

RAJASTHAN TECHNICAL UNIVERSITY, KOTA



SYLLABUS
&
SCHEME OF EXAMINATION

B. TECH. (Textile Technology)

Effective from session: 2008 - 2009

III SEMESTER (Textile Technology)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			
		L	T	P		Internal	End Term	Practical	Total
3TT1	Yarn Manufacturing – I	3	-	-	3	20	80	-	100
3TT2	Fabric Manufacturing – I	3	-	-	3	20	80	-	100
3TT3	Weaving Preparation – I	3	-	-	3	20	80	-	100
3TT4	Textile Fibers	3	-	-	3	20	80	-	100
3TT5	Electronics & Microprocessors in Textiles	3	-	-	3	20	80	-	100
3TT6.1	Elective Applied Statistics	3	-	-	3	20	80	-	100
3TT6.2	Nano Technology								
Total		18	-	-	-	120	480	-	600
3TT7	Spinning Workshop – I	-	-	4	3	60	-	40	100
3TT8	Weaving Workshop – I	-	-	4	3	60	-	40	100
3TT9	Textile Fiber Lab	-	-	4	3	60	-	40	100
3TT10	Electronics & Microprocessor Lab	-	-	2	3	30	-	20	50
3TT11	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	14	-	260	-	140	400
Grand Total		18	-	14	-	380	480	140	1000

IV SEMESTER (Textile Technology)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			
		L	T	P		Internal	End Term	Practical	Total
4TT1	Yarn Manufacturing – II	3	-	-	3	20	80	-	100
4TT2	Fabric Manufacturing – II	3	-	-	3	20	80	-	100
4TT3	Weaving Preparation – II	3	-	-	3	20	80	-	100
4TT4	Fabric Structure	3	-	-	3	20	80	-	100
4TT5	Structure & Properties of Fibers	3	-	-	3	20	80	-	100
4TT6.1	Electives Object Oriented Programming	3	-	-	3	20	80	-	100
4TT6.2	Applied mechanics								
Total		18	-	-	-	120	480	-	600
4TT7	Spinning Workshop – II	-	-	4	3	60	-	40	100
4TT8	Weaving Workshop – II	-	-	4	3	60	-	40	100
4TT9	Fabric Analysis, Color & Design Lab	-	-	4	3	60	-	40	100
4TT10	Object Oriented Programming Lab Or Applied Mechanics Lab	-	-	2	3	30	-	20	50
4TT11	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	14	-	260	-	140	400
Grand Total		18	-	14	-	380	480	140	1000

V SEMESTER (Textile Technology)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			
		L	T	P		Internal	End Term	Practical	Total
5TT1	Yarn Manufacturing – III	3	-	-	3	20	80	-	100
5TT2	Fabric Manufacturing – III	3	-	-	3	20	80	-	100
5TT3	Textile Chemical Processing– I	3	-	-	3	20	80	-	100
5TT4	Advance Fabric Structure	3	-	-	3	20	80	-	100
5TT5	Textile Testing - I	3	-	-	3	20	80	-	100
5TT6.1	Elective Introduction to Patterning & Fabric Designing Practical Applications of Statistics	3	-	-	3	20	80	-	100
5TT6.2									
Total		18	-	-	-	120	480	-	600
5TT7	Spinning Workshop – III	-	-	4	3	60	-	40	100
5TT8	Weaving Workshop – III	-	-	4	3	60	-	40	100
5TT9	Textile Testing Lab – I	-	-	4	3	60	-	40	100
5TT10	Textile Chemical Processing Lab – I	-	-	2	3	30	-	20	50
5TT11	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	14	-	260	-	140	400
Grand Total		18	-	14	-	380	480	140	1000

VI SEMESTER (Textile Technology)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			
		L	T	P		Internal	End Term	Practical	Total
6TT1	Yarn Manufacturing – IV	3	-	-	3	20	80	-	100
6TT2	Mechanics of Textile Machines	3	-	-	3	20	80	-	100
6TT3	Polymer & Extrusion	3	-	-	3	20	80	-	100
6TT4	Textile Chemical Processing – II	3	-	-	3	20	80	-	100
6TT5	Textile Testing - II	3	-	-	3	20	80	-	100
6TT6.1	Elective Technical Textiles Knitting Technology Clothing Science & Garment Manufacturing Technology – I	3	-	-	3	20	80	-	100
6TT6.2									
6TT6.3									
Total		18	-	-	-	120	480	-	600
6TT7	Spinning Workshop – IV	-	-	4	3	60	-	40	100
6TT8	Weaving Workshop – IV	-	-	4	3	60	-	40	100
6TT9	Textile Testing Lab – II	-	-	4	2	60	-	40	100
6TT10	Textile Chemical Processing Lab – II	-	-	2	2	30	-	20	50
6TT11	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	14	-	260	-	140	400
Grand Total		18	-	14	-	380	480	140	1000

VII SEMESTER (Textile Technology)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			
		L	T	P		Internal/Term	End Sem Exam	Practical	Total
7TT1	Modern Method of Yarn Production	3	-	-	3	20	80	-	100
7TT2	Modern Method of Fabric Production	3	-	-	3	20	80	-	100
7TT3	Man Made Fiber Production	3	-	-	3	20	80	-	100
7TT4	Engineering of Textile Structures - I	3	-	-	3	20	80	-	100
7TT5	Industrial Engineering & Quality Management	3	-	-	3	20	80	-	100
7TT6.1	Elective								
7TT6.2	Complex Textiles								
7TT6.3	Business Environment & Marketing Management	3	-	-	3	20	80	-	100
	Clothing Science & Garment Manufacturing Technology – II								
Total		18	-	-		120	480	-	600
7TT7	Spinning Workshop – V	-	-	4	3	60	-	40	100
7TT8	Weaving Workshop – V	-	-	4	3	60	-	40	100
7TT9	Project Part - I	-	-	2	3	30	-	20	50
7TT10	Mill Training Seminar	-	-	2	3	60	-	40	100
7TT11	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		-	-	12	-	230	-	140	400
Grand Total		18	-	12	-	350	480	140	1000

VIII SEMESTER (Textile Technology)

Sub. Code	Name of Subject	Teaching Periods			Duration of Exams (Hours)	Maximum Marks Allocation			
		L	T	P		Internal/Term	End Sem.	Practical	Total
8TT1	Multi Fiber Spinning	3	-	-	3	20	80	-	100
8TT2	Economics & Costing of Textile Process	3	-	-	3	20	80	-	100
8TT3	Engineering of Textile Structures - II	3	-	-	3	20	80	-	100
8TT4.1	Elective								
	Entrepreneurship Venture & Textile Hazard								
8TT4.2	Spinning Technology	3	-	-	3	20	80	-	100
8TT4.3	Development of Manmade Fiber Production								
Total		12	-	-	-	80	320	-	400
8TT5	Spinning Workshop – VI	-	-	4	3	60	-	40	100
8TT6	Weaving Workshop – VI	-	-	4	3	60	-	40	100
8TT7	Computer Aided Design Lab	-	-	2	3	30	-	20	50
8TT8	Project Part - II	-	-	4	-	120	-	80	200
8TT9	Seminar Presentation	-	-	4	-	60	-	40	100
8TT10	Discipline & Extra Curricular Activities	-	-	-	-	50	-	-	50
Total		12	-	18	-	380	320	220	600
Grand Total		12	-	18	-	460	320	220	1000

THIRD SEMESTER
B. TECH. (Textile Technology)

YARN MANUFACTURING – I

[3TT1]

[Common with 3TE1]

Class B. TECH. (Textile Technology)	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"> • System of expressing yarn linear density. • Object of ginning • Description and working of knife-roller, Mecarthy and Saw gin • Objects of mixing. • Principles underlying the selection of cotton for mixing. Different methods of mixing
II	<ul style="list-style-type: none"> • Study of different blending methods, their advantages and disadvantages. • Problems in blending of man-made fibre with cotton • Objects of blow-room • Various types of openers, their construction and working
III	<ul style="list-style-type: none"> • Lap forming mechanisms • Objects and arrangements of calendar roller and their weighing • Selection of machinery according to the type of cotton and their suitable combinations
IV	<ul style="list-style-type: none"> • Nature of waste extracted in various openers and beaters • Lap rejection causes of lap defects and their remedies. • Processing parameters for working different varieties of cotton in blow room. • Calculations pertaining to production of blow-room machinery under normal mill conditions.
V	<ul style="list-style-type: none"> • Blow room accessories e. g; Shirley analyzer, Lap meter, Varimeter, V-signal, moisture indicator . • Introductory idea about cleaning efficiency and opening efficiency of blow room machinery • Brief outline of setting the blow room line for man-made fibers • Measurement of blow room performance . Lap quality parameteras.

FABRIC MANUFACTURING – I

[3TT2]

Class B. TECH. (Textile Technology)	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"> • Introduction to weaving • Process and type of Looms, Plain, Hand Loom, Power Loom • Loom: Primary, secondary and auxiliary motions • Loom drive • Production and efficiency calculations
II	<ul style="list-style-type: none"> • Various ways of shedding & types of sheds • Tappet shedding mechanism, different types & idea of construction of tappet • Early & late shedding calculation of lift of tappet
III	<ul style="list-style-type: none"> • Various type of picking mechanism-Under & over pick mechanism • Early & late picking concept • Reason of shuttle fly & shuttle trap • Shuttle speed calculations
IV	<ul style="list-style-type: none"> • Sley beating up motion types of temple & utility on loom. • Negative and continuous take –up motion (advantages and disadvantages) • Five & seven wheel take up motion and their calculation
V	<ul style="list-style-type: none"> • Objects of let-off motion • Negative let-off motion • Warp protecting motion: Loose reed-fast reed • Brake motion

WEAVING PREPARATION – I

[3TT3]

Class B. TECH. (Textile Technology)	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"> • Various systems of yarn production, Sequence of machines in the weaving preparation department for different classes of fabrics. • Warp winding – objects of winding, Tensioners and tension setting
II	<ul style="list-style-type: none"> • Yarn clearers and its settings • Yarn classifying systems • Traverse mechanism for cross wound pickings
III	<ul style="list-style-type: none"> • Concept of precision winding • Classification of winding machines • Rotoconer winding machine.
IV	<ul style="list-style-type: none"> • Automatic winding machine • Auto-coner – passage and technical details. • Production calculation of various winding machines.
V	<ul style="list-style-type: none"> • Pirn winder, object, shape of pirns. • Hacoba pirn winder and various devices, • Production calculation

TEXTILE FIBERS

[3TT4]

[Common with 3TC1, 3TE3]

Class B. TECH. (Textile Technology)	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 on the basis of their sources. Essential properties of textile fibers. • Chemical composition and structure of natural fibers viz. cotton, jute, flex, Wool, silk. • Polymerization, degree of polymerization, inter –polymer forces of attraction, requirements of fibre forming polymers and general considerations with regard to fibre properties
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, 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, acetate -rayon, cupra-ammonium rayon. • Brief manufacturing process and properties of important synthetic fibers viz. Polyester, Nylon, Acrylics.

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

Units	Contents of the Subject
I	Semiconductor Diodes: Introduction, characteristics and their applications <ul style="list-style-type: none"> • Ideal diode • PN semiconductor diode • Diode equivalent circuits • Zener diode • Light diodes
II	Field Effect Transistors: <ul style="list-style-type: none"> • Introduction, Construction and characteristics of JFETS • Transfer characteristics, • BJT, their characteristics and applications. Transistor Amplifiers: <ul style="list-style-type: none"> • Classification of amplifiers • Biasing and compensation techniques • R-C coupled amplifier, tuned amplifier, operational amplifier their characteristics and applications • Digital to analog and analog to digital conversion
III	Operational Amplifiers (OpAmp): <ul style="list-style-type: none"> • Introduction, Block diagram, parameters of OpAmp IC 741 • OpAmp in inverting and non-inverting configuration • Some applications of OpAmp Semiconductor Devices: <ul style="list-style-type: none"> • Introduction of silicon controlled rectifier • GTO • TRIAC, DIAC • Injunction transistors, IGBT
IV	Cathode Ray Oscilloscope: <ul style="list-style-type: none"> • Introduction, Cathode ray tube – theory and construction Transducers: <ul style="list-style-type: none"> • Introduction, resistive, Inductive, capacitive transducers. • Construction and working principle of strain gauge, LVDT, RVDT • Summing devices, measurement of linear displacement • Pressure measuring using transducers • Construction and working of thermocouple and thermistor, measurement of temperature using them Data Acquisition Systems: <ul style="list-style-type: none"> • Introduction, Components and uses
V	Process control: <ul style="list-style-type: none"> • Application of microprocessors in process control with special emphasis on textiles • Minimum microprocessor based system requirement • Examples of process control from textile and garment manufacturing engineering

ELECTIVES

APPLIED STATISTICS

[3TT6.1]

[Common with 3TC6.1 & 3TE6.1]

Class B. TECH. (Textile Technology)	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

[3TT6.2]

[Common with 3TC6.1 & 3TE6.1]

Class B. TECH. (Textile Technology)	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

THIRD SEMESTER PRACTICALS

Spinning Workshop –I : (3TT 7)

MM 100

Ex.Hrs:3

Practice in handing and operation of blow room. Study of constructional details of machinery: Various controls, change place, etc. Practice in checking of the quality of lap . Calculation pertaining to blow-room.

Weaving Workshop -I (3 TT 8)

MM 100

Ex.Hrs:3

Pirn winding machine special mechanism of Hacoba Pirn winding machine . Various type of clears. Supply packages like Cone ,Chese, cone winding machine. Calculation of speed and production . Primary motions, i.e. shedding , picking beating . Secondary motion i.e. take-up , let –off (positive & negative). Drawing in process type of heald frame and Reed.

TEXTILE FIBRE LAB : (3TT 9)

MM 100

Ex.Hrs:3

Principle of microscopy ,microscopic identification of fibers, preparation and mounting of specimen for longitudinal view. Microscopy. Standard scheme of analysis of homogenous fiber and blends by physical and chemical methods Qualitative and Preparation of reagents used for chemical analysis.

ELECTRONIC & MICROPROCESS LAB (3TT 10)

MM 50

Ex.Hrs:3

- Study of CRO
- Study of Lab components
- Study of VI characteristics of DIODE
- Study of VI Characteristics of Zener Diode
- Study of VI Characteristics of Transistor in CB Configuration.
- Study of VI Characteristics of FET SCR.
- Study of OpAmp in Inverting Mode
- Study of OpAmp of non-inverting mode
- Study of OpAmp as Adder, Subtractor, Integrator, Differentiator
- Study of working of Data Acquisition System
- Study of LVDT
- Study of VI Characteristics of RTD, Thermistor
- Study of Stain gauge.

**FOURTH SEMESTER
B. TECH. (Textile Technology)**

YARN MANUFACTURING – II**[4TT1]****[Common with 4TE1]**

Class B. TECH. (Textile Technology)	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 & clearer card • Detailed study of revolving flat card • Constructional features and working details of liker- in, cylinder, doffer and flats.
II	<ul style="list-style-type: none"> • Elementary idea about Carding theories. • Flexible and metallic card clothing, stripping and grinding. • Processing parameters for different materials • Carding defects and their remedies
III	<ul style="list-style-type: none"> • Fiber neps, their assessment and control • Introductory information about modern developments in carding • Control of waste and cleaning in carding • Calculations pertaining to draft and production of the machines dealt with course
IV	<ul style="list-style-type: none"> • Objects of drawing. Working principle of draw frame including constructional details • Systems of drafting, weighing in draw frames • Mechanical and electrical stop-motions • Draft distribution: various types of drafting rollers and their construction
V	<ul style="list-style-type: none"> • Coiling systems: over coiling; under coiling and bicoiling • Concept of ideal draft and formation of drafting waves • Principles of roller setting • Introduction to modern developments in draw frames • Calculations pertaining to draft and production of the machine dealt with course

FABRIC MANUFACTURING – II**[4TT2]**

Class B. TECH. (Textile Technology)	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"> • Types of dobbies, Keighly, Climax, dobe cross doobby, cross border doobby • Preparation of chain for different kinds of design used in dobbies. • Negative and positive dobbies with setting
II	<ul style="list-style-type: none"> • Detail of let-off motion, type • Roper and barlet let-off motion with special reference to Cimmco, Ruti and their setting
III	<ul style="list-style-type: none"> • Multiple box motion • Eccles drop box motion • Pick and pick loom • Preparation of pattern chain pertaining to above dobbies and multi box motion
IV	<ul style="list-style-type: none"> • Side and center weft fork motion • Filament weaving used on loom (Timing and setting)
V	<ul style="list-style-type: none"> • Fabric defects, causes and remedies • Calculation pertaining to above mechanism • Some loom shed, average production, efficiency and loom chart

WEAVING PREPARATION – II

[4TT3]

Class B. TECH. (Textile Technology)	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"> • Warping- object, classification of warping machines • Beam warping- passage • Various mechanisms • Calculation of production and efficiency.
II	<ul style="list-style-type: none"> • Sectional warping machine objects, passage • Warping calculation, • traverse mech and its calculation
III	<ul style="list-style-type: none"> • Objects, size ingredients • Sizing machine passage • Properties of size paste • Cylinder drying, hot air drying
IV	<ul style="list-style-type: none"> • Size box and its developments • Calculation of concentration, Viscosity and speed of sizing machine • Factors affecting size take up
V	<ul style="list-style-type: none"> • Looming process , • Accessories like reed, healds and drop pins • Manual drawing-in , semi auto and fully auto drawing-in • Knotting-in process and it developments

FABRIC STRUCTURE

[4TT4]

Class B. TECH. (Textile Technology)	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"> • Classification of fabrics , definition and methods of construction of weave, draft , lifting plan and denting order . Weave repeat unit and its requirements. Heald and reed calculations, and types of drafts viz: straight, skip, pointed and sateen. • Plain weave • Derivatives and ornamentation.
II	<ul style="list-style-type: none"> • Twill weave , classification of twill weave • Derivatives of twill weave • Effect of twist on prominence of twill lines
III	<ul style="list-style-type: none"> • Sateen & satins, their extensions • Crepe weave • Diamond and diaper
IV	<ul style="list-style-type: none"> • Mock leno • Honey comb • Huck-a- back
V	<ul style="list-style-type: none"> • Cork screw • Bedford cords • Welt and pique fabrics

STRUCTURE AND PROPERTIES OF FIBRE

[4TT5]

[Common with 4TC5]

Class B. TECH. (Textile Technology)	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"> • Structure of fibres • Morphology and order in fibre structure • Theories of fine structures of fibres
II	<ul style="list-style-type: none"> • Determination of degree of crystallinity • Orientation and crystal size
III	<p>Theories of mechanical properties of fibres</p> <ul style="list-style-type: none"> • Phenomenological approach-stress-strain, creep and relaxation behavior of simple models • Applications of Eyring's model to predict mechanical response of fibres (Only the interpretation of equation, no derivation) • Integral approach and interpretation of mechanical properties of fibres from their structures • Effect of crystal linearity and orientation on mechanical properties of fibres
IV	<ul style="list-style-type: none"> • Molecular motions and transition phenomenon • First order and second order transitions • Effect of transition and modules and strength of fibers • Concept of neat setting and pleating
V	<p>Properties depending on the amorphous regions</p> <ul style="list-style-type: none"> • Moisture regain • Swelling • Heat of sorption • Optical • Thermal • Electrical

ELECTIVES

OBJECT ORIENTED PROGRAMMING

[4TT6.1]

[Common with 4TC6.1]

Class B. TECH. (Textile Technology)	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	Principles of object oriented programming <ul style="list-style-type: none">• Beginning with C++• Tokens, Expression and Control structures• Main function, call by reference, inline, friend• Classes and objects
II	Function in C++ <ul style="list-style-type: none">• Nesting of member function• Private member function• Array within a class• Static data member• Static member function
III	Constructors and Destructors <ul style="list-style-type: none">• Copy constructor,• Multiple constructor in a class• Destructor
IV	Operator Overloading <ul style="list-style-type: none">• Unary• Binary
V	Inheritance: Extending Classes <ul style="list-style-type: none">• Single inheritance• Multiple inheritance• Multi level inheritance• Working with files

Class B. TECH. (Textile Technology)	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	Strength of materials <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	Shearing & Bending <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	Torsion of shaft: <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	Fluid Mechanics – I: <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	Fluid Mechanics – II: <ul style="list-style-type: none"> • Fluid momentum: momentum theorem, application of momentum equation • Bernoulli equation • Application of Bernoulli equation: orifice meter, venture meter • Flow through pipe • Head losses due to sudden enlargement, contraction, entrance, exit, obstruction, bend and pipe fitting • Power transmission by fluid

B PRACTICALS

Spinning Workshop -II (4TT7)

MM 100

Ex. Hrs: 3

Familiarity with carding machine, constructional details, change places, effect of various machine parameters in production and quality of sliver. Checking the quality of sliver. Calculation pertaining to card. Card dropping and wastes and their analysis including cleaning efficiency. Practice in checking the quality of lap; and sliver, methods of rectifying defects there in. calculation pertaining to card gearing.

Weaving Workshop -II (4TT8)

MM 100

Ex. Hrs: 3

Secondary motion take –up & Let off motion . Speed calculation & * production 5 wheel & 7 wheel take –up, motion. Warp protecting motion side & centre weft fork motion. Sectional warping m/c passage & Road speed calculation, Negative climax dobbing & eules drop box.

FABRIC ANALYSIS, COLOUR AND DESIGN LAB (4TT9)

MM 100

Ex. Hrs: 3

Basic principles of woven fabric analysis and estimation of data for cloth reproduction. Recognition of fabric and yarns and materials used in their construction, weave analysis, sett, cover factor count and weight calculations for single and compound woven structures. Specifications for standard woven fabric. Color, its theory, dimensions and attributes, color combinations. Physical, psychological and psychophysical aspects of color, Texture and its determinates. Physical, psychological and psychophysical aspects of color, Texture and its determinates. Familiarization with new and creative development in the field of fibres, yarns, fabric structures, colorants and finishes in relation to design, concept of need based product development. Application of computer aided design.

Object Oriented Programming Lab (4TT10)

MM 50

Ex. Hrs: 3

Practical based on C++ programming and application in textile.

OR

Applied Mechanics(4TT10)

MM 50

Ex. Hrs: 3

FIFTH SEMESTER
B. TECH. (Textile Technology)

YARN MANUFACTURING – III

**[5TT1]
[Common with 5TE1]**

Class B. TECH. (Textile Technology)	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	Combing <ul style="list-style-type: none"> • Object of combing • Systems of lap preparation • Study of sliver lap, ribbon lap and super-lap machines • Configuration of fibre feed and its effect on the quality of product, noil percentage and fractionation efficiency of comber
II	Comber <ul style="list-style-type: none"> • Types of combers • Detailed study of the Nasmith and modern comber • Timing and setting of comber for different classes of cotton • Control of comber waste
III	<ul style="list-style-type: none"> • Calculation pertaining to draft, production and noil percentage • Introduction to the recent developments in coming. and simplex
IV	Speed frame <ul style="list-style-type: none"> • Objects of speed frame • Conventional and modern roving processes • Mechanisms involved in drafting, twisting and winding • Basic principles of designing of cone drums • Differential motions and their working principles • Building motions, their objects and types, working principle of English type builder motions • Drafting systems (Ordinary and high draft)
V	<ul style="list-style-type: none"> • Processing parameters for different rovings • Common defects in roving packages, their causes and remedies • Calculations pertaining to gearing, constants, drafts, tpi and production • Twist multiplier and roving twist • Introduction to the changes to be made on roving frame to run man-made fiber

FABRIC MANUFACTURING-III**[5TT2]**

Class B. TECH. (Textile Technology)	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	Jacquard shedding <ul style="list-style-type: none"> • Classification of jacquards • Single Lift Single Cylinder, Double Lift Single Cylinder, Double Lift Double Cylinder • Shed forming element, drive & timing of above Machine
II	<ul style="list-style-type: none"> • Self twilling, pressure harness, cross border jacquard, card cutting operation for mechanical jacquard • Electrical jacquard • electronic jacquard • Warp stop motion & its setting
III	Terry weaving <ul style="list-style-type: none"> • Essential feature of terry weaving loom • Various principle of terry pile formation • Terry let- off-heading , fringing-motion • Modern development in terry structure
IV	<ul style="list-style-type: none"> • Automatic weft replacement device on loom • Pirm changing • Shuttle changing • setting & timing of above mech.
V	<ul style="list-style-type: none"> • Basic concept of Unifil loom winder • Basic concept of Bobbine lodder • Introduction to shuttle less weaving machine, projectile, rapier with reference to picking

TEXTILE CHEMICAL PROCESSING – I**[5TT3]
[Common with 5TE3]**

Class B. TECH. (Textile Technology)	Evaluation
Schedule per week Lectures : 3 Practical : 4	Theory 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"> • Sequence of chemical processing of textiles • Natural and added impurities in textiles
II	Preparatory processes for <ul style="list-style-type: none"> • Cotton • Wool • Silk
III	Preparatory processes for <ul style="list-style-type: none"> • Nylon • Polyester • Acrylic and blends including optical whitening.
IV	Dyeing: <ul style="list-style-type: none"> • Introduction to dyeing of natural and synthetic fiber. • Fabrics and blend fabric with various dye classes.
V	<ul style="list-style-type: none"> • Brief Introduction to Processing Machinery and New Processes • Development in machinery for preparatory and dyeing processes

ADVANCE FABRIC STRUCTURE**[5TT4]**

Class B. TECH. (Textile Technology)	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"> • Extra warp & weft figuring • Backed cloths
II	<ul style="list-style-type: none"> • Double cloths • Damask • Brocades
III	<ul style="list-style-type: none"> • Terry pile structure • Warp Pile, weft pile fabrics
IV	<ul style="list-style-type: none"> • Cloth setting theory
V	<ul style="list-style-type: none"> • Draft, peg plan for above design, Gauze and leno, Treable cloth. • Particulars of common varieties of these fabrics

TEXTILE TESTING-I

[5TT5]

[Common with 5TC5, 5TE5]

Class B. TECH. (Textile Technology)	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>Introduction to textile testing</p> <ul style="list-style-type: none"> • Aim and scope <p>Sampling techniques</p> <ul style="list-style-type: none"> • General requirements, squaring, cut squaring and Zoning methods for sampling of raw material • Sampling techniques for yarn and fabrics for specific tests • Routine Sampling techniques used in the textile industry
II	<p>Hygrometry and moisture relations of textiles</p> <ul style="list-style-type: none"> • Terms and definitions • Relation between Relative Humidity. and regain of textile materials • Equilibrium regain, hysteresis • Measurement of regain principle and operation of equipment • Official regain and concept of current invoice weight
III	<p>Measurement of fibre physical characteristics</p> <ul style="list-style-type: none"> • Fibre length, fineness, maturity and foreign matter of cotton and other fibres • Principle, construction, operation and calibration of equipment in common use for measurement of above properties • Grading of different cottons • Nep testing of cotton
IV	<p>Fibre friction</p> <ul style="list-style-type: none"> • Theories and measurement of friction of single and fibre assemblies during drafting <p>Yarn numbering systems</p> <ul style="list-style-type: none"> • Numbering systems • Conversion methods • Measurement of yarn number <p>Measurement of yarn properties</p> <ul style="list-style-type: none"> • Twist in spun, continuous filament and ply yarns <p>Measurement of fabric properties</p> <ul style="list-style-type: none"> • Serviceability, wear and abrasion • Definitions, methods for measuring abrasion resistance and evaluation of results • Fabric creasing and crease recovery testing
V	<p>Methods of test for fabric dimensions and other physical properties</p> <ul style="list-style-type: none"> • Thickness • Weight • Crimp • Shrinkage • Air permeability • Wet ability • Shower-proofness • Water- proofness • Flame-resistance

ELECTIVES
INTRODUCTION TO PATTERNING & DESIGNING

[5TT6.1]

Class B. TECH. (Textile Technology)	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"> • Stripe and Check Weave Combinations • General considerations in combining weaves: form of stripe and checks • Selection of weaves • Joining of weaves & relative firmness of the weaves
II	<ul style="list-style-type: none"> • Classification of stripe and check design • The use of motif designs • Crammed stripe and checks • Fancy weave stripes upon satin-grounds • Zephyr stripes and checks • Oxford shirting's , wool and union shirting's
III	<ul style="list-style-type: none"> • Elements of color • Light and color phenomena • Light theory • Pigment theory • Complementary colors • Chromatic circle • Brewster circle
IV	<ul style="list-style-type: none"> • Modification of colors • Colored gyres • Colors in combination • Application of colors • Combinations of differently colored threads • Color stripes and checks
V	<ul style="list-style-type: none"> • Simple color and weave effects • General considerations , representation, classification and examples. • Compound color and weave effects • Introduction of computer added textile designing including dobby & jacquard designing

PRACTICAL APPLICATION OF STATISTICS

[5TT6.2]
[Common with 5TC6.2]

Class B. TECH. (Textile Technology)	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	<p>Sampling and Estimation</p> <ul style="list-style-type: none"> • Repeated Sampling, the mean and variance of a function of random variables, linear functions • The central- limit theorem, sampling distribution of the mean • The Chi-square test. Point estimates, interval estimation, confidence limit
II	<p>Some standard significance tests</p> <ul style="list-style-type: none"> • Test for a single mean • Large sample available the significance level • The interpretation of significance test, single- tail test • The interpretation of significance test, double tail test • Error and the choice of the sample size • Test for a single mean: small sample available • Test for the difference between two means :independent sample • Test for the difference between two means: matched sample • Test for the difference between two variances
III	<p>Probability</p> <ul style="list-style-type: none"> • Definition of probability • Introduction to geometrical, Binomial, Poission and normal distribution <p>Analysis of ranking data</p> <ul style="list-style-type: none"> • Rank co-relation • Coefficient of concordance
IV	<p>Quality control</p> <ul style="list-style-type: none"> • Control charts • Action and warning limits • The interpretation of control chart • Control charts for defectives • Control charts for defects • Control charts for averages
V	<p>Analysis of variance</p> <ul style="list-style-type: none"> • An introduction • The design of experiments , random variation in experiments • The test of significance • The ANOVA table case (a) comparison with a control (b) Global comparisons • Tukey's procedure, differences among treatments and Blocks <p>Linear regression</p> <ul style="list-style-type: none"> • Relation between variables • Fitting a straight line • Variation about the regression line

PRACTICALS

SPINNING WORKSHOP –III (5TT7)

MM 100

Ex. Hrs: 3

Practice in handling, operation, setting and gauging draw frame. Lap former and comber. Study of constructional details of machines. Various controls, change places, etc. Practice in checking the quality of comber lap, sliver and waste analysis; common faults and remedies. Calculations pertaining to gearing: speeds, constants, drafts and production.

WEAVING WORKSHOP –III (5TT8)

MM 100

Ex. Hrs: 3

Practice in handling and operating beam and sectional warping machine and slasher sizing machine. Practice in drawing in of warp threads. Practice in handling and operating machine. Practice in handling and operating loom fitted with dobby, jacquard, drop-box and automatic looms. Calculations pertaining to above mentioned machines.

TEXTILE TESTING PRACTICAL –I (5TT9)

MM 100

Ex. Hrs: 3

Measurement of fiber length and its distribution , fineness, maturity, moisture content and strength using conventional methods and instruments. Fibre diameter and its variability, Measurement of Hank of sliver roving, and count of yarn and their variability. Single yarn strength and elongation, lea strength measurement by conventional instruments. Twist of yarn. Crimp of fabric. Use of statistical techniques for evaluation of experimental results.

Textile Chemical Processing Lab –I (5TT10)

MM 50

Ex. Hrs: 3

Pre-treatments such as desizing, scouring and bleaching. Dyeing of cotton, wool, silk and rayon fibers.

**SIXTH SEMESTER
B.TECH. (Textile Technology)**

YARN MANUFACTURING -IV

[6TT1]
[Common with 6TE1]

Class B. TECH. (Textile Technology)	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>Objective of ring frame</p> <ul style="list-style-type: none"> • Principle and mechanism involved in drafting, twisting and winding • Ordinary and high draft systems <p>Yarn twist</p> <ul style="list-style-type: none"> • Terminology, twist levels • Concept of twist multiplier • Propagation of twist • Yarn contraction due to twisting
II	<p>Types of build</p> <ul style="list-style-type: none"> • Builder motions warp, filling and combined builds for common package sizes • Limitations to large package spinning • Types of rings and travelers and their common uses • Rising and falling lappets • Balloon control rings, living rings
III	<ul style="list-style-type: none"> • Systems of waste collection at ring frame and types of spinning wastes • Limitations in ring spinning and factors responsible for loss in efficiency • Yarn faults and their remedies • Introduction to the recent developments in ring spinning • Concepts of average mill count and 20's conversion • Reason and remedies of end breaks on ring- frame • Changes to be done in ring frame to run man-made fibre
IV	<p>Objects of doubling</p> <ul style="list-style-type: none"> • System of doubling(dry and wet) • Study of ring doublers • Two for one twister • Reasons and remedies of end breaks in doubling frame • Calculations pertaining to gearing constants and production <p>Fancy yarns</p> <ul style="list-style-type: none"> • Objects and production of fancy yarns • Ply cable and core spun yarns • Sewing threads and tyre cords
V	<p>Objects of yarn reeling and doubling</p> <ul style="list-style-type: none"> • Types of reeling • construction and working of reel • Yarn bundling • Calculations pertaining to gearing, constants, drafts and production of ring frame

Class B. TECH. (Textile Technology)	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	Mechanics of Scutcher and Speed frame <ul style="list-style-type: none"> • Designing of cone drums for scutcher and speed frame • Roller weighting at different stages of spinning • Inertia of a carding machine • Epicyclic wheel trains used in textile machinery • Differential motion used in speed frames
II	Mechanics of Spinning Machine <ul style="list-style-type: none"> • The physics and theory of spinning balloons • Yarn tension in ring spinning • Power requirements for operating various motions and for machines as a whole, at various stages of spinning
III	Mechanics of winding <ul style="list-style-type: none"> • Winding rate, relationship between bobbin diameter and winding rate, relationship between bobbin diameter and spindle speed • Angle of wind and coil angle, Wind and traverse ratio • Drum-driven packages, develop the surface of cheeses • Gain in winding, linear gain, revolution gain • Cone-winding Tension in winding <ul style="list-style-type: none"> • Tension generators to control yarn tension • Yarn tension and its measurement
IV	Mechanics for Textile Machine <ul style="list-style-type: none"> • Warp tension and its measurement • Simple harmonic motion, displacement, velocity and acceleration • Determination of Tappet lift • Design of cam and tappet profile for textile machinery • Velocity of shuttle during acceleration and retardation, calculation for velocity of shuttle
V	Mechanics for Weaving Machine <ul style="list-style-type: none"> • An expression for sley eccentricity • Kinematics of sley I, e. displacement, velocity and acceleration of sley sword pin, Force, torque, power required to drive the sley • Kinematics of sedding i.e. an expression for shed opening at shuttle front • Power requirements for operation of various motions and for machine a whole, at various stages of weaving

POLYMERS AND EXTRUSION**[6TT3]**
[Common with 6TC3]

Class B. TECH. (Textile Technology)	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	Polymers <ul style="list-style-type: none"> • Definition of polymer, Classification of polymers, Different kinds of polymer materials, Fibrous polymers and their Morphology. • Molecular weight of polymer molecule, different types of molecular weight averages, Polydispersity, Molecular weight measurement methods. • Concept of micro-structure of chain molecules, crystallinity, orientation
II	<ul style="list-style-type: none"> • Basic principle of fluid flow during fibre spinning • Introduction to Melt spinning, melt spinning line, design and engineering of equipments, melt spinning variables and conditions for continuous spinning.
III	<ul style="list-style-type: none"> • Introduction to solution spinning processes and process variables, preparation of the dope and process of dry spinning, preparation of the spinning solution and process of wet spinning, coagulation, development the structure and morphology during solution spinning. • Comparative study of spinning processes.
IV	Post extrusion processes <ul style="list-style-type: none"> • Introduction of spin finish, functions of spin finishes, properties of spin finishes, spin finish components, methods of spin finish application, spin finish for staple fibres, filaments, yarns and other processes. Analysis of spin finish formulations, effect of spin finish on dyeing, problems associated with the use of spin finish.
V	Drawing and setting process <ul style="list-style-type: none"> • Introduction to drawing, drawing machines, the drawing behaviour of thermoplastic fibres, influence of drawing on structure and properties of fibres, draw warping. • Introduction to heat setting, nature of set, heat setting behaviour of polyamide and polyester fibres, measurement of degree of set.

TEXTILE CHEMICAL PROCESSING-II**[6TT4]**
[Common with 6TE5]

Class B. TECH. (Textile Technology)	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"> • Introduction to textile finishing • Different chemical finishing agents and their behavior
II	<ul style="list-style-type: none"> • Finishing treatments by raising, stiffening, calendaring, heat-setting, anti-crease and flame proofing • Wool and silk finishing
III	<ul style="list-style-type: none"> • Finishing of polyester and their blends
IV	<ul style="list-style-type: none"> • Introduction to Textile printing • Printing paste ingredients • Paste preparation
V	<ul style="list-style-type: none"> • Introduction to different methods and styles of printing

TEXTILE TESTING -II

[6TT5]

[Common with 6TC5, 6TE5]

Class B. TECH. (Textile Technology)	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	Mechanical behavior of textiles <ul style="list-style-type: none"> • Terms and definitions, expressing the results, quantities and units • Introduction to visco-elasticity, creep and relaxation phenomenon • Mechanical conditioning and recovery properties of textile
II	Experimental methods <ul style="list-style-type: none"> • Principle of CRL, CRT and CRE type • Tensile testing machines- various Instruments • Factors affecting the results of tensile experiments • Evaluation and interpretation of tensile experiments • Evaluation and interpretation of tensile test results • Tension winding test for yarns
III	Fabric strength testing <ul style="list-style-type: none"> • Tensile, tearing and bursting strength tests • Principle and operation of equipment, fabric bending, shearing and draping properties: terminology, quantities and units, Experimental method
IV	Evenness testing of yarns <ul style="list-style-type: none"> • Nature and cause of irregularities • Principle and methods of evenness testing ,evaluation and interpretation
V	Yarn faults <ul style="list-style-type: none"> • Classification • Measurement • Causes and their remedies

**ELECTIVES
TECHNICAL TEXTILES**

[6TT6.1]
[Common with 6TC6.1, 6TE6.2]

Class B. TECH. (Textile Technology)	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	<p>Introduction</p> <ul style="list-style-type: none"> • Definition • Textile materials in technical applications <p>Fibers</p> <ul style="list-style-type: none"> • Natural and man-made fibres suitable for technical application and their relevant properties <p>Geotextile</p> <ul style="list-style-type: none"> • Fibers used for geotextile applications • Mechanics of reinforcement, filtration and drainage by geotextiles • Typical applications of woven and non-woven geotextiles
II	<p>Medical textiles</p> <ul style="list-style-type: none"> • Textiles in various medical applications • Textile materials used for medical applications • Application oriented designing of typical medical textiles (e.g. porous graft or trashed tube) • Materials used and design procedures for protecting wounds • Cardiovascular application, Sutures
III	<p>Filtrations</p> <ul style="list-style-type: none"> • Principles of wet and dry filtrations • Characteristic properties of fibres and fabrics in selective example of filtration <p>Ropes and Cordages</p> <ul style="list-style-type: none"> • Application oriented structure and production of ropes, cordages and twines
IV	<p>Protective Clothing</p> <ul style="list-style-type: none"> • Thermal protection • Ballistic protection • Protection against micro organisms, chemicals and pesticides • Protection from electromagnetic radiation and static hazards
V	<p>Automotive Textiles</p> <ul style="list-style-type: none"> • Fibres used for automotive applications – upholstery, carpeting, pre-formed parts, type, safety devices, filters and engine compartment items • Brief description for the manufacture and application of these devices or parts

KNITTING TECHNOLOGY**[6TT6.2]****[Common with 6TC6.2, 6TE6.1]**

Class B. TECH. (Textile Technology)	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"> • Definition of Knitting • Knitted fabrics • General description of knitting machines (Flat and Circular and their classification) • Differences between woven and knitted fabric properties
II	<ul style="list-style-type: none"> • Type of different needles used in knitting process (Latch, Beard and Compound). • Knitting cycles • Classification of weft knitting machines • Basic weft knitted structures (Plain, Rib, Interlock, Purl). Their properties
III	<ul style="list-style-type: none"> • Circular machine used for plain knitted fabrics • Rib and Interlock double jersey • Purl knitting machine along with knitting cycle, design of cams
IV	<ul style="list-style-type: none"> • Classification of warp knitting machines • Description of Raschal and Tricot machines • Knitting cycle of these machines
V	<ul style="list-style-type: none"> • Knitting geometry • Knit, Tuck and Float Stitches, their formation in machine and applications • Derivatives and ornamentation of weft knitted fabrics • Knitted fabric faults, their causes and remedies

CLOTHING SCIENCE & GARMENT MANUFACTURING -I**[6TT6.3]**

Class B. TECH. (Textile Technology)	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"> • Concept of comfort factors involved in the study of clothing
II	<ul style="list-style-type: none"> • Thermal and moisture transmission properties of textile structures
III	<ul style="list-style-type: none"> • Garments manufacturing technology-marker efficiency spreading , cutting, making-up grading fusing
IV	<ul style="list-style-type: none"> • Objective hand evaluation and tailor ability assessment of the fabric
V	<ul style="list-style-type: none"> • Brief introduction to garment processing

B. PRACTICALS

SPINNING WORKSHOP IV (6TT7)

MM 100

Ex. Hrs: 3

Practice in handling, operating, setting and gauging speed frame, ring frame and doubling frame. Study of constructional details of machinery; various controls, change place etc. practice in checking the quality of sliver roving and yarn, common yarn faults and their remedies. Calculations pertaining to gearing: speeds, constants, drafts, tpi and production.

WEAVING WORKSHOP –IV (6TT8)

MM 100

Ex. Hrs: 3

Jacquard shedding , automatic cap & shuttle change mechanism, Jacquard card cutting warping machine-drive, traverse, beaming brake mechanism. Calculation of speed & production.

TEXTILE TESTING LAB –II (6TT9)

MM 100

Ex. Hrs: 3

Use of microscopes for testing of yarns for appearance, and diameter. Measurement of evenness by conventional and modern testing instruments. Classification of yarn faults, hairiness of yarn interpretation of results and construction of X& R Charts.

Fabric testing for dimensions, construction, weight, thickness, stiffness, crease, drape, busting, cover, shrinkage and air permeability.

Strength testing of fibre, yarn fabric using modern instruments.

Fabrics testing for load elongation, tensile, bursting and tearing strength , abrasion, flexural rigidity, crease recovery and draping qualities of fabrics.

TEXTILE CHEMICAL PROCESSING LAB -II (6TT10)

MM 50

Ex. Hrs: 3

Pre-treatments such as desizing, scouring and bleaching. Dyeing of cotton, rayon, wool and synthetics fibres with different dyes, e.g. direct, reactive, vat, acid and disperse. Printing of cotton fabrics. Application of finishing agents such as starches, resins,.

**SEVENTH SEMESTER
B. TECH. (Textile Technology)**

MODERN METHODS OF YARN PRODUCTION**[7TT1]**

Class B. TECH. (Textile Technology)	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"> • Causes leading to the advent of unconventional systems of spinning • Classification of unconventional methods of yarn production
II	<ul style="list-style-type: none"> • Mechanism of yarn formation on rotor spinning • Effect of rotor machine variables and fibre properties on the properties of rotor spun yarns • Limitation of rotor spinning • Advances in rotor spinning
III	<ul style="list-style-type: none"> • Study of other open-end spinning systems • Friction spinning • Electrostatic spinning • Air-vortex spinning
IV	<ul style="list-style-type: none"> • Mechanism of yarn formation • Structure, properties and end uses of yarns spun on Air-jet spinning
V	<ul style="list-style-type: none"> • Principle of wrap spinning • Twist less spinning • Self-twist spinning • Compact spinning • Ring spinning • Structure, properties and end uses of these yarns • Potential and limitations of various spinning technologies

Class B. TECH. (Textile Technology)	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>Projectile Weaving Machine</p> <ul style="list-style-type: none"> • Basic principle of projectile weaving machine • Sequence of weft insertion i.e.: weft supply system, feeding of yarn to projectile • Toggle-Torsion bar picking mechanism • Cam driven shedding (Rotatory dobby, card cutting, card reading, card welding and card pasting) • Double cam Beat-up • Weaving machine timing
II	<p>Air-jet Weaving Machine</p> <ul style="list-style-type: none"> • Principle of weft insertion • Sequence of weft insertion i.e.: weft supply system, feeding of yarn to main nozzle • Picking mechanism • Problems in air-jet weaving machine, its remedies by machine design like relay nozzles, confusers & profile reed and suction • Design of nozzle. Nozzle parameters affecting characteristics of air-jet • Quality of air required • Weaving machine timings • Air drag force, factors affecting air drag force • Blowing sequence of relay nozzles and timing control
III	<p>Water-jet Weaving Machine</p> <ul style="list-style-type: none"> • Principle of weft insertion • Path of yarn on weaving machine • Sequence of weft insertion i.e.: weft supply system, feeding of yarn to main nozzle • Picking mechanism, Nozzle pump design. Problems encountered • Drying of fabric on weaving machine • Quality of water required
IV	<p>Rapier Weaving Machine:</p> <ul style="list-style-type: none"> • Classification of rapier Weaving Machine • System of weft insertion and number of rapiers. • Sequence of weft insertion i.e.: weft supply system, feeding of yarn to rapier • Picking mechanism • Driving mechanism for flexible and rigid rapiers • Weaving machine timing, Velocity and time calculations
V	<p>Multiphase Weaving Machine</p> <ul style="list-style-type: none"> • Principle and Classification, Warp-wise and weft wise multiphase looms • Different methods of shedding, Picking and beat-up picking mechanism • Advantages and disadvantages • Circular Multiphase Weaving Machine • Positive let-off mechanisms like, Electronic let off, their advantages • Positive continuous take up mechanisms like Sulzer take-up, Picanol take-up and their advantages • Different selvages: Tucked-in, leno, fused. Their mechanism of formation, their characteristics and uses • Modern developments in shuttle less weaving

MAN-MADE FIBRE PRODUCTION**[7TT3]****[Common with 7TC3]**

Class B. TECH. (Textile Technology)	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">• Growth and production of man made fibres in the World and India.• The method of manufacture and mechanism of polymerisization and production techniques of polyesters and the staple and multi filament yarn manufacturing process, properties and application areas.
II	<ul style="list-style-type: none">• The method of manufacture and mechanism of polymerisization and production techniques of Nylons and the staple and multi filament yarn manufacturing process, properties and application areas.
III	<ul style="list-style-type: none">• The method of manufacture and mechanism of polymerisization and production techniques of Acrylics, Mod-acrylics and the staple and multi filament yarn manufacturing process, properties and application areas.• The method of manufacture and mechanism of polymerisization and production techniques of polyolifins and the staple and multi filament yarn manufacturing process, properties and application areas.
IV	<ul style="list-style-type: none">• The methods of manufacture and production techniques of regenerated cellulosic fibres like cuprammonium rayon, viscose rayon and modified viscose rayons, the staple and multi filaments yarn manufacturing process, properties and application areas.
V	<ul style="list-style-type: none">• The methods of manufacture and production techniques of regenerated modified cellulosic fibres like acetate rayon, fortisan the staple and multi filaments yarn manufacturing process, properties and application areas.• The methods of manufacture and production techniques of regenerated Protein fibres like casein, ardil, vicara fibres. Their properties and application areas.

ENGINEERING OF TEXTILE STRUCTURE – I

[7TT4]

[Common with 7TC4, 7TE3]

Class B. TECH. (Textile Technology)	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	Yarn geometry <ul style="list-style-type: none"> • Idealized yarn geometry • Relationship of yarn number and twist factor
II	Packing of fiber in yarn <ul style="list-style-type: none"> • Ideal packing, hexagonal close packing and to other forms • Packing factor and its measurement • Yarn diameter
III	Methods of measurement of twist contraction <ul style="list-style-type: none"> • limit of twist • Fiber migration • Mechanism of migration • Condition for migration to occur • Frequency of migration • Migration in blended yarns
IV	Translation of fibers properties into yarn properties <ul style="list-style-type: none"> • Extension of continuous filament yarn for small strains and large strains • Prediction of breakage
V	Mechanics of staple fibre yarns <ul style="list-style-type: none"> • The practical and experimental studies • Mechanics of staple fibre yarns • Hambureger model and later modifications • Spin ability of and torsional behavior of Fibres and yarns

INDUSTRIAL ENGINEERING AND QUALITY MANAGEMENT

[7TT5]

[Common with 7TE5]

Class B. TECH. (Textile Technology)	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	<p>Production Information</p> <ul style="list-style-type: none"> • Production Information of the entire unit • Product range and quantity • Production Information systems • Feeding and retrieval of data <p>Productivity Planning</p> <ul style="list-style-type: none"> • Production Capacity and the productivity obtained from each machine • Analysis of the data and planning of production
II	<p>Output of human resource</p> <ul style="list-style-type: none"> • analysis and strategy <p>Production Planning</p> <ul style="list-style-type: none"> • Study of market demand and supply analysis • Technology and product design for various textile products and forecasting future trends <p>Work study</p> <ul style="list-style-type: none"> • Method of Work study • Study and work measurement • Application of time study in a textile mill • Importance and use of snap study, TPM
III	<ul style="list-style-type: none"> • Production planning in spinning and weaving • Plans for various counts and yarns, production rates, waste, efficiency level of machine • Balancing of machines • Production rate, efficiency etc. for preparatory and weaving shed • Balancing of weaving machines • Preparation of weaving plan
IV	<p>Quality Management</p> <ul style="list-style-type: none"> • Concept of Total Quality • Quality Management systems as a means of achieving total quality. TQM • Linkage of Quality <p>Environment Management System</p> <ul style="list-style-type: none"> • Strategic concern for environment • Need for proper environment management systems and their economic implications • Environment management systems • Green products and strategies • Environment assessment • Environment protection
V	<p>Quality Management Systems</p> <ul style="list-style-type: none"> • ISO 9000 • Quality policy, data, records and traceability • Documenting the quality system, quality manual, quality audit, design and change control • ISO 9000 registration, ISO 14000

ELECTIVES

COMPLEX TEXTILES

[7TT6.1]

[Common with 7TE6.1]

Class B. TECH. (Textile Technology)	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"> Gauge and leno structure with their mechanism Madras Muslin structures
II	<ul style="list-style-type: none"> Type of Carpets and classification, Hand knitted carpets, tufted Carpets, Knitted Carpets, Stitch Bonded Carpets, Electrostatic flocking Carpets
III	<ul style="list-style-type: none"> Some common fabrics like Lappets, Swivels, Ondule Fabrics, Tuck fabrics, woven pile fabrics produced by thermal shrinkage
IV	<ul style="list-style-type: none"> Industrial fabrics especially kind of canvases, Belts, Parachute Fabrics and umbrella cloth. Lycra Fabric
V	<ul style="list-style-type: none"> Narrow fabrics production methods and their calculation: Laces, bandage, ribbons and niwar. Introduction of non-woven fabrics, classification and uses

BUSINESS ENVIRONMENT AND MARKETING MANAGEMENT

[7TT6.2]

[Common with 7TC6.2]

Class B. TECH. (Textile Technology)	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	Business: <ul style="list-style-type: none"> Changing concept and objective of business, professionalisation business ethics: Social responsibility of business-responsibility to shareholders, employers, consumers and to the community, the Indian situation
II	Environment <ul style="list-style-type: none"> meaning of environment, constituents of business environment ; economic, social political legal and technological environment relation between firm and its environments
III	Management <ul style="list-style-type: none"> Definition theory's principles of scientific management Henry Fayol's principles of management and human relations approach functions of management (I) planning (ii)Organizing (iii) Staffing (iv) Directing (v) Controlling
IV	<ul style="list-style-type: none"> Forms of organization structures Line organization; Functional organization Line and staff organization, their merits and demerits
V	The marketing process <ul style="list-style-type: none"> Mean components, factors influencing marketing process Modern marketing process The market concept: Feature and promises of modern marketing concept Marketing management: meanings and importance: marketing mix-A Very brief description of product mix, price mix, distribution mix, and promotion mix

Class B. TECH. (Textile Technology)	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	Cutting <ul style="list-style-type: none"> • Planning, drawing and reproduction of the marker • Requirements of marker-planning • Marker efficiency • Methods of marker planning • Marker use – normal marker • Planning and computerized marker planning • Requirement of spreading process
II	Packages <ul style="list-style-type: none"> • Nature of fabric packages • Objectives and methods of cutting • Straight knife, band knife, notches, drills, computer controlled knives • Die cutting, Laser cutting, Plasma cutting • Application of Computer in pattern construction • Try planning, marking and cutting processes
III	Sewing <ul style="list-style-type: none"> • Properties of seams, seam types, stitch types • Sewing machine feed mechanism, sewing machine needles, sewing threads, sewing problems
IV	<ul style="list-style-type: none"> • Introduction to Sewing Machinery • Basic sewing machines and associated work aids
V	Pressing <ul style="list-style-type: none"> • Purpose of pressing, pressing equipment and methods • General description to alternative methods of joining materials • The use of components, trimmings to care labeling in Garment manufacturing

Practical

SPINNING WORKSHOP -V (7 TT 7)

MM 100

Ex. Hrs: 3

Spinning Practical Familiarity with established processing parameters for producing carded combed, blended, folded and fancy yarns. Case studies pertaining to waste to waste analysis, estimation of the total productivity, actual efficiency levels and causes of loss of efficiency in different spinning preparatory departments, Viz. Blow-room, card, comber, draw-frame and simples. Study of blow-room and card performance. Nep count in card web. Checking of comber waste. Assessment and control variability before yarn formation. Practice in handling and setting of the various spinning preparatory machines. Workload and measurements in spinning preparatory, Oiling and maintenance schedules. Idea of time and motion study .

WEAVING WORKSHOP -V(7 TT 8)

MM 100

Ex. Hrs: 3

Study of constructional details of high speed winding, warping, sizing machine controls, dobbies, jacquard, drop-box, automatic looms and knitting machines. Study of Air-Jet-water-jet, rapier and projectile looms . Practice in weaving and knitting and checking the quality of fancy fabric and method of rectifying the defect. Work load assignments in different department. Familiarity with established processing parameters for weaving and knitting and fancy fabrics. Snap studies.

PROJECT PART - I (7 TT9)

MM 50

Ex. Hrs: 3

Each Student individually, or in association with some other students will carry out mini project of an experimental and/ or theoretical nature in one of the main branches **Textile Technology** and present him fin ding is a systematic in the report form duly approved and signed by his supervisors/Guide(to be nominated by the Head of the Departments/Institutions).Each candidates would submit 3 typed copies of mini project report to the head of the department/institution at least 15 days before the commencement of first semester examination after viva-voce examinations. The original report and a carbon copy will be retained by the concerned department/institution and the supervisor respectively.

MILL TRAINING SEMINAR (7TT10)

MM 100

Ex. Hrs: 3

Each student, individual or in association with some other students at the end of the Third B.E. course will observe and collect the general and technical information pertaining to machinery, raw materials used, yarns and fabrics produced by the textile mills, in which he/she/they are undertaking 4 weeks' practical training with the approval of the **Principal, M.L.V.T.E.C.** Each student will have to submit a written/typed report duly approved and signed by the guide to the Head of the department.

**EIGHTH SEMESTER
B. TECH. (Textile Technology)**

MULTI FIBRE SPINNING**[8TT1]**

Class B. TECH. (Textile Technology)	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"> Survey of established practices for the spinning of manmade fibres using different spinning systems with emphasis of fiber and yarn properties Detailed study of the cotton system process for spinning of man-made fibres and fibre assemblies
II	<ul style="list-style-type: none"> Properties involving engineering principles Blending techniques for various man-made and natural fibres, problems in Blending Blended yarn properties and fabric performance
III	<ul style="list-style-type: none"> Spinning of wool (woolen and worsted system.)
IV	<ul style="list-style-type: none"> Cotton Waste: Types, classification and end-uses Study of machines and methods employed in the production of waste yarns(coiled system and condenser system)
V	<ul style="list-style-type: none"> Introduction to jute spinning process

ECONOMICS & COSTING OF TEXTILE PROCESSES**[8TT2]****[Common with 8TE2]**

Class B. TECH. (Textile Technology)	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"> General cost concepts Classification of cost, cost elements, methods and techniques of costing. Direct / indirect, Fixed / Variable, Total cost. Inventory costing System of costing: Job, order, batch, process, unit and operating cost
II	<ul style="list-style-type: none"> Costing in Textile Industry: Cost structure, cost of raw material / labour / utilities Cost control – standard costs, Variance analysis, determination of cost per kg of yarn, per meter of fabric, yarn realization, value loss, measures of cost reduction, selling price decision for yarn/fabric Concepts of depreciation
III	<ul style="list-style-type: none"> Labour allocation in different departments of a textile mill Work-load standards for card tenters, speed frames and ring tenters, doffers, winders, weavers, in terms of tripartite agreements and Labour Laws
IV	<ul style="list-style-type: none"> Economics of large package spinning and optimum package size. Economics of Open-end Spun, Air-jet spun and Friction spun yarns.
V	<ul style="list-style-type: none"> Economics of super-speed automatic warp and weft winding machines. Economics of various labour saving mechanisms mounted on automatic looms like 'box loader' and 'unfil' systems. Costing of shuttle-less weaving machine like Projectile, air-jet, water-jet, circular weaving machine

ENGINEERING OF TEXTILE STRUCTURES-II**[8TT3]****[Common with 8TC3, 8TE3]**

Class B. TECH. (Textile Technology)	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"> • Elements of fabric geometry • Cloth setting theories • Fabric cover and fractional cover • Crimp balance equation • Fabric cover and fabric weight relationship
II	<ul style="list-style-type: none"> • Peirce's concept of fabric geometry • Flexible and elastic threads model • Graphical solutions • Latest modifications
III	<ul style="list-style-type: none"> • Translation of fiber and yarn properties into fabric properties, viz. tensile, tearing, abrasion, bending, shearing • Creasing & shearing
IV	<ul style="list-style-type: none"> • Introduction about FAST and KAWABATA Instrument
V	<ul style="list-style-type: none"> • Design of textile structure for certain functional and uses

ELECTIVES**ENTREPRENEURIAL VENTURE & TEXTILE HAZARDS****[8TT4.1]****[Common with 8TC4.3, 8TE4.1]**

Class B. TECH. (Textile Technology)	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"> • Introduction to entrepreneurial ventures • What is entrepreneurship • Who is entrepreneur
II	<ul style="list-style-type: none"> • Need scope and characteristics of entrepreneurship • Identification of opportunities
III	<ul style="list-style-type: none"> • The need scope and approaches entrepreneurship • Project formulation for different entrepreneurship
IV	<ul style="list-style-type: none"> • Cotton dust disease. of human-being in textile industry • Accidents , causes and safety measures for textile industry
V	<ul style="list-style-type: none"> • Pollution control : Measure to control air and noise pollution in spinning& weaving • Effluent treatment in process house

SPINNING TECHNOLOGY**[8TT4.2]****[Common with 8TE4.4]**

Class B. TECH. (Textile Technology)	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"> Measurement of performance of blow room: opening efficiency, cleaning efficiency, lap regularity and waste percentage
II	<ul style="list-style-type: none"> Assessment of performance of card Study of hooks formation, their control, removal and effect of yarn quality
III	<ul style="list-style-type: none"> Improvement in technology of carding for increased production and improved quality of sliver, high speed carding: designs of carding machines for improved performances
IV	<ul style="list-style-type: none"> Recent developments in drawing, lap preparation, combing processes, speed frames, Types and basic principal of autolevellers
V	<ul style="list-style-type: none"> Irregularities of drafted material: random, quasi-periodic and periodic irregularities of addition of irregularities, effect of doubling on irregularity Causes of irregularity: influence of raw material, process and machine variables on irregularity

DEVELOPMENTS IN MAN MADE FIBRE PRODUCTION**[8TT4.3]****[Common with 8TC4.4]**

Class B. TECH. (Textile Technology)	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"> Problems and difficulties associated with conventional fibres. Modified synthetic fibres like: antistatic, hydrophilic, hollow, micro voids, microgrooves, low pilling, flame retardant, carrier free dye able, cationic dye able, silk like polyester, nylon, acrylic, poly-propylene. Fibres with multilobal cross-section and hollow fibres.
II	<ul style="list-style-type: none"> Developments in fibre line of synthetic fibres High speed spinning of synthetics fibre forming polymers, advantage and disadvantages of HSS, high speed spinning speeds, HSS of polyesters, nylon and their properties, spin draw processes, structure development during high speed spinning.
III	<ul style="list-style-type: none"> Newly developed elastomeric and high performance fibres like lycra, spandex, aramid, Kevlar, ordered polymeric, aromatic polyesters etc.
IV	<ul style="list-style-type: none"> Production process of carbon fibres, structure and morphology of carbon fibres, properties and application of carbon fibres. Glass, ceramic, metallic, silicon carbide and other fibres. Fibres used for Geo Textile, optical fibers
V	<p>Texturing process</p> <ul style="list-style-type: none"> Principle of texturing, false twist texturing process and machines, process variables like temperature, twist, tension and time, structural geometry of textured yarn, draw texturing machines. Air jet texturing process and variables such as over feed, air pressure temperature and water content. Stuffer box crimping, gear crimping, knife edge crimping, hi-bulk acrylic yarns.

B. PRACTICALS

SPINNING WORKSHOP -VI (8 TT5)

MM 100

Ex. Hrs: 3

Collection and interpretation of data for process control and comparing the same with established norms.

Waste analysis in ring and rotor spinning Locating and improving machines with substandard performance. Case studies pertaining to estimation of the total productivity, actual efficiency level, causes of loss of efficiency in ring, rotor and air-jet spinning. Study off the defects at various stages of spinning. Assessing process capability for count controls.

Calculation pertaining to comparison of productive, average count etc. Practice in motion study, time study and work-load measurements in ring and rotor spinning departments, Oiling and maintenance schedules, spare parts consumption and idea of the lie of the various parts.

Practice in handling and setting of the ring and rotor spinning. Assessment and control of variability in ring, rotor and air jet yarns.

Case studies pertaining to yarn costing. Condition under which a worker is charge-sheeted and suspended. To acquaint with labor laws.

WEAVING WORKSHOP –VI (8TT 6)

MM 100

Ex. Hrs: 3

Case Studies pertaining to winding warping, sizing, drawing-in and looming for the estimation of production, efficiency and cause of loose in efficiency, excessive wastes, warp and weft breakages,, costing rate fixing for new product, damage etc. and to compare the same with established norms.

Familiarity with the temperature and humidity in different department and methods of controlling the same. Oiling and maintenance schedules. Spare parts consumption and controlling the same.

Oiling and maintenance schedules. Spare parts consumption and idea of the life of various spare parts. Conditions under which a worker is being charge-sheeted or suspended.

To acquaint with labour laws.

Practice in motion study, time study and work-load measurement.

CAD LAB (8TT7)

MM 50

Ex. Hrs: 3

Practice on dobby & jacquard based weaving designs software's Preparation of draft, designs and peg plans for various types of designs. Practice on printing software, color separation, screen preparation. Use of scanners.

PROJECT PART - II: (8TT8)

MM 200

Ex. Hrs: 3

Each Student individually, or in association with some other students will carry out project of an experimental and/ or theoretical nature in one of the main branches textile technology and present him fin ding is a systematic in the report form duty approved and signed by his supervisors/Guide(to be nominated by the Head of the Departments/Instituttions).Each candidates would submit 3 typed copies of project report to the head of the departmen/institution at least 15 days before the commencement of second semester examination after viva-voce examinations. The original report and a carbon copy will be retained by the concerned department/institution and the supervisor respectively.

SEMINAR: (8TT 9)

MM 100

Ex. Hrs: 3

Each student will have to deliver a talk on the topic in the weekly period allotted to this subject, either pertaining to his project work or any topic assigned by Head of the Department. The performance of the speaker would be judged in the class by a board of examiners.

