

MAHARSHI DAYANAND UNIVERSITY, ROHTAK
SCHEME OF STUDIES & EXAMINATIONS
B.Tech 2nd YEAR TEXTILE TECHNOLOGY(TT)
3rd SEMESTER
Proposed 'F' Scheme w.e.f 2010-11

Course No.	Course Title	Teaching Schedule				Marks of Class work	Examination		Total Marks	Duration of Exam
		L	T	P	Total		Theory	Practical		
TT-201-F	Textile Raw Materials (common with TC/FAE)	3	1	-	4	50	100	-	150	3
TT-203-F	Yarn Manufacture-I	3	1	-	4	50	100	-	150	3
TT-205-F	Weaving Preparation	3	1	-	4	50	100	-	150	3
TT-207-F	Fabric Manufacture-I	3	1	-	4	50	100	-	150	3
ME-217-F	Thermal science(common to TC and TT)	3	1	-	4	50	100	-	150	3
HUM-201-F	Engineering Economics (Common to CSE, ME, ECE, BME, EE, EEE, E&I, I&C, IT, CE, TT, FAE, TC)	3	1	-	4	50	100	-	150	3
	Practicals									
TT-209-F	Spinning Practical-I	-	-	3	3	50	-	50	100	4
TT-211-F	Weaving Practical-I	-	-	3	3	50	-	50	100	4
ME-219-F	Machine Drawing	-	-	2	2	50	-	50	100	4
TT-213-F	Fibre Microscopy & Identification	-	-	2	2	50	-	50	100	4
Total		18	6	10	34	500	600	200	1300	

TT-201-F TEXTILE RAW MATERIALS (COMMON WITH TC/FAE)

L	T	P	Class work	:	50
3	1	-	Examination	:	100
			Total	:	150
			Exam duration:		3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

General definitions and important terminologies related to textiles; Classification of fibres; Essential and desirable properties of textile fibres and their role in final products; Advantages and disadvantages of natural and manmade fibres. Flow charts showing processes involved in textile industry.

Cotton: Geographical distribution, structure and properties (physical and chemical); Different Varieties including organic as well as Bt cotton and their properties; Applications.

Unit II

Bast and leaf fibres such as jute, hemp, sisal and ramie etc: Geographical distribution, extraction, properties and their uses.

Varieties of natural silk, rearing of silk worm, properties and uses of various types of silk; silk reeling, throwing and weighing.

Unit III

Varieties, sorting and grading of wool, chemical and physical properties of wool, processes involved in the removal of impurities from raw wool; numbering systems of woollen and worsted yarns.

General principles of manufacturing of man made fibres.

Unit IV

Brief outline of the manufacturing processes of important man-made fibres, viz. rayons (Viscose and Acetate), polynosic, tencel, nylons, polyester, acrylics, polypropylene, polyolefins, polyacrylonitrile and some technical speciality fibres like spandex/lycra etc (only flow charts); their Important physical and chemical properties and applications.

Reading List

Title

Author

Handbook of Textile Fibres

J Gordon Cook

Textile Fibres

HVS Murthy

Manmade Fibres

RW Moncrieff

Manufactured Fibre Technology

V B Gupta & V K Kothari

TT-203-F YARN MANUFACTURE-I

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

UNIT I

Introduction to spinning processes through flow charts and brief description of each process. Objectives of ginning, Pre-ginning and post-ginning operation and their significance, description and working of knife roller, McCarthy and saw gin, cotton contamination Objectives of blow room, Objectives of mixing and blending, different methods of blending, their advantages and disadvantages,

UNIT II

Principles involved in different methods of selection of cotton for mixing, various types of opener, cleaner and mixer, their construction and working, Lap forming mechanism, Blow room accessories, tinting, application of additional spin finish, Selection of blow room lines for different cotton and man-made fibres. Production and efficiency level attainable in blow room,

UNIT III

Performance assessment of Blow room, Lap rejection, causes of lap defects and their remedies, Design of cone drums. Calculations related to blow room, Modern development in blow room.

Objectives of carding, introduction to roller and clearer card, Principle of carding, stripping and brushing action, design and construction of carding machine, Design criteria for a high production card, Different zones in carding machine,

UNIT IV

Analysis of carding forces, Mechanics of nep and hook formation and their control. Carding of micro denier and dyed fibres, flexible and metallic card clothing, Design wire point for different material, Shirley pressure point system, Auto levelling at card, Performance assessment of Carding, Calculations related to carding, Modern development in carding.

Reading List

Title	Author
Cotton Ginning, Textile Progress Vol.24 No.2	I Doraiswamy, P Chellamani
Spun Yarn Technology, Vol I& II	A Venkatasubramani
Short Staple Spinning Volume-I, II, III & IV	W Klein
Spinning of Manmade & Blends on Cotton Systems	KR Salhotra
Technology of Carding	R Chattopadhyay

TT-205-F WEAVING PREPARATION

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Introduction to passage of material through weaving processes by flow charts and their objectives.

Winding - Process description, Objectives, types of winding, (Random & Precision), their principle and comparison.

Devices used on winding machines: Tensioners - Objective, principle, types, performance assessment; Clearers - Objectives, types, their principle, performance assessment; other devices with their objectives.

Unit II

Yarn faults and their classification systems, Phenomenon of patterning and Anti patterning methods. Knots and splices; Brief idea of types of Splicers and their principle. Definitions of wind, Traverse Ratio, Coil angle, wind angle, Net winding Rate, gain and their related calculations. General calculations for efficiency and production, package faults in winding, modern developments in winding.

Pirn winding: Objective and process description in brief.

Unit III

Warping: Process description, objectives, Direct and sectional warping, principle of working, relative merits and demerits, application area. Components of warping machines with objectives; types of creel, steps of section formation, Differences between warpers' and weavers' beam. Package faults, modern developments in warping. Calculations pertaining to direct and sectional warping including production and efficiency

Sizing: Process description and objectives of sizing. Passage of material through a Slasher Sizing machine

Unit IV

Different zones of slasher sizing machine: creel, size box and its components, drying zone and head stock and their details. Size box controls, Sizing parameters: definition and relation, Sizing ingredients and their types; Size recipe for common yarns like cotton, polyester, viscose, nylon, acrylic. Factors affecting size add on. Package faults in sizing. Calculations related to production and efficiency. Developments in Slasher sizing machine.

Other sizing techniques like HPS, Single end sizing, foam sizing, sinter roller sizing, and cold sizing

Leasing, Drawing-in and tying in: Objectives and process description.

Reading List

Title

Yarn Winding
Weaving: Technology and Operations
Yarn Preparation for Handloom weaving
Textile Mathematics Vol. III
Textile Sizing
Sizing: Materials, Methods, Machines
Sizing

Author

NCUTE Publication
Ormerod
B K Behera
JE Booth
Goswami, Anandjiwala, Hall
Ajgaonkar, Talukdar, Wadekar
J B Smith

TT-207-F FABRIC MANUFACTURE-I

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

UNIT I

Brief introduction to weaving processes and loom. Classification of looms: Plain loom, automatic shuttle loom and shuttle-less looms. Definitions of primary, secondary and auxiliary motions of a loom

Shedding motion on the loom:

Tappet shedding: types of tappet shedding (positive and Negative), Negative tappet shedding – relative throw of cams, Heald shaft reversing motion.

Dobby Shedding: Negative Dobby shedding – mechanism of Keighley dobbie, preparation of pattern chain for it.

Jacquard shedding: Mechanism of single lift-single cylinder, Double lift-single cylinder, Double lift-Double cylinder. Jacquard harness: different harness ties, e.g. Straight, Pointed and Border Tie, card punching for Jacquard.

UNIT II

Types of shed-Bottom closed, Semi-open, Center closed and open-sheds, their advantages and uses, comparison of Tappet, Dobby and Jacquard shedding.

Picking motion on the loom:

Types of picking: conventional picking mechanisms: over-pick and under-pick, shuttle checking, checking devices, Calculations for power requirement for picking, shuttle flight time.

Study of picking mechanism as simple elastic system, nominal and actual picker displacement curves, Shuttle retardation curve during checking

Beat-up motion on the loom: Sley motion, Factors affecting sley motion, Sley eccentricity and its effects, Kinematics of loom sley in normal conditions.

Loom timings for shedding, picking and beat-up motions.

UNIT III

Cloth control: Take-up motion – Objective, types, Five and seven-wheel take-up mechanisms, their comparison. Changes in Pick density, change places, expression for Pick density, Calculation of periodicity in pick variation due to faulty teeth or wheel eccentricity, Shirley take-up.

Temples - Function, types.

Warp control: Objective, types. Let-off mechanisms (negative friction type, Bartlett let-off).

Warp stop motion: Objective, types. Mechanical and electrical warp stop motion.

UNIT-IV

Weft stop motion: Objective, types, side weft fork and center weft fork motion.

Warp protector motion: Objective, types, Loose Reed, Fast Reed warp protector motion.

Automatic pirn change mechanism: Objective, feeler and types of feeler, change mechanism.

Bobbin loader and loom winder.

Weft mixing and weft patterning: four-box motion, pick at will.

Loom drive; rpm, efficiency and production calculations

Reading List

Title

Author

Principles of Weaving

R Marks & ATC Robinson

Weaving: Conversion of yarn to Fabric

Lord and Mohammed

Weaving: Technology & Operations

Ormerod

Weaving: Machines, Mechanisms, Management

Ajgaonkar et al

Woven Fabric Production – I, II

NCUTE Publications

Weaving Mechanism, I & II

NN Banerjee

ME- 217-F THERMAL SCIENCE (Common to TT & TC)

L	T	P	Sessional	: 50 Marks
3	1	-	Theory	: 100 Marks
			Total	: 150 Marks
			Duration of Exam	: 3 hrs.

NOTE: Examiner will set 9 questions in total, with two questions from each section and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each section.

Unit I

Basic Concepts and First Law of Thermodynamic: Macroscopic and Microscopic Approaches, Thermodynamic system, Thermodynamic properties, Equilibrium, State, Path, Process and Cycle, Quasi-static, Reversible and Irreversible Processes, Concept of Thermodynamic Work and Heat, Zeroth Law of Thermodynamic and its utility, First Law of Thermodynamics, Internal Energy and Enthalpy, PMMFK, Limitation of First Law, Steady Flow Energy Equation, First Law applied to Non-Flow Process, Steady Flow Process and Transient Flow process, Throttling process and Free Expansion Process

Unit II

Second Law of Thermodynamic and Entropy: Kelvin- Plank and Clausius Statement and their Equivalence, PMMSK, Carnot Cycle, Carnot Heat Engine, Carnot Theorem and its Corollaries, Entropy, Clausius Inequality, Principal of Entropy Increase, Temperature Entropy Plot, Entropy Change in different Processes, Third Law of Thermodynamics, Availability, Ir-reversibility

Unit III

Pure Substance and Air Conditioning: Pure Substance and its properties, Phase and Phase Transformation, Saturated and Superheated steam, Solid-Liquid-Vapour Equilibrium, T-V, P-V, P-T plot during Steam Formation, T-S and H-S Diagrams, Dryness fraction, Throttling and Separating Calorimeter, Psychrometric Chart, Psychrometric Terms, System of Humidification in Textile Industry, Cooling and Dehumidification, Heating and Humidification, Air Conditioning System

Unit IV

Fuel and Steam Generator: Different types of Fuels, Calorific Value, Bomb Calorimeter, Combustion Equation of Fuel, Orsat Apparatus, Boiler Efficiency and Heat Losses in Boiler, Heat Balance Sheet, Boiler Drought, Height of Chimney, and High pressure Boilers

Reading List

Title	Author
Heat Engineering	VP Vasaandani & DS Kumar
The Theory & Practice of Heat Engines	DA Wrangham
Thermodynamics applied to Heat Engines	EH Lewit
Air Conditioning in Textile Mills	SP Patel & K Subramaniyan
Engineering Thermodynamics	P K Nag
Thermodynamics and Thermal Engineering	J Selwin Rajadurai

HUM-201-F ENGINEERING ECONOMICS

(Common to CSE, ME, ECE, BME, EE, EEE, E&I, I&C, IT, CE, TT, FAE, TC)

L T P
3 1 -

Class Work : 50 Marks
Theory : 100 Marks
Total : 150 Marks
Duration of Exam. : 3 Hrs.

NOTE: Examiner will set 9 questions in total, with two questions from each section and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each section.

Section-A

Definition of Economics - various definitions, Nature of Economic problem, Production possibility curve Economic laws and their nature. Relation between Science, Engineering, Technology and Economics.

Concepts and measurement of utility, Law of Diminishing Marginal Utility, Law of equi-marginal utility - its practical application and importance.

Section-B

Meaning of Demand, Individual and Market demand schedule, Law of demand, shape of demand curve, Elasticity of demand, measurement of elasticity of demand, factors effecting elasticity of demand, practical importance & applications of the concept of elasticity of demand.

Meaning of production and factors of production; Law of variable proportions, Returns to scale, Internal and External economics and diseconomies of scale.

Section-C

Various concepts of cost - Fixed cost, variable cost, average cost, marginal cost, money cost, real cost opportunity cost. Shape of average cost, marginal cost, total cost etc. in short run and long run.

Meaning of Market, Types of Market - Perfect Competition, Monopoly, Oligopoly, Monopolistic Competition (Main features of these markets)

Section-D

Supply and Law of Supply, Role of Demand & Supply in Price Determination and effect of changes in demand and supply on prices.

Nature and characteristics of Indian economy (brief and elementary introduction),

Privatization - meaning, merits and demerits. Globalisation of Indian economy - merits and demerits. Elementary Concepts of VAT, WTO, GATT & TRIPS agreement.

TEXT BOOKS:

1. Principles of Economics: P.N. Chopra (Kalyani Publishers).
2. Modern Economic Theory – K.K. Dewett (S.Chand)

REFERENCE BOOKS:

1. A Text Book of Economic Theory Stonier and Hague (Longman's Landon)
2. Micro Economic Theory – M.L. Jhingan (S.Chand)
3. Micro Economic Theory - H.L. Ahuja (S.Chand)
4. Modern Micro Economics : S.K. Mishra (Pragati Publications)
5. Economic Theory - A.B.N. Kulkarni & A.B. Kalkundrikar (R.Chand & Co.)
6. Indian Economy: Rudar Dutt & K.P.M. Sundhram

TT-209-F SPINNING PRACTICAL-I

L	T	P
-	-	3

Class work	:	50
Examination	:	50
Total	:	100
Exam duration:		4 hrs

Practice in handling and operation of blow room, study of constructional details of machinery in blow room, Calculating speeds of different machine parts, Blow/inch of Kirschner beater, Production calculation of blow room, various control points and change places, Practice in checking of the quality of lap.

Familiarity with carding machine, constructional details, change places and speed calculation of a carding machine, Effect of various machine parameters in production and quality of sliver, checking the quality of sliver, Finding out individual draft and total draft in carding machine. Flat speed and its impact, Study of coiling mechanism, coils/layer. Setting points according to type of material.

TT-211-F WEAVING PRACTICAL-I

L T P
- - 3

Class work : 50
Examination : 50
Total : 100
Exam duration: 4 hrs

Study of winding, warping, slasher sizing: primary components and their functioning, operation, settings, related calculations, production, efficiency, package types, faults and their remedies.

Drawing-in process: Process description, drafting/denting plans

Pirn winding: objective and functioning in brief.

Introduction to loom and its primary parts, passage of material through it.

Study of shedding (negative cam, dobbie, jacquard), picking and beat-up mechanisms in shuttle looms: construction, working and related calculation/settings.

ME-219-F MACHINE DRAWING (Common to TT & TC)

L	T	P	Sessional	: 50 Marks
	-	2	Theory	: 50 Marks
			Total	: 100 Marks
			Duration of Exam	: 4 hrs

Technical terminology and drawing conventions, Conventional representation of spring, gears, and bearings etc., Screw threads – forms of threads, triangular and square. Riveted joints: forms and proportion of rivets joints, lap and butt joints, Shaft coupling- muff, flange and flexible coupling.

Bearings – journal, bush, thrust and pivot bearings. Gears and train of gears, Cams: construction and linkage.

TT-213-F FIBRE MICROSCOPY & IDENTIFICATION (COMMON to TT, TC and FAE)

L T P
- - 2

Class work : 50
Examination : 50
Total : 100
Exam duration: 4 hrs

Principle of microscopy, Microscopic identification of fibres, preparation and mounting of specimen for longitudinal view, Cross-section cutting. Microtomy - cork method, metal plate method, Hardy's Microtome, Mountants and reagents for fibre microscopy; Identification of fibre by burning as well as solubility tests. Standard scheme of analysis of homogenous fibre blends by physical and chemical methods, Qualitative and quantitative determination of components.

Preparation of reagents used for chemical analysis.

MAHARSHI DAYANAND UNIVERSITY, ROHTAK
SCHEME OF STUDIES & EXAMINATIONS
B.Tech 2nd YEAR TEXTILE TECHNOLOGY (TT)
4th SEMESTER

Proposed 'F' Scheme w.e.f 2010-11

Course No.	Course Title	Teaching Schedule				Marks of Class work	Examination		Total Marks	Duration of Exam
		L	T	P	Total		Theory	Practical		
TT-202-F	Man-Made Fibre Production	3	1	-	4	50	100	-	150	3
TT-204-F	Yarn Manufacture-II	3	1	-	4	50	100	-	150	3
TT-206-F	Fabric Manufacture-II	3	1	-	4	50	100	-	150	3
TT-208-F	Fabric Structure	3	1	-	4	50	100	-	150	3
TT-210-F	Computer Aided Designing	3	1	-	4	50	100	-	150	3
MA-201-F	Applied Statistics & Operations Research	3	1	-	4	50	100	-	150	3
	Practicals									
TT-212-F	Spinning Practical-II	-	-	3	3	50	-	50	100	4
TT-214-F	Weaving Practical-II	-	-	3	3	50	-	50	100	4
TT-216-F	Fabric Analysis	-	-	2	2	50	-	50	100	4
TT-218-F	Computer Aided Textile Designing	-	-	2	2	50	-	50	100	4
Total		18	6	10	34	500	600	200	1300	

TT-202-F MAN-MADE FIBRE PRODUCTION (COMMON WITH TC)

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

UNIT 1

General definitions related to man-made/manufactured fibres. Introduction to manufacturing processes of these fibres. Study of various spinning systems: melt, wet & dry spinning – basic principles. Brief details of spinning head, spinneret, quench chamber, drying chamber & coagulation bath. Spin finish application.

UNIT – II

Regenerated fibres: Viscose rayon – detailed manufacturing process with reactions at each stage. Polynosics, Super high wet modulus rayons, Brief manufacturing processes of lyocell and tencel fibres.

UNIT – III

Polyacrylonitrile: Addition of comonomers, continuous suspension, polymerization technique. Solution spinning techniques, Coagulation bath variables, Macrovoid generation and their remedies, Effect of spinning variables on structure and properties of gel and final fibres.

Polypropylene: Polymerisation technique (suspension & gas phase), Superactive catalysts, spinning of filaments, Major drawbacks and their possible remedies.

UNIT – IV

Polyethylene terephthalate: Polymerisation technique (batch & continuous), side reactions, degradation reactions – their control, Production of filament yarns and staple fibres, Brief description of manufacturing technique of high tenacity polyethylene terephthalate.

Nylon 6 & nylon 66: Polymerisation techniques in VK tube (batch & continuous), side reactions, Integrated continuous process for nylon 66, Filament spinning technique.

TT-204-F YARN MANUFACTURE-II

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

UNIT I

Objectives of draw frame, Principle of roller drafting and weighting in draw frame, Concept of Ideal drafting and drafting wave, drafting forces, drafting roller arrangements, doubling, blending and hooks removal at draw frame, coiling systems. Principle of roller setting, Processing of cotton and man-made fibre on draw-frame, Auto-levelling, Roller lapping – reasons and remedies, Performance assessment of Draw frame, Calculation related to Draw frame, modern developments in draw frame.

UNIT II

Objectives of lap preparation, system of lap preparation, study of sliver lapper, ribbon lapper and super lapper machines, Modern concept of lap preparation, Configuration of fibre feed and its effect on quality of product, Objective of Combing, noil percentage and fractionation efficiency of comber, Different types of comber, Detailed study of the Nasmith type comber, Timing diagram for combing operation.

UNIT III

Timing and setting of comber for different classes of cotton, control of noil percentage, Type of feed, Influence of type of feed on noil extraction and cleanliness of sliver, Performance assessment of Combing, Calculations related to combing, Recent developments in combing, Objectives of speed frame, conventional and modern roving processes, Mechanism of drafting, twisting and winding.

UNIT IV

Basic principle of designing of cone drum, Differential motions, Building motions, their objects and types, Roving tension, coil spacing, drafting systems, common defects in roving packages, their causes and remedies, Processing of man-made fibres on speed frame, Performance assessment of Speed frame, Calculations related to speed frame, Recent developments in speed frame.

Reading List

Title	Author
Spun Yarn Technology, Vol I& II	A Venkatasubramani
Short Staple Spinning Vol I, II, III & IV	W Klein
Spinning of Manmade & Blends on Cotton System	KR Salhotra
Manual of cotton spinning (Drawframes, Combers and speedframes)	Frank Charnley
Cotton Spinning	WS Taggart
Cotton Drawing & Roving	GR Merrill

TT-206-F FABRIC MANUFACTURE-II

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Definitions of Knitting and Knitted fabrics, stitch. Differences between woven and knitted fabrics, Classification of knitting, differences between weft and warp knitting, characteristics of weft knit and warp knit structures.

Weft Knitting: Classification of weft knitting machines. General description of weft knitting machines viz. Flat and Circular, primary knitting elements, types of Knitting Needles (Latch, bearded and compound), their knitting cycle, comparison and use.

Unit II

Knit, Tuck and Float Stitches, their formation in machine, properties and applications. Basic weft knitted structures (Plain, Rib, Interlock, Purl) and their properties. Description of machines: Non sinker and sinker single jersey, Rib and Interlock double jersey and Purl knitting machine along with knitting cycle, design of cams.

Unit III

Warp Knitting: Classification of warp knitting machines. Description and knitting cycle of Raschel and Tricot machines, Prominent structures like Tricot, Lock knit, Reverse Lock knit, Satin, Sharkskin and their uses.

Patterning: Patterning Devices and their mechanism: multi-cam track, pattern wheel jacquard, pattern cylinder and electronic jacquard.

Unit IV

Knitted Fabric Geometry and calculations: Tight and distorted knitted structure geometry. Derivations of formulae and calculations for fabric width, Tightness factor, Stitch density, Areal density, Fabric cover and knitting machine production.

State of Knitted fabrics: Dry, Wet and Finished relaxed.

Characteristics of yarns used for knitting.

Major Knitted fabric faults, their causes and remedies.

Developments in knitting technology

Reading List

Title	Author
Knitting Technology	Ajgaonkar
Warp Knitting Production	S Ray, Melliand
Knitting Technology	David J Spencer
Circular Knitting	Iyer, Chandrasekhar

TT-208-F FABRIC STRUCTURE (COMMON WITH FAE)

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Basic Concepts: Importance of fabric structure, Classification of fabrics, Notation of Weave, drafting plan, peg plan and denting.

Simple Weaves: plain weave and its derivatives, ornamentation,

Unit II

Twill weave and its derivatives, ornamentation, effect of twist on prominence of twill lines, Sateen and Satin and their extensions. Crepe weave, diamond,

Unit III

mockleno, Cork-screw, honey comb, huck-a-back, bedford cords, welt and pique fabrics.

Unit IV

Decorative Weaves: Extra warp and weft figuring, Backed cloth, Double cloth, treble and multiply belting structures.

Draft, peg plan and denting plan for all simple and decorative weaves, Particulars of common varieties of these fabrics.

Reading List

Title

Textile Design and Colour
Watson's Advanced Textile Design
Grammar of Textile Design
Woven Cloth Construction

Author

Watson
W Watson
H Nisbet
Marks and Robinson

TT-210-F COMPUTER AIDED DESIGNING (COMMON WITH TC)

L T P
3 1 -

Class work : 50
Exam : 100
Total : 150
Exam Duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Fundamentals of CAD: Definition, History , Hardware and Software requirements of CAD, Design Process, Application, Use, Creating the manufacturing Data base and benefits of CAD.

Hardware in CAD: Introduction, Design workstation, Graphics terminal, input and output devices, central processing unit and secondary storage.

Unit II

Computer Graphics Software and Database – Introduction, Software configuration of a graphic system, functions of a graphic package, transformations, Database structure and content, wire frame versus solid modeling, CAD features and CAD integration. Drawing aids, free hand sketching, Enhancement drawing. Feature based design process.

Unit III

Introduction to Computer Graphics: Computer Graphics and its applications, Computer Graphics Hardware and Software. Two dimensional graphics primitives – Point and Lines, Line drawing algorithms: DDA, Bresenham’s; Circle drawing algorithms: midpoint circle drawing algorithm, Bresenham’s circle drawing algorithm.

Unit IV

Introduction to Software Packages:

Introduction to Auto-CAD: Features, Basic Drawing Techniques: Drawing Line, Circle, Rectangle, Arc, Polyline, Ellipse, Elliptical Arc, Polygons, Donuts, Corner rounding, Chamfering, Displacing, Duplicating, Removing Objects.

Introduction to Corel Draw: Features and basic drawing techniques.

Introduction to Photoshop: Features and basic drawing techniques.

Reading List

Title

Author

Computer Aided Design & Manufacturing

Mikcle P Groover,
Emory W. Zimmers Jr

Computer Graphics Principles & Practices

James D Foley, Andeies
Van Da Shvan K

Computer Graphics

Feiner Steven, John F Hughes
Donald Mearn & M Pauline
Baker

Mastering AUTOCAD 2004 & AUTOCAD LT
2004

George Omura

MA-201-F APPLIED STATISTICS & OPERATIONS RESEARCH (COMMON WITH TC)

L T P
3 1 -

Class work : 50
Examination : 100
Total : 150
Exam duration: 3 hrs

NOTE: Examiner will set 9 questions in total, with two questions from each unit and one question covering all sections which will be Q.1. This Q.1 is compulsory and of short answers type. Each question carries equal mark (20 marks). Students have to attempt 5 questions in total at least one question from each unit

Unit I

Measures of Dispersion: Range, quartile deviation, standard deviation, moments, skewness and Kurtosis (definition, properties and associated numerical only)

Regression and Correlation: Karl Pearson's coefficient of correlation, rank correlation and line's of regression, curve fitting (linear, parabolic, and exponential)

Unit II

Theory of Probability: The concept of probability, additive and multiplicative laws of probability (Statements and associated numerical only)

Probability Distributions: Random variate, mathematical expectation, theorems on expectation, discrete and continuous probability distributions (definition and problems only).

Univariate Binomial, Poisson and Normal distribution (properties and applications)

Unit III

Sampling Theory: Population and sample, types of sampling, sampling distribution of means and proportions (definition only)

Tests of Hypothesis and Significance: Definition of statistical hypothesis, null hypothesis, type I and type II errors and level of significance. Tests of significance for large and small samples (discussion) problem based on X^2 test for goodness of fit, t-test, F-test and Analysis of variance (one way and two way classifications)

Unit IV

Operations Research: Linear programming problem (formulation and solution by graphical approach only). Transportation problem including time minimizing problems, Basic Assignment problem, sequencing problems (n jobs, 2 machines and n jobs, m machine problems)

Project scheduling by PERT/CPM: Definition of network, critical path, floats, finding of critical path and floats.

Reading List

Title

Mathematical Statistics

Business Statistics

Theory and problems of probability and Statistics

Operation Research

Operations Research for Management

Higher Engineering Mathematics

Author

Ray and Sharma

Gupta & Gupta

Murray P Spiegel

P.K. Gupta, Manmohan

Gupta & Sharma

B.S. Grewal

TT-212-F SPINNING PRACTICAL-II

L	T	P
-	-	3

Class work	:	50
Examination	:	50
Total	:	100
Exam duration:		4 hrs

Practice in handling, operation, setting and gauging draw frame, Lap former, comber and simplex. Study of constructional details of machines: various control and change places etc. Practice in checking the quality of comber lap, sliver and waste analysis, common fault and remedies, Calculations pertaining to gearing, speeds, constant, draft and production etc.

TT-214-F WEAVING PRACTICAL-II

L T P
- - 3

Class work : 50
Examination : 50
Total : 100
Exam duration: 4 hrs

Study of construction, working and related calculation/settings of secondary and auxiliary motions in shuttle looms (negative let-off, 5 & 7 wheel take-up, warp protector, warp and weft stop, automatic pirn change)

Study of weft knitting process: Specifications, path of yarn, construction, operation of circular and flat bed weft knitting machines, primary knitting elements and their working, yarn feed, stop motions, patterning possibilities. Weft knitted fabric sample preparation.

TT-216-F FABRIC ANALYSIS

L T P
- - 2

Class work : 50
Examination : 50
Total : 100
Exam duration: 4 hrs

Basic principles involved in analysis of woven fabric and estimation of data for cloth reproduction. Identification of materials, type of yarns used in their construction, weave analysis, sett and cover factor. Warp Count, Weft Count and weight calculations for simple and compound woven structures, Specifications for standard woven fabrics.

TT-218-F COMPUTER AIDED TEXTILE DESIGNING (COMMON WITH TC)

L T P
- - 2

Class work : 50
Examination : 50
Total : 100
Exam duration: 4 hrs

Introduction to graphical representations: live graphics, pixel graphics, Graphic systems and peripherals. Graphic standards/formats, file conversion initiatives, drawing simple geometric figures. Implementation of various aspects and commands of Corel Draw including 2D and 3D graphic design, other Design Software (Textile and Garments) and drawing objects such as Line, Circle, Arc, Ellipse, Elliptical Arcs, Xlines, Rays, Multiline, Polylines, Rectangles, Polygons, Donuts and Spline etc.

Introduction to Textile Design Software, Uses of various tools, Selection and creation of motifs, uses of colour tools, knowledge of repeats, selection and creation of fancy yarns, selection and creation of different types of weaves, Development of dobby and jacquard designs using CAD software.