

III SEMESTER (Textile Engineering)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			Total
		L	T	P		Internal	End Term	Practical	
3TE1	Mechanisms of Yarn Manufacturing – I	3	-	-	3	20	80	-	100
3TE2	Mechanisms of Fabric Manufacturing – I	3	-	-	3	20	80	-	100
3TE3	Textile Raw Material	3	-	-	3	20	80	-	100
3TE4	Engineering Manufacturing Processes	3	-	-	3	20	80	-	100
3TE5	Applied Electronics	3	-	-	3	20	80	-	100
3TE6.1	Elective Applied Statistics	3	-	-	3	20	80	-	100
3TE6.2	Nano Technology								
Total		18	-	-	-	120	480	-	600
3TE7	Spinning Workshop – I	-	-	4	3	60	-	40	100
3TE8	Weaving Work Shop – I	-	-	4	3	60	-	40	100
3TE9	Fiber Microscopy & Identification Lab	-	-	2	3	30	-	20	50
3TE10	Engineering Manufacturing Workshop	-	-	2	3	30	-	20	50
3TE11	Applied Electronics Lab	-	-	2	3	30	-	20	50
3TE12	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	14	-	260	-	140	400
Grand Total		18	-	14	-	380	480	140	1000

IV SEMESTER (Textile Engineering)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			Total
		L	T	P		Internal	End Term	Practical	
4TE1	Mechanisms of Yarn Manufacturing – II	3	-	-	3	20	80	-	100
4TE2	Mechanisms of Fabric Manufacturing – II	3	-	-	3	20	80	-	100
4TE3	Textile Chemical Processing – I	3	-	-	3	20	80	-	100
4TE4	Applied Mechanics	3	-	-	3	20	80	-	100
4TE5	Microprocessor Applications in Textiles	3	-	-	3	20	80	-	100
4TE6.1	Elective Numerical Analysis	3	-	-	3	20	80	-	100
4TE6.2	Industrial Management								
Total		18	-	-	-	120	480	-	600
4TE7	Spinning Workshop – II	-	-	4	3	60	-	40	100
4TE8	Weaving Workshop – II	-	-	4	3	60	-	40	100
4TE9	Textile Chemistry Lab – I	-	-	2	3	30	-	20	50
4TE10	Applied Mechanics Lab	-	-	2	3	30	-	20	50
4TE11	Microprocessor Application In Textiles Lab	-	-	2	3	30	-	20	50
4TE12	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	14	-	260	-	140	400
Grand Total		18	-	14	-	380	480	140	1000

MECHANISMS OF YARN MANUFACTURING – I**[3TE1]**

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> Object of ginning, description and working of knife Mearthy and saw gins. Object of mixing, Principles underlying the different methods of selection of cotton for mixing their advantages and disadvantages Study of modern blending machines Problems in blending of man-made fiber with cotton
II	<ul style="list-style-type: none"> Objects of blow-room, various types of openers, their construction and working Lap forming mechanism Objects and arrangements of calendar and their weighting Selection of machinery according to the type of cotton and their suitable combinations
III	<ul style="list-style-type: none"> Nature of waste extracted in various openers and beaters Production and efficiency levels attainable for different blow-room machinery under normal mill condition Lap rejection causes of lap defects and their remedies Processing parameters for working different varieties of cotton in blow-room
IV	<ul style="list-style-type: none"> Blow room accessories e.g. Shirley analyzer, Lap meter, varimeter, V-signal moisture indicator Cleaning efficiency and opening efficiency of blow-room machinery setting the blow room line for different man made fibers
V	<ul style="list-style-type: none"> Measurement of performance of blow room, opening efficiency, cleaning efficiency, Lap regularity and waste preparations

MECHANISMS OF FABRIC MANUFACTURING – I**[3TE2]**

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> Warp winding machines – Rotoconer winding machines, objects, passage of yarn Study of various mechanisms like tensioners, yarn clearers, yarn traverse drum, thread stop motion etc. Efficiency and production calculation of the machine
II	<ul style="list-style-type: none"> Pirn winding machine – high speed hacoba pirn winder, objects, passage of yarn Study of various mechanisms like tensioners & thread stop motion, traverse with traverse mechanism, diameter control mechanism, automatic doffing Production calculation of the machine
III	<ul style="list-style-type: none"> Beam warping machine- objects, passage through any high speed beam warping machine, production calculation.
IV	<ul style="list-style-type: none"> High speed sectional warping machine, passage, calculation of sections, traverse mechanism and its calculation, efficiency calculation
V	<ul style="list-style-type: none"> Slasher sizing machine - passage, sizing ingredients, 2 cylinder and multi-cylinder driers Factors affecting size take up, calculation of concentration ,size take up, and speed of machine Looming in process, accessories healds, reed, drop pins and its calculations Manual drawing-in stand

TEXTILE RAW MATERIALS**[3TE3]****[Common with TEXTILE FIBERS paper 3TC4, 3TT4]**

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> • Definition and classification of textile fibers with reference to their utilization in textile industry • Introduction to impurities in natural fibers
II	<ul style="list-style-type: none"> • Cultivation and retting practices, • Fiber morphology, • Physical and chemical properties of natural cellulosic fibers viz. cotton, jute, flex, rammie, hemp, sunn, coir. • Varieties of cotton
III	<ul style="list-style-type: none"> • Varieties, sorting and grading of wool • Morphological structure of wool • Physical and chemical properties of wool fiber
IV	<ul style="list-style-type: none"> • Varieties of silk • Rearing of silk worm, cocooning, silk reeling, throwing and weighting • Varieties of silk yarns and fabrics • Morphology, physical and chemical properties of silk fiber
V	<ul style="list-style-type: none"> • Brief outline of manufacturing process and properties of regenerated fibers viz. viscose rayon, cellulose, triacetate, cupraammonium rayon, polynosics etc. • Brief manufacturing process and properties of important synthetic fibers viz. Polyester, Nylon, Acrylics • Introduction to some newly developed fibers viz. Lycra, Spandex, Polybutylene, Terephthalate, Lyocell, Casein

ENGINEERING MANUFACTURING PROCESSES

[3TE4]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<p>Foundry:</p> <ul style="list-style-type: none"> • Moulding Material Moulding Sands; • Properties and Methods testing. Core materials and core making. • Moulding Process: Green dry and loam sand moulding, various moulding processes - shell moulding, permanent moulding, carbon moulding.
II	<p>Casting:</p> <ul style="list-style-type: none"> • Die Casting, Centrifugal casting, Investment casting and continuous casting, Slush casting, casting defects and their smelting furnaces, rotary, H.electric, lifting and constructional features and operation of cupola, furnace, principal of casting design • Welding: Atomic hydrogen, ultrasonic, laser beam special welding processes e.g. TIG, MIG, friction and explosive welding
III	<p>Powder metallurgy:</p> <ul style="list-style-type: none"> • Powder manufacturing mechanical pulverization electrolytic process, chemical reduction, atomization properties of metal powder, compacting of powders, sintering • Application, advantage and disadvantage of powder metallurgy.
IV	<p>Press tools:</p> <ul style="list-style-type: none"> • Classification of processes and presses: shearing, bending, drawing and forming operation and dies. • Compound and progressive dies: calculation of bank size: high velocity forming of metals.
V	<p>Machine Tools:</p> <ul style="list-style-type: none"> • Constructional details and main operation lathes, • Capston and turret lathes: shaper and planner, drilling and boring machines. • Milling machine, indexing methods. • Grinding

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 2	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	Basic Electronics: <ul style="list-style-type: none"> • Introduction, Solid Circuit Elements, Diode Application Bipolar Junction • Different Transistor, Contributions, Integrated Circuits – IC Technology • Non Inverting OP-Amps, OP-Amp Applications-Voltage Follower, Integrator, Differentiator
II	Digital Electronics: <ul style="list-style-type: none"> • Number System -Decimal, Binary, Octal & Hexadecimal Number System, • Conversion from One System to another, Binary Arithmetic, Signed Number ,Code-BCD, Excess -3, Gray, • Concept of Parity and Error Correction, Boolean algebra, Theorems, Boolean Function and standard canonical forms. • There Simplification and K-Map, Logic Gates- AND, OR, NOT, NAND, NOR and Ex-OR, universal gates.
III	Combinational Circuits: <ul style="list-style-type: none"> • Half & full Adder and Subtractor • Binary and BCD adder, their Design & Implementation • Multiplexer & Demultiplexer
IV	Sequential Circuits: <ul style="list-style-type: none"> • Definition, D, T, S-R, J-K, Master – slave configuration and IC Flip-flop • Applications and design of Sequential circuits
V	Semiconductor Memory Devices: <ul style="list-style-type: none"> • Static And Dynamic RAM, ROM, PROM & EEPROM • There Working, Memory Organization & Operation

ELECTIVES

APPLIED STATISTICS

[3TE6.1]

[Common with 3TC6.1 & 3TT6.1]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> • Curve fitting (least square method) • Fitting of straight line • Second degree parabola • Exponential and logarithmic curves
II	<ul style="list-style-type: none"> • Correlation and regression • Partial and multiple correlation • Multiple regression
III	<ul style="list-style-type: none"> • Probability • Probability distributions • Binomial, Poisson • Normal distribution, application aspects of normal distribution • Hypergeometric distribution
IV	<ul style="list-style-type: none"> • Estimation of parameters • Testing of hypothesis • t-test • F-test • Chi-square test
V	<ul style="list-style-type: none"> • Quality control • Control charts (X, R & P), action & warning limits • Interpretation of control charts

NANO TECHNOLOGY

[3TE6.2]

[Common with 3TC6.2 & 3TT6.2]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	Introduction and fundamental science behind Nano technology: <ul style="list-style-type: none"> • Definition, description about size and measures, electron, atoms and ions, molecules • Molecular recognition • Quantum mechanics and quantum ideas and some Nano challenges.
II	Measuring instruments of Nano structures: <ul style="list-style-type: none"> • Scanning probe instruments, spectroscopy, electrochemistry, electron microscopy • Tools to make Nano structures – lithography methods, scanning probe instruments • Nano scale crystal growth, polymerization • Nano bricks and building blocks
III	Points and places of interest: <ul style="list-style-type: none"> • Smart materials, sensors • Nano scale bio-structures • Optics, fabrication, modeling, electronics
IV	Applications: <ul style="list-style-type: none"> • Nano polymer, Nano tubes, Nano fibers • Nano catalyst and consumer goods
V	<ul style="list-style-type: none"> • Nano business • Nano ethics • Nano resource

FOURTH SEMESTER

B. Tech. (Textile Engineering)

MECHANISMS OF YARN MANUFACTURING – II**[4TE1]**

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> • Objects of carding • Introduction to roller and Clearer card • Detailed study of revolving flat card • Carding theories, constructional features and working details of liker-in cylinder doffer and flats processing different cottons • Flexible bends, card clothing flexible and metallic, stripping, processing, parameters for different materials
II	<ul style="list-style-type: none"> • Carding defects and their remedies • Fibre naps, their assessment and control modern developments in carding • Control of waste and cleaning in carding
III	<ul style="list-style-type: none"> • Objects of drawing • Working principle of draw frame including constitutional details • System of drafting, weighing in draw frames • Mechanical and electrical stop-motions • Draft distribution: various types of drafting roller and their construction • Coiling systems; over coiling; under coiling and coiling • Concept of ideal draft and formation of drafting weaves • Principles of roller setting modern developments in draw frames
IV	<ul style="list-style-type: none"> • Calculations pertaining to draft and production of the machine dealt with the course.
V	<ul style="list-style-type: none"> • Assessment of performance of card • Study of hooks formation, their control, removal and effects on yarn quality • Assessment of performance of draw-frame changes required in card • Draw-frame for processing man-made fiber

MECHANISMS OF FABRIC MANUFACTURING – II**[4TE2]**

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> • Classification of various fabrics • Weight of warp and weft in the fabric, design, draft and peg plan of plain, twill and satin weave
II	<ul style="list-style-type: none"> • Classification of weaving machines • Various motions of plain power looms and its drive
III	<ul style="list-style-type: none"> • Tappet shedding for plain and twill weaves • Dobby shedding - double lift knife and cam doobby mechanism and its card cutting • Over and under pick motions
IV	<ul style="list-style-type: none"> • Conventional sley beat-up of power looms, 5 wheel and 7 wheel take up motion and its calculation
V	<ul style="list-style-type: none"> • Semi positive let-off mechanism and its setting • Loose and fast reed warp protector motion

TEXTILE CHEMICAL PROCESSING – I

[4TE3]
[Common with 4TT5]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> Pre treatments: Impurities in natural fibers Introduction to pre treatments viz. shearing, singeing, desizing, scouring, bleaching
II	<ul style="list-style-type: none"> Machines used in pre treatments viz. washing machine, kier, bleaching machine
III	<ul style="list-style-type: none"> Introduction to mercerization & different types of mercerizing machines
IV	<ul style="list-style-type: none"> Method of dyeing for natural & synthetic fibers by batch, semi-continuous and continuous process
V	<ul style="list-style-type: none"> Dyeing Machines viz. Jigger, Jet dyeing, winch, HTHP beam dyeing, fiber dyeing

APPLIED MECHANICS

[4TE4]
[Common with 4TT6.1 & 4TC6.1]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<p>Strength of materials</p> <ul style="list-style-type: none"> Behavior of common materials in tension & compression Characteristic strain-stress curves of engineering materials Hook's law Elastic-limit working stress, ultimate stress, factor of safety Poisson ratio Elastic constants & their relationship
II	<p>Shearing & Bending</p> <ul style="list-style-type: none"> Center of gravity, Moment of Inertia of area of symmetrical, un-symmetrical & built-up sections Simple beams subjected to transverse loading Shear force and bending moment diagram Theory of bending Normal stress due to bending
III	<p>Torsion of shaft:</p> <ul style="list-style-type: none"> Torsional shear stresses in solid, hollow & stepped circular shafts Angular deflection & power transmission capacity Application to close coil helical spring
IV	<p>Fluid Mechanics – I:</p> <ul style="list-style-type: none"> Basic definitions & fluid properties: definition of fluid, incompressible and compressible fluids Mass density, specific weight, relative density, specific volume Ideal fluid, viscosity, Newtonian & Non-Newtonian fluids Kinematics & conservation of mass: flow classification, fluid velocity & acceleration Continuity equation for one dimensional and three dimensional fluid flow
V	<p>Fluid Mechanics – II:</p> <ul style="list-style-type: none"> Fluid momentum: momentum theorem, application of momentum equation Bernoulli equation Application of Bernoulli equation: orifice meter, venturi meter Flow through pipe Head losses due to sudden enlargement, contraction, entrance, exit, obstruction, bend and pipe fitting Power transmission by fluid

MICROPROCESSOR APPLICATIONS IN TEXTILES

[4TE5]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3 Practical : 2	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	Introduction To Microcomputer Systems: <ul style="list-style-type: none"> • Microprocessor, micro controller and microcomputer devices • Machine and assembly language • Bus concept
II	Architecture: <ul style="list-style-type: none"> • Comparative study of 8085-A, 8086 and 8088 (Pinout, internal architecture, timing diagrams) • Instruction format and addressing modes
III	Assembly Language and Programming in 8085: <ul style="list-style-type: none"> • Instruction set, program structure (sequential, conditional, iterative) • Macros and subroutines • Stack, counter and timing delay • Interrupt structure and its programming
IV	Devices and Interfacing: <ul style="list-style-type: none"> • System buses: STD and ISA Memory (static, dynamic & various PROM) , Architecture, characteristics and interfacing of the following devices. • DMA Controller 8257, Interrupt controller 8259A, USART 8251, PPI 8255, • Timer 8254 and keyboard display controller 8279. • Level converters MC 1488 and MC 1489, • Communication buses: Centronics, IEEE- 488, Current loop, RS 232 C , RS 422 A & RS 423 A
V	PLC: <ul style="list-style-type: none"> • Definition, comparison between relay logic control and PLC • Architecture of programmable controller • Inbuilt function of PLC • PLC applications in textile industry

ELECTIVES

NUMERICAL ANALYSIS

[4TE6.1]

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> • Finite differences • Newton's Interpolation formulae • Lagrange's formula for unequal intervals
II	<ul style="list-style-type: none"> • Numerical differentiation & integration • Trapezoidal Rule • Simpson's rules • Weddel's rule
III	<ul style="list-style-type: none"> • Numerical solution of equations of one variable : Bisection method • Regula-Falsi method, Secant method • Newton-Raphson Method.
IV	<ul style="list-style-type: none"> • Numerical solution of systems of linear equation : Gauss-Siedel method • Jacobi method • Gauss elimination method.
V	<ul style="list-style-type: none"> • Numerical solution of differential equations : Euler's methods • Picard's method, Runge-Kutta method

Class B. Tech. (Textile Engineering)	Evaluation
Schedule per week Lectures : 3	Examination Time = Three (3) Hours Maximum Marks = 100 [Mid-term (20) & End-term (80)]

Units	Contents of the Subject
I	<ul style="list-style-type: none"> • Cotton Textile Industry of India- its importance, size, structure, problems and remedies • Location for Industries, factors influencing location, selection of sites • Trends of dispersal of industries in India
II	<ul style="list-style-type: none"> • Industrial productivity- its importance and factors affecting productivity, productivity trends in Textile Industry • Industrial pricing export promotion • Wages of Industrial workers- methods of payment of wages including wage incentive plans
III	<ul style="list-style-type: none"> • Industrial relation-problems of absenteeism and turn over • Grievance handling at plant level, collective bargaining • Collective agreement between the Mill Owners • Associations and workers participation in management
IV	<ul style="list-style-type: none"> • An idea about labour and factory legislation • Factories act • Indian trade unions act • Payment of wages act • Trade dispute act • Workman compensation bonus act • Safety act • Industrial acts
V	<ul style="list-style-type: none"> • Operation Management: General picture of industrial management • Types of organization • Distinction between line and staff Taylor's contribution to the theory and practices of management • Scientific management • Sales management • Personal management