatment of municipal water. g. Describe methods for estimation of hardness of water.

	State and explain dyes , its classification, raw materials and uses of dyes.	a. Define Dyes. b. Describe classification of dyes. c. Explain raw materials for the manufacture of dyes. d. Describe Direct dye, Mordant dye, Vat dye and Ingrain dye.

1.**Course Title : Chemistry –II Practical**
2.Course Code : TT-202(P)
3. Semester : Second Semester
4. Objectives : At the end of the program the student will be able to identify the Acid and basic radicals present in the given inorganic salt and can estimate the hardness of water .
5. Teaching and Examination Scheme ;

Instructions	
Hours/Week	Hours/Semester
2	30

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	25	25	**50**	15

6. Detailed Course Content :

Content	Hours
1. Analysis of Inorganic simple salt	
1.1 Identification of Acid radical with systematic procedure-CO_3^-,Cl^-,NO_3^-,$S^=$,$SO_4^=$.	12
1.2 Identification of Basic radical with systematic procedure- Pb^{++},Cu^{++},Cd^{++},Fe^{+++},Al^{+++},Mn^{++},Co^{++},Ni^{++},Cu^{++},Ba^{+},Ca^{++},Mg^{++},Na^{+},K^{+},NH_4^{+}.	14
2. Determination of pH of a Solution by using pH meter	4

Books :

1. Elementary Practical Chemistry by G.D. Sharma and Arun Baht
2. Elements of Practical Chemistry by Sudarsan Barua.

1. Course Title : PHYSICS-II
2. Course code : TT-203
3. Semester : 2nd
4. Rationale : This part of the course explains the basic fundamentals of Physics which will develop basic understanding of the students.
5. Course Outcome: After completion of this course students will be able to-

- Know about the light, its property
- Understand the phenomenon of light such as reflection, refraction of light.
- Know to image formation on mirror and lens.
- Know the magnet, its properties and uses..
- Understand static electricity, coulomb's law, its uses to determine the force between charges.
- Know about nucleus, atomic physics, radioactivity, photoelectric effect etc.

6. Teaching Scheme (per week) :

Lecture	Tutorial	Practical	Credit points
3	1	4	5

7. Teaching Scheme (in hours) :

Lecture	Tutorial	Practical	Total
42	3	10	55

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**	30	-	-	-	-

9. Detailed Course Content:

Chap No.	**Chapter Title**	**Content**	**Duration In hours**
1	LIGHT	1.1 Reflection of light, laws of reflection, explanation of image, real and virtual image, their differences, Reflection on plane mirror and spherical mirror, formation of image, formation of images for different positions of object, mirror formula to be assumed numerical	3hrs
		1.2 Refraction of light, laws of refraction, definition of refractive index, refraction through lenses, concave and convex lens, lens formula (to be assumed), power of lens, numerical problems.	3hrs
		1.3 Explanation of total internal reflection, explanation of critical angle, condition of total internal reflection.	2hrs

		1.4 Prism, refraction through prism, deviation, angle of deviation, its ray diagram. 1.5 Dispersion of light, ultraviolet spectrum, electromagnetic spectrum, colour of bodies, primary colours, complimentary colours, colour filters, appearance of a rose indifferent colours .	2hrs 2hrs
2	MAGNETISM	2.1 Natural and artificial magnet, magnetic pole coulombs law of magnetism its statement and Mathematical expression. 2.2 Magnetic field, magnetic lines of force, magnetic intensity and potential, their units. 2.3 Terrestrial magnetism, elements of earth's magnetism- definitions and explanation of dip, inclination and horizontal field of earth's magnetic field.	2hrs 1hr 1hr
3	ELECTROSTATICS.	3.1 Concept of electric charge, Inverse square law of electric charge, its statement and mathematical expression. 3.2 Explanation of electric field, electric lines of force, properties of electric lines of force, electric potential and intensity, its mathematical expression.	2hrs 2hrs
4	CURRENT ELECTRICTY	4.1 Potential difference and current with their units, ampere. 4.2 Electric cell, principle and construction of simple voltaic cell, electromotive force (e.m.f), internal resistance of cells,. Different types of cell, Daniel cell, Lechalnche cell and dry cell , difference between primary cell and secondary cell, 4.3 Defects of simple voltaic cell, explanation of localaction and polarization. 4.4 Basic d.c circuit, Ohm's law and its verification, Law of resistance, law of resistance, Kirchhoff's lawnumerical problems. 4.5 Magnetic effect of current, nature of magneticfield due tostraight, circular conductor and solenoid, Fleming's left hand rule, effect of current flowing through twoparallel conductors.	1hr 2hrs 1hr 2hrs 1hr 2hrs
5	ELECTROMAGNETIC INDUCTION	5.1 Explanation of electromagnetic induction, e.m.finduced in a coil by magnet, Faraday's of electro-magnetic induction , calculation of e.m.f,, direction of e.m.f, Lenz Law, Eddy currents and its application.	2hrs
6	ATOMIC PHYSICS	6.1 Atomic nucleus, atomic mass unit (a.m.u), bindingenergy, mass energy equivalence. 6.2 X-rays, its properties and uses. 6.3 Photoelectric emission, explanation, Einstein'sphoto electric equation, threshold	2hrs 1hr

		frequency andwork function of a metal. 6.4 Radioactivity, properties of alpha, beta and gamma rays and their application in engineering and medical science.	2hrs 2hrs
7	ELECTRONICS	7.1 Thermionic emission , vacuum tube, diode, triode, and their working principle, Concept of amplifier andrectifier, use of diode as a half wave rectifier.	2hrs
8	SEMICONDUCTOR	8.1 Concept of semiconductor, properties and basic principle, p-type and N-type semiconductor, intrinsicand extrinsic semiconductor with examples.	2hrs

10.**Distribution of Marks:**

Chapter No.	Chapter Title	Type of Question			Total Marks
		Objective type Compulsory	Short Question	Descriptive Question	
1	LIGHT	2	2	10	14
2	MAGNETISM	1	2	3	6
3	ELECTROSTATICS	1	2	4	7
4	CURRENT ELECTRICTY	2	2	9	13
5	ELECTROMAGNETIC INDUCTION	1	2	5	8
6	ATOMIC PHYSICS	1	2	7	10
7	ELECTRONICS	1	2	3	6
8	SEMICONDUCTOR	1	1	4	6
		10	15	45	70

11. .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	LIGHT	1		1	2	1		1		2	3	3	4		10
2	MAGNETISM	1			1	1	1			2	1	1	1		3
3	ELECTROSTATICS	$\frac{1}{2}$		$\frac{1}{2}$	1	1	1			2	1	1	2		4
4	CURRENT ELECTRICTY	1	1		2	1	1			2	3	2	4		9
5	ELECTROMAGNETIC INDUCTION	1			1	1		1		2	2	1	2		5
6	ATOMIC PHYSICS	1			1	1		1		2	2	2	3		7
7	ELECTRONICS	1			1	1	1			2	1	1	1		3
8	SEMICONDUCTOR	1			1	1				1	1	1	2		4

K=Knowledge, C= Comprehension, A= Application, HA= Higher than application (analysis, synthesis, Evaluation) and T=Total

.

Annexure-1

12. TABLE OF SPECIFICATIONS FOR THEORY

Sr. No:	Topics (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	C	A	HA
1	LIGHT	12	28.5	5	3	6	
2	MAGNETISM	4	9.5	3	2	1	
3	ELECTROSTATICS	4	9.5	$2\frac{1}{2}$	$2\frac{1}{2}$		
4	CURRENT ELECTRICTY	9	21	5	4	4	
5	ELECTROMAGNETIC INDUCTION	2	4.7	4	1	4	
6	ATOMIC PHYSICS	7	16.6	4	2	4	
7	ELECTRONICS	2	4.7	3	2	1	
8	SEMICONDUCTOR	2	4.7	3	1	2	
TOTAL		42 Σ b	100%				

K=Knowledge, C= Comprehension, A= Application, HA= Higher than application (analysis, synthesis, Evaluation)

$C = \frac{b}{\Sigma b} \times 100$.

13. .**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 help students to understand the subject.

14. **Suggested learning Resource:** By using Models, Vedio etc.

15.1 **Book list:**

1. Principle of Physics by- N Subramanium and BrijLal,
2. A Text book on Applied Physics-II by DwijendraSarma.
3. Modern Approach to PhysicsVol-I & II by Sarma, Chakraborty& Sharma
4. Polytechnic Physics by Dr. B Baishya.

15.2 list of journals:

15.3 Manuals: PPT

15.4 Others: Handouts.

S.No	Course outcome	Intended Learning Outcome
	1.1 Reflection of light, laws of reflection, explanation of image, real and virtual image, their differences, Reflection on plane mirror and spherical mirror, formation of image, formation of images for different positions of object, mirror formula to be assumed, numerical problems. Define and explain light or light radiation Know the important nature of light Explain the phenomenon of Reflection of light State and explain of reflection of light Explain of optical image Know the classification of images Explain the real and virtual image of light Define the mirror mirror Classify the mirror- plane mirror and spherical mirror Know how to construct mirrors Know the important definitions related to spherical mirror, like pole, centre of curvature, focus, focal length and principal axis of concave and convex mirror Know the formation of image on plane and spherical mirrors Ray diagram of image formation. Rules for tracing image on plane and spherical mirror Measurement of distance such as object distance, image distance, and focal length i.e sign conventions. Know the Mirror formula and its use to locate the position of image formed by concave or convex mirror. Use plane and spherical mirrors. Solve of numerical problems using mirror formula to determine the position, nature and size of the image formed by spherical mirrors.	Introduction to light, some important nature of light Explanation of some terms related to light such as source of light, medium of light, Representation of light Explanation of the phenomenon of Reflection of light, laws of reflection of light Explanation of optical image, classification of images- real and virtual image with ray diagram, difference between real and virtual image Definition the mirror, Classify the mirror- plane mirror and spherical mirror Explanation of some important definitions related to spherical mirror, like pole, centre of curvature, focus, focal length and principal axis of concave and convex mirror, ray diagram of image formation Rules for tracing image on plane and spherical mirror Measurement of distance such as object distance, image distance, and focal length i.e sign conventions. Know the Mirror formula and its use to locate the position of image formed by concave or convex mirror. Use plane and spherical mirrors. Solution of numerical problems using mirror formula to determine the position, nature and size of the Image formed by spherical mirrors.
	1.2 Refraction of light, laws of refraction, definition of refractive index, refraction through lenses, concave and convex lens, lens formula (to be assumed), power of lens, numerical problems. Know the explanation of refraction of	Explanation of refraction of light, laws of refraction, definition of refractive index of medium definition of a lens, the classification of lens- convex, concave lens Refraction through lens, ray diagram

	light know the definition of refractive index know the definition of a lens know the construction of lens Know the classification of lens- convex, concave lens Refraction through lens, ray diagram Important definitions related to lens, like optical centre, centre of curvature, focus, focal length and principal axis of concave and convex lens. Formation of image on convex and concave lens. Ray diagram of image formation on lens. Rules for tracing image on lens, convex and concave lens. Measurement of distance such as object distance, image distance, focal length i.e sign conventions. Lens formula and its use to locate the position of image formed by convex and concave lens Solution of numerical problems using mirror formula to determine the position, nature and size of the image formed by spherical lens. Explanation of power of a lens, formula of power of lensUnit of power of a lens Uses of lens in our day today life	Important definitions related to lens, like optical centre, centre of curvature, focus, focal length and principal axis of concave and convex lens. Formation of image on convex and concave lens, Ray diagram of image formation on lens. Rules for tracing image on lens, convex and concave lens.Measurement of distance such as object distance, image distance, focal length i.e sign conventions.Lens formula and its use to locate the position of image formed by convex and concave lensSolution of numerical problems using lens formula to determine the position, nature and size of the image formed by spherical lens. Explanation of power of a lens, formula of power of lensUnit of power of a lens-diopterUses of lens in our day today life
	1.3 Explanation of total internal reflection, explanation of critical angle, condition of total internal reflection. Bending of light when it travel from denser to rarer medium Explanation of critical angle for a pair of media Explanation of the phenomenon of total internal reflection of light Condition of total internal reflection of light Examples of TIR such as mirage, looming etc.	Explanation of critical angle of a medium Explanation of total internal reflection of light, condition of total internal reflection of light Relation between critical angle and refractive index of any medium
	Prism, refraction through prism, deviation, angle of deviation, its ray diagram. What is a prism-definition Construction of prism	Explanation of prism, types of prism, definition of angle of prism, refracting edge and base of a prism Refraction through prism, deviation of ray passing through prism

	Different type of prism Important definition related to prism, refrating edge, refracting angle, base of prism Refraction through prism- with ray diagram Formation of image on prism Deviation of a light ray when passes through prism, angle of minimum deviation Deduction of a relation between refractive index of a prism, angle of minimum deviation and angle of prism. Numerical problems to calculate refractive index of a prism, angle of minimum deviation or angle of prism. Uses of Prism- to split white light, periscope etc.	Image formation on prism Definition of angle of minimum deviation and angle of prism Deduction of relation between minimum deviation, angle of prism and refractive index of any medium. Solution of numerical problems
	Dispersion of light, ultraviolet spectrum, electromagnetic spectrum, colour of bodies, primary colours, complimentary colours, colour filters, appearance of a rose in different colours. Explanation of Dispersion of light, Explanation of Newton's experiment Meaning of VIBGYOR Why splitting takes place? Explanation of Spectrum Explain the Electromagnetic Spectrum Explain the colour and pigments Primary and complimentary colours Colours of Opaque body Colour of a transparent body Colour filter Appearance of a rose in different colours	Explanation of dispersion of light Newton's experiment Meaning of VIBGYOR Why splitting takes place? Explanation of electromagnetic spectrum, ultraviolet and infrared spectrum complimentary colours, colour filters, appearance of a rose in different colours
	2.0 MAGNETISM Natural and artificial magnet, magnetic pole, coulombs law of magnetism its statement and its mathematical expression. What is magnet and properties of magnet Different types of magnet- artificial and natural magnet Concept of magnetic poles- north and south pole of magnet Understand the force between two magnetic poles i.e., magnetic force Measurement of magnetic force between	Explanation of magnet, properties of magnet Classification of magnet- Natural and artificial magnet, how to locate magnetic poles Definition of magnetic poles, Force between magnetic poles, Coulomb's law of magnetic poles, its statement , explanation with mathematical expression Unit of pole strength Solve numerical problems

	two magnetic poles They can be able to state and explain Coulomb's law of magnetic force Mathematical expression of Coulomb's law or Inverse Square law of Magnetic force.	
	Magnetic field, magnetic lines of force, magnetic intensity and potential, their units. Concept of magnetic field, How to define the Magnetic lines of force and its some properties Know how to draw magnetic lines of force due to a bar magnetic Magnetic potential and magnetic intensity of a magnetic field How to represent magnetic field? How to measure magnetic intensity at any point on end on also broad side position due to a short bar magnet	Concept of magnetic field, its representation Concept and explanation of magnetic lines of force Definition and explanation of magnetic intensity and magnetic potential

	2.3 Terrestrial magnetism, elements of earth's magnetism- definitions of dip, inclination and horizontal field of earth's magnetic field. Concept of terrestrial magnet of earth magnet Explain the elements of earth magnetism- dip, inclination and the horizontal component of earth magnetic field	Concept of terrestrial magnet of earth magnet Explain the elements of earth magnetism- dip, inclination and the horizontal component of earth magnetic field
	3.0 **ELECTROSTATICS.** 3.1 Concept of electric charge, Inverse square law of electric charge, its statement and mathematical expressions. Explanation of electric charge Types of electric charge- positive and negative charge State and explain the Inverse square law of electric charge with mathematical expression, unit charge To measure charge, Unit of charge- Coulomb etc	Introduction to electrostatic charge, concept of charge according to modern electron theory. Explanation of two kinds of charge, +ve and _ve charge Force between electrostatic charge Statement, explanation and mathematical expression of Inverse Square law Unit of charge, its definition
	3.2 Explanation of electric field, electric lines of force, properties of electric lines of force, electric potential and intensity, its mathematical expression, potential. Explain electric field Define electric lines of force	Concept and explanation of electric field its representation Explanation of electric lines of force, its property

	Know the properties of electric lines of force Explain electric potential, its measurement and unit Explain electric intensity, its measurement with mathematical expression	Drawing of electric lines of force Concept , explanation with mathematical expression of electric potential
	4.0 **CURRENT ELECTRICITY** 4.1 Potential difference and current with their units,ampere. Know the concept of potential difference and its unit Know the concept of electric current and its mathematical expression know how current flows through any conductor, know how current is measured, its SI unit know the definition of ampere numerical problems relating tom electric current	Explanation of P.D between two points of a conductor, Flow of charge, electric current its mathematical expression Measurement of electric current, definition of ampere Numerical problems
	4.2 Electric cell, principle and construction of simple voltaic cell, electromotive force resistance of cells,. Different types of cell, Daniel cell, Leclanche and dry cell, emf, internal resistance, difference between primary cell and secondary cell. Know electric cell, principle of electric cell Know to construct simple voltaic cell Define e.m.f and internal resistance of cell Classify electric cells-primary and secondary cell Different types of primary cell such as Daniel cell, Leclanche and dry cell,	Concept of electric cell and its explanation Principle of electric cell, Classification of electric cell, primary cell and secondary cell Difference of primary cell and secondary cell Construction of simple voltaic cell Theory of action of simple voltaic cell Construction and explanation of Daniel cell, Lechalnche cell and dry cell Explanation of electromotive force and internal resistance of a cell.
	4.3 Defects of simple voltaic cell, explanation of local action and polarization. Explain the defects of simple cell- Know the explanation of local action and polarization. To know how these can be removed	Explanation of Defects of simple cell, explanation of local action and polarization its removal
	4.4 Basic d.c circuit, Ohm's law and its verification, explanation of resistance, law of resistance, Kirchoff's law, numerical problems. Know electric circuit(d.c)	Concept of electric circuit Basic elements of d.c circuit Statement Ohm's law, definition of resistance Mathematical expression of Ohm's law

	Different elements of electric circuit To state and explain Ohm;s law how to verify Ohm;s law with circuit diagram to define resistance and its mathematical expression to state laws of resistance to solve numerical problems on ohm's law state and explain Kirchoff's law of current and voltage to analyses electric circuit	Explanation of ohm's law and its mathematical expression Verification of ohm's law with circuit diagram Statement and explanation of Kirchoff's law Numerical problems.
	4.5 Magnetic effect of current, nature of magnetic fielddue to straight, circular conductor and due tosolenoid, Fleming's left hand rule, effect of current flowing through two parallel conductors. To explain magnetic effect and Orstead's experiment Explain the pattern of magnetic field produced Detect the direction of induced magnetic field explain Fleming's left hand rule explain the effect of current flowing through two parallel conductors	Explanation of Orstead Experiment to demonstrate magnetic effect of current Nature and pattern of magnetic field Magnetic field due to straight and circular current carrying conductor Direction of induced magnetic field, explanation of Fleming's left hand rule effect of current flowing through two parallel conductors
	5.0 ELECTROMAGNETIC INDUCTION Explanation of electromagnetic induction, e.m.f induced in a coil by magnet, Faraday's of electromagnetic induction, calculation of e.m.f,, direction of e.m.f, Lenz Law, Eddy currents and its application. demonstrate the phenomenon of electromagnetic induction State and explain the phenomenon of electromagnetic induction How e.m.f can induced in a coil by magnet State and explain Faraday's of electromagnetic induction Determine the direction of induced e.m.f. State and explain Lenz Law and eddy current Examples of eddy current	Concept and explanation of electromagnetic induction Faradays experiment of EMI Explanation of e.m.f induced in a coil by magnet, Statement and explanation of Faraday's law of electromagnetic induction Mathematical expression Direction of induced emf, Statement of Lenz's law, its explanation Explanation of eddy current and its application
	6.0**MODERNPHYSICS** 6.1 Atomic nucleus, atomic mass unit (a.m.u), binding energy, mass energy	Explanation of atomic nucleus Representation of atomic nucleus

	equivalence. Explain atomic nucleus of an atom To represent nucleus of an atom How to measure nuclear mass To define and explain atomic mass unit, electron volt (e.v) To state and explain binding energy To state and explain Einstein's mass energy equivalence principle To convert certain mass to energy	Measurement of atomic mass, explanation & definition of atomic mass unit Measurement of atomic energy, definition and explanation of electron-volt (e.v) Einstein's mass energy equivalence principle, statement ,explanation with mathematical expression Definition of binding energy and its explanation
	6.2 X-rays, its properties and uses. To explain X-ray To explain the properties of X-rays To explain the application of X-rays-medical applications, technological application,	Explanation of X-ray Properties of x-ray Medical and technical application of X-ray
	Photoelectric emission, explanation, Einstein's photo electric equation, threshold frequency and work function of a metal. To state and explain photoelectric effect To demonstrate photoelectric emission Understand the photon To deduce Einstein's photo electric equation To state and explain work function and threshold frequency of metal To solve numerical problems	Explanation of Photoelectric effect Explanation of photoelectric emission Deduction of Eienstein's Photo-electric effect Explanation of photon and photo-electron Definition and explanation of work function of metal Definition and explanation of threshold frequency of metal
	Radioactivity, properties of alpha, beta and gamma rays and their application in engineering and medical science. To state and explain the phenomenon of radioactivity To know the emission of alpha, beta and gamma radiation Understand the properties of alpha, beta and gamma radiation know the application of alpha, beta and gamma radiation in engineering and medical science.	Explanation of radioactivity ,natural and artificial radioactivity Laws of radioactivity Properties of alpha, beta and gamma radiation Application of radioactive radiation in engineering and medical science.
	7.0 ELECTRONICS Thermionic emission, vacuum tube, diode, triode, and their working principle, Concept of amplifier and rectifier, use of diode as a half wave rectifier.	Explanation of Thermionic emission Principle of thermionic tube or valve Construction of diode valve and triode valve Concept of amplifier and rectifier Working of diode vale with circuit

	State and explain thermionic emission The principle of thermionic tube or valve- diode, triode To explain the construction of diode The working of diode valve How to use diode as a rectifier To explain rectification and amplification	diagram Use of diode as half wave rectifier
	8.0 **SEMICONDUCTOR.** 8.1 Concept of semiconductor, properties and basic principle, p-type and N-type semiconductor, intrinsic and extrinsic semiconductor. State and explain semiconductor Properties of semiconductor Classify Intrinsic and extrinsic semiconductor How construct P-type and N-type semiconductor	Explanation of semiconductor Some property of semiconductor Types of semiconductor, intrinsic and extrinsic semiconductor Construction of n-type semiconductor Construction of p-type semiconductor.

SUBJECT - PHYSICS –II PRACTICAL
COURSE CODE -TT-203(P)
FULL MARKS -50
PRACTICAL EXAMINATION : 25 Marks
PRACTICAL SESSIONAL : 25 Marks

SYLLABUS

Theory				Practical			
Examination Full Marks	Sessional Full Marks	Total Marks	Pass Marks	Practical	Practical Assessment	Total Marks	Pass Marks
-	-	-	-	25	25	**50**	15

Unit-I Toverify the laws of reflection by pin method. 2
Unit-2 To verify laws of refraction by pin method using a glass slab. 2
Unit-3 To find the refractive index of the material of the prism by minimum deviation position using symmetrical rays. 2
Unit-4 To determine the refractive index of a prism by drawing I-D Curve. 2
Unit-5 To locate the pole of a bar magnet. 2
Unit-6 To determine the focal length of convex lens by plane mirror method. 2
Unit-7 To determine the focal length of concave lens by U-V method. 2

1. Course Title **:- YARN MANUFACTURE-I**
2. Course Code :-**TT-204**
3. Semester :-**2nd**
4. Rationale of the subject/ Courses :-
5. Teaching Scheme (in hours) :-105**hrs**

Lecture	Tutorial	Practical	Total
42	03	60	105

6. Course Outcomes: The Students will be able to:-

1. Define Ginning and explain the working mechanism of Ginning machine.
2. State the Process involved for Yarn Numbering System.
3. Express Mixing and Blending of Fibers and their advantages and disadvantages.
4. Explain the Principles of operation in Blow Room Line, Concept of Major and Minor Beating Points and modern trend of machine.
5. Describe the Functions of Hopper Bale Breaker, Hopper Feeder, Step Cleaner, Porcupine Opener, Bladed Beater and its maintenance.
6. Identify the Feed Regulating Device in blow room line and

Calculate the production, draft in Blow Room Line machine.

Examination Scheme :

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

7. Detailed Course Content :

Chapter No	Chapter Title	Content	Duration (in hours)
1	Ginning of cotton	1.0. Objects of ginning and working mechanism of Saw & Mecarthy Gin	3
2	Introduction to spinning.	Study the outline of the processes involved in production of cotton	2
3	Baling of cotton	3.0.Objects of baling, Process of baling, Weight of bales.	2
4	Mixing and Blending	4.0.Objectsof Mixing and Blending. 4.1.Different Methods of Mixing and Blending and their advantages and disadvantages. 4.2.Ingredients used in Mixing.	5
5	Opening and Cleaning	5.2.Study of a typical single process Blow-Room lines with Conventional machines	3
6	Blow- Room Machineries.	6.0.Principles involved in Blow- Room machine & their construction, classification, Concept of Major &minor	12

		Beating points and settings. 6.1. Hopper Bale Breaker /Opener 6.2.Hopper feeder. 6.3.Step cleaner or Ultra cleaner 6.4.Porcupine Opener 6.5.Bladed beater/ Piano feed regulating motion, Photo Electric cell, Swing door mechanism. 6.6.Krischner Beater& Cages. 6.7.Dust Trunk.	
7	Modern Trend of m/c	Uni-opener,S.R.R.L opener 7.1.Bale Plucker 7.2.Axi-flow-opener	3
8	Scutcher.	Objects of Scutcher, Constructional Features, Mechanism & working.	3
9	Blow-Room-Maintenance.	Maintenance-Schedule-Daily, Periodical, Preventive, Operational. 9.1.Blow Room Lap defects & Remedies. 9.2.Performanceassesment.	6
10	Calculation	10.0.Calculation related to Production, Draft and Lap hank.	3

Sr No.	Topic (a)	Time allotted in hours (b)	Percentage Weightage (c)	K	C	A	HA
1	Ginning Of Cotton	3	7.1%	01	02	03	00
2	Introduction to Spinning	2	4.7%	01	02	03	00
3	Baling Of Cotton	2	4.7%	01	02	00	03
4	Mixing and Blending	5	11.9%	01	02	00	03
5	Opening and Cleaning	3	7.1%	01	02	00	03
6	Blow-Room Machineries.	12	28.5%	01	02	02	02
7	Modern Trend Of m/c.	3	7.1%	01	02	02	02
8	Scutcher	3	7.1%	01	02	02	02
9	Blow Room Maintenance	6	14.2%	01	02	02	02
10	Calculation	3	7.1%	01	02	02	07
		42	100%	10	20	23	17

8. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type (Compulsory)	Short Questions	Descriptive Questions	
1	Ginning of cotton	01	02	04	07
2	Introduction to spinning.	01	02	04	07
3	Baling of cotton	01	02	03	06
4	Mixing and Blending	01	02	04	07
5	Opening and Cleaning	01	02	04	07
6	Blow- Room Machineries.	01	01	04	06
7	Modern Trend of m/c	01	01	04	06
8	Scutcher.	01	01	04	06
9	Blow-Room-Maintenance.	01	01	04	06
10	Calculation	01	01	10	12
		10	15	45	70

TABLE OF SPECIFICCATIONS FOR THEORY

DETAILED TABLE OF SPECIFICATIONS FOR THEORY

SL. No	Topic	objective type				Short Answer Type					Essay type				
		K	C	A	T	K	C	A	HA	T	K	C	A	HA	T
1	Ginning	1			1		2		0	2			3		3
2	Introduction to spinning	1			1		2		0	2			3		3
3	Baling of cotton	1			1		2		3	5					0
4	Mixing and Blending	1			1		2		3	5					0
5	Opening and cleaning	1			1		2		3	5					0
6	Blow Room machineries	1			1		2	2	2	6					0
7	Modern trend of machine	1			1		2	2	2	6					0
8	Scutcher	1			1		2	2	2	6					0
9	Blow room maintenance	1			1		2	2	2	6					0
10	Calculation	1			1		2	2	3	7				4	4
					10					50					10

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

1. Suggested implementation Strategies :
2. Suggested learning Resource :

a. Books list

Sl.No.	Title	Author/ Publisher
1	Spun yarn technology - vol-I, II, III	A.Venkatasubramani.
2	Manual of Textile Technology vol-I,II,III	W.Klein,
3	Elements of cotton spinning calculations	H.V.Shrinivasamurthy

11 List of Journals :

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

12.**ILO (Intended Learning Outcome.)**

The Students will be able to :-

1 Define Ginning and mechanism of Ginning machine.
a) Express the meaning of ginning.
b) State the causes of faulty ginning.
c) Identify the types of ginning machine.
d) Describe the function and mechanism of ginning machine.

2. Recognize the yarn numbering system.
a) Classify the yarn numbering system
b) Define the direct and indirect numbering system.
c) State about tex, denier,dividend, enhlish count, hank, grains etc.
d) Detect the conversion of indirect system to direct system.

3. Recognize the process of mixing and mechanism of blow room machinery.
a) Differentiate mixing and blending.
b) Identify the mixing ingredients.
c) Describe the methods of mixing.
d) Relate the objects of mixing and its advantages and disadvantages.
e) Identify the sequence of machinery involved in blow room for cotton and synthetic fiber processing.
f) Learn the operation principle of blow room line and meaning of beating points.
g) Access the air suction device for transferring material from one part to another of blow room line.
h) Explain the main function of hopper bale breaker, step cleaner, hopper feeder, bladed beater.
i) Express the opposite action of beater blade and spikes on the fiber.
j) Identify the feed regulating device in Blow room line.
k) Detect the different feed regulating devices in different position of blow room line with its function

l) State the actual function of krischner beater in blow room line.
m) Describe the function of cage roller situated nearest to the Krischner beater.
n) Analyze the cone drive mechanism connected with the piano feed regulating device.
o) Explain the bowl and box arrangement in relation to feed regulating device.
p) Identify the modern developments in blow room line.
q) Relate about the modern openers and cleaners engaged in Blow room line.
r) Recognize the maintenance points, name of lubricants in blow room line.
s) Explain the maintenance schedule in Blow room line for better running.
t) Detect the various defects occurred in blow room line and carding and its remedies
u) Calculate the production, draft, efficiency and waste percentage of blow room .
v) Recognize different components for calculating the production of a machine.

4. a) State the function of SRRL Opener
   b) Explain the lap defects and its remedies.
   c) Access the difference between cotton and man made fibre processing.

1. SUBJECT :YARN MANUFACTURE-I (PRACTICAL)
2. SUB CODE : TT-204(P)
2.SEMESTER :-II

INTENDED LEARNING OUTCOME:-

The students will be able to:

- Measure the diameter of driver and driven pulley of the machine.
- Acquire knowledge how the material is transferred from machine to machine with help of pneumatic suction device.
- Elaborate the process, how the material is flown from lower beater to upper beater of step cleaner.
- Locate the position grid bars in the step cleaner beater and its function.
- Identify the location of PIV gear box and piano feed regulating device nearest to the scutcher.
- Identify the major and minor beating points of blow room line.
- Do the different settings for better flow of material in Blow room line.
- Maintain the lubricating and greasing points and use of graphite powder.
- Know the name of different lubricants used in the B/R/L machine.

DETAIL PRACTICAL LIST

1.

1. **Course Title :FABRIC MANUFACTURE -I**
2. **Course Code : TT- 205**
3. **Semester :- 2nd**
4. **Rationale of Subject /Courses** :- Weaving is the most commonly employed method of fabric manufacturing. Basically, weaving process is divided into two parts – weaving preparatory and actual fabric production on loom. Among preparatory processes – weft (pirn) winding is includedin this semester .Various types of looms like hand-looms, non-automatic looms, automatic looms and shuttleless looms are used for fabric manufacturing. Out of these, hand looms are suitable for small scale production while other types of looms are suitable for large scale production and hence are used in industry. Among these, non-automatic loom producing plain fabric, can be considered as basic loom giving knowledge about various motions and mechanisms provided on the loom. With this view, study of plain powerloom (non-automatic loom) is included in this semester while automatic looms and shuttleless looms will be dealt during higher semesters. In this semester, student will study primary, secondary and auxiliary motions of plain power loom, accessories of loom and fabric defects. He also will be able to practice production calculations of loom. Practices will provide hands on experience on plain loom and pirn winding machine
5. Teaching Scheme(In hours)

Lecture	Tutorial	Practical	Total
42	**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**	30	50	50	**100**	30

7. Details course content

C N	Chap. Title	Content	Hrs
I	Handloom	Type of Handloom. Fly shuttle frame loom Semiautomatic looms Tie up of healds Draw boy arrangement	6hrs
II	Weft Winding – Pirn Winding:-	Specific Objectives – The Student will be able to – • understand object of pirn winding • Compare non-automatic and automatic pirn Winding M/cs. • Identify defects in wound pirn and causes and suggest remedies for it. • Estimate time required for desired production. Content – 2.1 Object, types of pirn winding machines – non-automatic,	4hrs

		automatic and fully automatic.	
III	Study of Plain Power Loom- (A)Primary Motions	Specific Objectives – The Student will be able to – • Understand construction of plain power loom • Understand passage of warp, various motions of loom, loom timings indication. Content – 3.1 Loom framings, main parts of loom and their functions, passage of warp on plain power loom, objects of primary, secondary and auxiliary motions in brief, Drive to loom, Drive to loom, Loom timing indication, hand of loom. Specific Objectives – The Student will be able to – • Understand object of primary motions. • Understand construction and working of primary motions. • Set and time the primary motions. • Identify causes of defective working. Content – 3.2 Shedding Motions- object, types of shedding, mechanisms – tappet, dobby and jacquard shedding, positive and negative shedding. 3.3 Tappet Shedding – study of construction and working of plain tappet shedding mechanism. functions of all parts, timing and setting. 3. Early and late shedding on loom working and fabric quality. 3.6 Picking Motions :- Object, types of picking mechanisms – over-pick and under-pick mechanisms. 3.7 Over Picking Mechanism – Construction and working of cone over picking mechanism, function of all parts, timing and settings, early and late picking. 3.8 Under Picking Mechanism – Construction and working of side lever under picking mechanism ,functions of all parts, timing and settings, comparison between various picking mechanisms. 3.9 Beat-up motions – object, study of construction and working of beat-up mechanism – sley, crank and crank arm assembly. Sley eccentricity, importance and calculations. Specific Objectives – The Student will be able to – • Understand object, construction and working of secondary motions • Calculate dividend of 7 wheel take-up motion. • Identify pick wheel for required no. of picks per inch in the fabric Content – 4.1 Take-Up Motion (Cloth control) – object, types, study of construction and working of seven wheel take-up motion, settings and timings of the mechanism, calculation of dividend of seven wheel take-up mechanism, change of	15hrs
	(B) Secondary Motions -		

	(C) Auxiliary Motions	standard wheel, cloth wind-up device. 4.2 Let-off Motion – Objects, types – positive, semi-positive and negative, study of construction and working of negative let-off motions, Advantages and disadvantages. Specific Objectives – The Student will be able to – • understand object, construction and working of auxiliary motions. • Set and time auxiliary motions. Content – Object, types, study of construction and working, details of parts and its functions, settings and timings of the following. 5.1 Weft Stop Motion – Types, side weft fork motion, side weft fork problems, limitations. 5.3 Warp Protector motion – Loose reed and fast reed motion and comparison between them.	
IV	Fabric Defects	• Identify fabric defects. • Understand causes and suggest remedies for fabric defects. Brief description, demonstration, causes and remedies for following defects occurring on the plain power loom. Missing end, float, shuttle smash, thick place, crack, double pick, double end, broken piece, reedy fabric or fabric with poor cover, all types of bad selvedge, temple marks, emery roller marks, starting mark, stains, gout.	4hrs
V	Warping (Handloom & powerloom)	Specific Objectives - The Student will be able to • understand objects of Warping • identify various parts and their functions • compare Beam and Sectional Warping • understand the procedure of leasing and beaming • select the machine for desired production • estimate the time required for desired production • calculate no. of Beams required for desired warp density 7.1 Direct Warping (Beam Warping):- Objects, passage of warp, construction and working of warping machines, different types of creels used, their merits and demerits, different types of tension devices, 7.2 Indirect Warping:- (Sectional Warping) – object, passage of warp, through machine, preparation of sections, construction of warping drum, lease rod, section reed, section warping, leasing, beaming and creeling for colour pattern. 7.5 Modern Warping machines : Salient features Sub Topic - Warping calculations 06 Marks 1. Production and efficiency of Direct Warping machine. 2. Efficiency of Sectional Warping machine. 3. Calculation and no. of beams in a set for beam warping and no. of sections and section width for Sectional Warping.	5hrs
VI	Warping & Weaving	Weaving Calculations Specific Objectives – The Student will be able to –	

	Calculations	• Calculate loom speed, production and efficiency • Estimate time/no. of looms required for desired production • Estimate weight of warp, weft and fabric. • Calculate reed count. • Estimate total no. of ends on a beam. 8.1 Calculations of loom speed, production and efficiency 8.2 Calculations on warp weight, weft weight, fabric weight. 8.3 Calculations of heald and reed count for given sett, ends per beam for required width of the cloth. Sub Topic - Warping calculations 1. Production and efficiency of Direct Warping machine. 2. Efficiency of Sectional Warping machine. 3. Calculation and no. of beams in a set for beam warping and no. of sections and section width for Sectional Warping.	8hrs
		Total =	42+3hrs including3class test

8. Distribution of Marks

Chapt No.	Chapter Title	Type of question			Total Marks
		Objective Type (Compulsory)	Short Question	Descriptive Question	
I	Handloom	2	3	5	10
II	Weft Winding – Pirn Winding	2		4	6
III	Study of Plain Power Loom-	6	9	10	25
IV	Fabric Defects	3	4	-	7
V	Warping (Handloom & Power loom)	4		4	8
VI	Warping & Weaving Calculations	8	2	4	14
Total		25	18	27	70

Annexure-I
TABLE OF SPECIFICATIONS FOR THEORY

Sr. No	Topic (a)	Time allotted in Hrs.(b)	Percentage Weightage (c)	K	C	A	HA
1	Handloom	6	14	5	5		
2	Weft Winding –	4	10	2	4	-	
3	Study of Plain Power Loom-	15	35	10	10	5	
4	Fabric Defects	4	10	4	3	-	

5	Warping (Handloom & Power loom)	5	12	4	4		
6	Warping & Weaving Calculations	8	19	4	2	8	
Total			100	29	28	13	

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

10. 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	Handloom	2	-		2	3	-			3	-	5	-		5
2	Weft Winding	2	-		2	-	-			-	-	4			4
3	Study of Plain Power Loom-	2	2	2	6	3	4	1		8		5	5	1	11
4	Fabric Defects	1	2		3	3	1			4					-
5	Warping (Handloom & Power loom)	2	2		4	2				2		2			2
6	Warping & Weaving Calculations	2	2	4	8	2				2					4

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

11. Learning Resources:

SlNo.	Author	Title	Publisher
1.	M.K. Talukdar	Winding and Warping	-
2.	R. Sengupta	Yarn Preparation Vol. I & II	Popular Publications, Mumbai
3.	N.N. Banerjee	Weaving Mechanism Vol. I &II	Textile Book House, 29, Krishnath Road, Behrampore 742 101(W.B.)
4.	R. Marks A.T.C. Robinsons	Principles of Weaving	Principles of Weaving(UK)
5.	K.T. Aswani	Plain Weaving Motions	MahajansPublishers,Ahamedabad
6.	T.W. Fox	Mechanisms of Weaving	Universal Publications, Mumbai
7.	Hasmukhrai	Fabric Forming	SSM Institute of Textile Technology, Tamilnadu
8.	M.K. Talukdar, P.K. Shriramulu	Weaving Machines, Mechanisms, Management	Mahajan Publishers Pvt.Ltd., Ahmedabad

	D.B. Ajgaonkar		
9.	R. Sengupta	Weaving Calculations	D.B. Taraporevasla Sons & Co. Sons D.N. road, Mumbai
10.	M.C. Paliwal P.D. Kimothi	Process Control in Weaving	ATIRA, Ahmedabad
11.	NCUTE	Woven Fabric Production I & II	NCUTE, New Delhi

10.0 List of Journals :

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

1. Subject : Fabric Manufacture – I (PRACTICAL)

2. Code : TT-205 (P)

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

Intellectual Skills:
- Select Fabric and suitable loom for it's production.
- Draw sketches of various motions of a loom.
- Calculate speed, production and efficiency of a loom.

Motor Skills:
- Set and time various motions of loom.
- Operate power loom for production of different fabrics.

List of Practical's:

1. Make a pirn using a) ordinary pirn winding m/c, b) Automatic pirn winding m/c.
2. Find out speed of crankshaft and bottom shaft and speed ratio between them.
3. Dismantle, refit and set the following mechanisms on a plain power loom.

3.1 Plain tappet shedding mechanism.
3.2 Cone over-picking mechanism.
3.3 Side lever under - picking mechanism.
3.4 Negative let-off and 7wheel positive take-up mechanism.
3.5 Loose reed mechanism
3.6 Fast reed mechanism.

4. Verify loom brake, temple and oscillating back rest.
5. Identify various fabric defects and find out their causes and remedies.
6. Practice of loom running after pre weaving operations.
7. Draw the path of warp in a handloom ,identify various parts and accessories of a handloom and enlist their functions.
8. Practice transfer of yarn from hank to weavers beam (warp preparation) and hank to pirn (weft preparation) for handloom weaving.
9. Gait a beam on handloom and weave at least 10cm fresh fabric as per specification.

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1. **Course Title** **:- TEXTILE FIBRE**
2. **Course Code** **:- TT-206**
3. **Semester** **:- 2nd**
4. **Rationale of the subject/ Courses:-** This subject provides knowledge regarding various textile fibres, their classification, physical property and manufacturing process of Man Made fibre which is very essential for yarn spinning, weaving and processing also.

Course Outcome

After learning the course the students should be able to-

CO-1 Know different varieties of Natural, Regenerated and Synthetic fibres used in textile industries.

CO-2 Describe the Structures of different textile fibres.

CO-3 Production methods for synthetic and regenerated fibers, such as melt spinning, wet-spinning and dry spinning.

CO-4 Demonstrate the manufacturing of different Man-Made fibres.

CO-5 Enunciate the properties and uses of different textile fibres.

CO-6 Identify different fibres on the basis of their physical and chemical properties.

5. Teaching Scheme (in hours) :-

Lecture	Tutorial	Practical	Total
45 (including class test)	5	45	95

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	30	50	50	100	30

7. Detailed Course Content :

Chapt No	Chapter Title	Content	Duration (in hours)
1	Introduction to Textile Fibre	Define fibre, textile fibres, filament Classification of Textile Fibres: As per source of availability. As per chemical composition. Essential and desirable properties of textile fibres. Orientation and Crystalinity, degree of polymerization. Advantages and disadvantages of disadvantages of natural & manmade fibres.	5
2	Growth,	2.1. Vegetable fibres:	10

	Harvesting, properties of vegetable and bast fibres	→ Cotton fibre - Cultivation and harvesting, Ginning process, Morphological structure →Bast fibres - Retting and extraction process of Bast fibres –Jute, Ramie and linen. 2.2 Physical, chemical properties and uses of * Cotton * Jute * Ramie. * Linen	
3	Production and properties of animal fibres	3.1. Animal Fibres: → Silk-Types of Silk fibre, Life cycle of silk, Morphological structure, reeling and spinning of silk fibre. → Wool-Grading of wool, Extraction process, Morphological structure 3.2 Physical, chemical properties and uses of-. * Wool * Silk	8
4	Manufacturing, physical and chemical properties of Regenerated fibres	4.1 Techniques for manufacturing Man-Made Fibres: i.e. melt spinning, dry spinning and wet spinning 4.2 Process of Manufacturing of Regeneraed fibres: Viscose, Cuprammonium, acetate rayon etc. 4.3 Physical and chemical properties and uses of : * Viscose Rayon * Cuprammonium * Acetate Rayon	10
5	Manufacturing, physical and chemical properties of Synthetic fibres	5.1 Manufacturing process of Synthetic fibres: Polyester, Nylon, Acrylic, Polyurathane, Polypropylene fibre. 5.2 Physical and chemical properties and uses of : * Nylon * Acrylic * Polyester * Polyurethane	8
6	Introduction to new fibres.	6.1. Introduction, Physical Properties & Uses of-Kevlar, Twaron, Carbon, Spandax	4

8. Distribution of Marks :

Chapter No	Chapter Title	Type of Question			Total Marks
		Objective Type (Compulsory)	Short Questions	Descriptive Questions	
1	Introduction to Textile Fibre (5)	2	3	4	9
2	Natural fibres (10)	3	3	9	15
3	Physical and chemical properties of textile fibres (8)	3	3	8	14
4	Physical and chemical properties of important Man-Made Fibres.(10)	3	3	9	15

5	Physical and chemical properties of important High Performance Fibre.(8)	3	2	6	11
6	Introduction to new fibres. (4)	1	1	4	6
		15	15	40	70

9. Suggested implementation Strategies :
10. Suggested learning Resource :
11. **Books list:**

Sl.No	Name of Book	Author
1	Textile Fibre	Moncriff
2	Textile Fibre	Mathews
3	Textile Fibre	ATA (Textile Association- India)
4	Man Made Fibre	-------
5	Textile Fibre, vol-1	V.A. Shenai
6	Handbook of Textile Fibre (CTRL)	Ayangar
7	Physical Properties of Textile Fibre	Gulantee
8	Introduction to Textile Fibres	H.V.Sreenivasmurthy

11.1List of Journals :

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

1. **Course Title : Textile Fibre (Practical)**
2. **Course Code : TT-206 (P)**
3. **Semester : 2nd**
4. **Rationale/Objectives:**
   i) To understand the characteristics of fibre properties.
   ii) To identify the various fibres by handling and testing.

5. Teaching Scheme**(In hours)**

Lecture	Tutorial	Practical	Total
--	--	45	45

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	15

7. **Detailed Practical List:**

1. Identification of textile fibre by:
   - Burning test
   - Chemical Test
   - Microscopic test
   - Solvent test

2. To practice the identification of fibres by visual / handle & feel.

3. To collect different fibres, yarn / fabric samples, test and paste in the journal.

4. To collect and study the properties of new fibres.

1. **Course Title : DEVELOPMENT OF LIFE SKILL II**
2. **Course Code : TT-206**
3. **Semester : 2nd Semester**
4. **Examination Scheme**

Theory				Practical			
Examination		Sessional		Practical Viva		Sessional	
Full Marks	Pass Marks	Full Marks	Pass Marks	Full Marks	Pass Marks	Full Marks	Pass Marks
--	--	--	--	25		25	15

Aim :-This subject is kept to

- Conduct different session to develop students interpersonal skills
- Conduct different session to improve problem solving skills
- Conduct different session to improve communication and presentation skills

Objective: - This course will enable the students to:

- Develop interpersonal skill
- Develop problem solving skill.
- Develop presentation skill
- Enhance creativity skills.
- Develop communication skills.
- Prepare for interviews

DETAILED COURSE CONTENT

THEORY:

UNITS	CONTENTS	Hours
Unit1	Inter personal Relation Importance, Interpersonal conflicts, Resolution of conflicts, Developing effective interpersonal skills communication and conversational skills, Human Relation Skills (People Skills)	1
Unit 2	Problem Solving I)Steps in Problem Solving(Who?What?Where?When?Why?How?How much?) 1.Identify,understand and clarify the problem 2.Information gathering related to problem 3.Evaluate the evidence 4.Consider feasible options and their implications 5.Choose and implement the best alternative 6.Review II)Problem Solving Technique 1.Trial and Error,2.Brain Storming3.Thinking outside the Box	2

Unit 3	Presentation Skills Concept ,Purpose of effective presentations, *Components of Effective Presentations*: Understanding the topic, selecting the right information, organizing the process interestingly, Good attractive beginning, Summarising and concluding, adding impact to the ending, *Use of audio visual aids* OHP, LCD projector, White board, *Non verbal communication*: Posture, Gestures ,Eye contact and facial expression, Voice and Language Volume, pitch, Inflection, Speed, Pause, Pronunciation, Articulation, Language Handling questions Respond, Answer, Check, Encourage, Return to presentation *Evaluating the presentation* Before the presentation, During the presentation, After the presentation	4
Unit 4	Looking for a Job Identifying different sources announcing Job vacancies, Skim, scan and read advertisements in detail, write efficacious CVs, write covering letters to a company CVs, write Job Application Letters in response to advertisements and self-applications	2
Unit 5	Job Interviews *Prepare for Interviews*: Intelligently anticipating possible questions and framing appropriate answers, Do's and don'ts of an interview(both verbal and non verbal), *Group Discussion:* Use of Non verbalbehavior in Group Discussion, Appropriate use of language in group interaction, Do's and don'ts for a successful Group Discussion	4
Unit 6	Non verbal graphic communication Nonverbal codes: A .Kinesics ,.B .Proxemics,.C.Haptics.,D.Vocalics,.E.Physical appearance.,F..Chronemics,.G. Artifacts Aspects of Body Language	2
	Total	15
Practical Total Periods : 30 Periods : 2 P/W		
Unit 1 Interpersonal Relation	Case Studies: 1.from books 2.from real life situations 3.from students' experiences Group discussions on the above and step by step write of any one or more of these in the sessional copies	2
Unit II Problem Solving	Case Studies: 1.from books 2.from real life situations 3.from students' experiences Group discussions on the above and step by step write of any one or	4

	more of these in the sessional copies	
Unit III Presentation Skills	Prepare a Presentation (with the help of a Power point) on a Particular topic. The students may refer to the Sessional activity (sl.No.8) of the Computer Fundamental syllabus of Semester1. For engineering subject oriented technical topics the cooperation of a subject teacher may be sought. Attach hand out of PPT in the sessional copy	8
Unit IV Looking for a job	Write an effective CV and covering letter for it. Write a Job Application letter in response to an advertisement and a Self-Application Letter for a job.	6
Unit V Job Interviews &Group Discussions	Write down the anticipated possible questions for personal interview (HR)along with their appropriate responses Face mock interviews.The cooperation of HR personnels of industries may be sought if possible Videos of Mock Group Discussions and Interviews may be shown	10
	Total	30