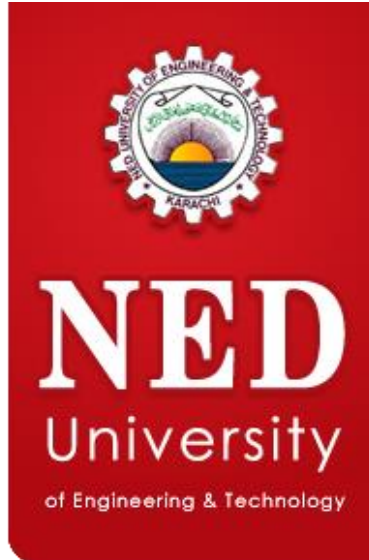


NED UNIVERSITY OF ENGINEERING TECHNOLOGY
TEXTILE ENGINEERING DEPARTMENT



CURRICULUM
OF
BACHELORS OF TEXTILE SCIENCES

**Curriculum Re-structuring
BS Textile Sciences program
Textile Engineering Department
NED University of Engineering & Technology**

Applicable from Batch 2014-15

First Year (FS)				First Year (FS)					
Spring Semester / 1st Semester				Fall Semester / 2nd Semester					
Subject name		Credit hours		Subject name		Credit hours			
TE 111 Textile Chemistry		3	1	4	IM 207 Computer Programing & Drafting		2	1	3
ME 101 Engineering Mechanics		3	1	4	MT 114 Calculus		3	0	3
HS 104 Functional English		3	0	3	HS 105 Pakistan Studies/ HS 127 Pakistan Studies for Foreigners		2	0	2
TS 109 Introduction to Textiles		2	1	3	PH 122 Applied Physics		3	1	4
TS 102 Textile Raw Material-I		2	1	3	TS 108 Textile Raw Material-II		3	0	3
Total				17	Total				15
Second Year (SS)				Second Year (SS)					
Spring Semester / 3rd Semester				Fall Semester / 4th Semester					
Subject name		Credit hours		Subject name		Credit hours			
HS 205 Islamic Studies/ HS 209 Ethical Behaviour		2	0	2	MF 303 Applied Economics for Engineers		3	0	3
ME 217 Elements of machine Design & Dynamics		3	0	3	TS 206 Yarn Production Processes		3	1	4
TS 209 Colour Science		2	1	4	TS 208 Weaving Preparatory Processes		3	1	4
TS 205 Pre-Spinning Processes		3	1	4	TS 245 Pre-treatment in Textiles		3	1	4
TS 207 High Performance Fibres		3	0	3	TS 233 Textile Testing-1		3	1	4
MT 225 Linear Algebra & Ordinary Differential Equation		3	0	3					
Total				19	Total				19
Third Year (TS)				Third Year (TS)					
Spring Semester/ 5th Semester				Fall Semester/ 6th Semester					
Subject name		Credit hours		Subject name		Credit hours			
TS 341 Advanced Yarn Production Processes		3	1	4	TS 354 Knitting Technology		3	0	3

TS 343 Weaving Mechanism	3	1	4	TE 307 Utilities for Textile Industry	3	1	4
TE 305 Quality Control in Textiles	2	0	2	TS 358 Textile Printing	3	1	4
TS 356 Textile Dyeing	3	1	4	TS 361 Textile Testing-II	3	1	4
HS 304 Business Communication & Ethics	3	0	3	HS 405 Organizational Behaviour	3	0	3
Total			17	Total			18
Final Year (BS)				Final Year (BS)			
Spring Semester / 7th Semester				Fall Semester / 8th Semester			
Subject name		Credit hours		Subject name		Credit hours	
TS 455 Advanced Fabric Manufacturing Techniques		3 0 3		HS 403 Entrepreneurship		3 0 3	
TE 452 Textile Finishing		3 1 4		TE 454 Textile Merchandizing		3 0 3	
TE 318 Textile & Environment		2 0 2		TS 470 Technical Textiles		3 0 3	
TS 458 Project		- - -		TS 458 Project		0 6 6	
TE 453 Garment Manufacturing		3 0 3		TE 406 Textile Production Management		3 0 3	
Total		12		Total		18	

TE 111: TEXTILE CHEMISTRY

Liquids and solutions:

Viscosity, colloidal solution, coagulation, adsorption, absorption and diffusion. Intermolecular forces in liquids, surface tension. osmosis and osmotic pressure, desalination of saline water by reverse osmosis. Ways of expressing concentration of solutions

Electrochemistry:

Theories on acids, bases, electrolytes, buffers. Conductance of electrolytes & measurement of electrolytic conductance & cell constant, pH scale & its measurement, buffer solution & Handersen –Hasselbalch equation

Aromatic carbocycles:

Concept of a dye and a pigment, parts of a dye molecule. Organic and inorganic raw materials for the manufacturing of dyes intermediates, Synthesis of dyestuff intermediates through chemical conversion reactions. Resonance and orbital theory of color

Carbohydrates:

Mono, di & polysaccharides, sources and structure of Starch & cellulose, properties and uses of starch & cellulose. chemistry of cellulose and its degradation products. Physical properties of cellulosic materials

Surface active agents:

Soap and soap manufacturing, theory of detergency, synthetic detergents. Surfactants (anionic, cationic, non-ionic & amphoteric) and their properties. Laundry detergents

Chemical auxiliaries used in Textile processing:

Enzymes and Catalyst; mechanism and application, Salts, wetting agents, sequestering/ chelating agents, dispersing and solubilizing agents, levelling and dye-fixing agents. Waxes

ME 102: ENGINEERING MECHANICS

Statics of Particles:

Forces in a plane; Newton's First Law, Free-body diagram; Forces in space (rectangular components); Equilibrium of a particle in space

Kinematics of Particles:

Rectilinear and curvilinear motion of particles; Components of velocity and acceleration; Motion relative to a frame in translation

Kinetics of Particles:

Newton's Second Law; Dynamic equilibrium; Rectilinear and curvilinear motion; Work and energy; Kinetic energy of particle; Principle of Work and Energy; Conservation of energy;

Impulse and omentum; Impulsive forces and conservation of momentum; Impact, direct and oblique; Conservation of angular momentum

Rigid Bodies:

Equivalent systems of forces; Principle of transmissibility; Moment of a force; Couple; Varignons Theorem. Centre of gravity of a three-dimensional body and centroid of a volume. Moments of inertia, radius of gyration, parallel axis theorem

Equilibrium of Rigid Bodies:

Free-body diagram; Equilibrium in two and three dimensions; Reaction of supports and connections; Equilibrium of two-force and three-force bodies.

Kinematics of Rigid Bodies:

General Plane motions; Absolute and relative velocity and acceleration

Plane Motion of Rigid Bodies:

Forces and acceleration; Energy and momentum; Conservation of linear and angular momentum

Friction:

Laws of dry friction; Angles of friction; Wedges; Square-threaded screws; Journal and thrust bearings; Belt friction

Analysis of Structures:

Internal forces and Newton's Third Law; Simple and space trusses; Joints and sections; Frames and machines. Forces in cables

HS 104: FUNCTIONAL ENGLISH

Listening

- Types of Listening
- Problems in listening and coping strategies
- Listening skills, Sub skills
- Practice in Listening

Note taking

- Techniques for taking notes (from lectures, from books)
- Note taking in different forms paragraphs (points, figures, processes, tables, graphs etc.)

Vocabulary development

- Enhancing current vocabulary to reflect a better usage of words in spoken and written language
- Tips / strategies in vocabulary enhancement

- Practice in vocabulary development

Reading

- Reading skills, Sub skills
- Reading comprehension levels
- Reading strategies
- Reading practice through variety of reading texts and comprehension exercises
- Beyond reading [outline, précis, speech and presentation]

Writing

- Process of Writing
- Informal Writing strategies

Writing Correctly

- a. Sentence structure and punctuation
- b. Error correction

Paragraphs

- a. Structure
- b. Types
- c. Topic and the topic sentence
- d. Unity
- e. Adequate development and coherence in paragraphs

Essays

- a. Types
- b. Five paragraphs, long essays
- c. Structure (thesis statement and the paragraphs)

Short Reports

- a. Structure
- b. Format and types (informational and analytical)

Letters

- a. Elements, Styles
- b. Formatting (digital letter writing)
- c. Organization and structure of the letter
- d. Types (Routine requests and intimation, invitation, thank you and condolence letters etc.)

TS 109 INTRODUCTION TO TEXTILES

Fibers: Types, properties and uses of Natural, Regenerated and synthetic fibers.

Ginning: Objectives and processes.

Textile Yarn Manufacturing Processes:

Yarn preparatory processes, carding, drawing, combing and spinning.

Winding: Study of different yarn packages, winding processes and machines.

Fabric forming processes:

Weaving; difference between weaving and knitting; warping, sizing, primary, secondary and auxiliary motions of loom, different weft insertion mechanisms, Knitting, Types of Knitting and basic Knitted Structures.

Wet processing: scouring, bleaching, Mercerization, Dying, Printing and Finishing.

TS 102 TEXTILE RAW MATERIAL-I

Textile Fibers: Definition and classification of textile fibers.

Vegetable Fibers:

Cotton: introduction and types, cultivation, harvesting and picking of cotton, morphological structure, physical properties, chemical properties and end uses of cotton, varieties of cotton and cotton grading.

Bast Fibers: Fibers such as jute, flax ramie, etc. production, processing, properties and end uses of bast fibers.

Leaf Fibers: Fibers such as abaca, kenaf, hemp, and sisal fibers. Production, processing, properties and end uses of leaf fibers.

Animal Fibers:

Hair Fibers: introduction, classification, production, processing, properties and uses of wool fiber, grading of wool, introduction of fibers such as camel, Mohair, Cashmere, Alpaca and Angora.

Silk: production, properties and uses of silk yarn.

Mineral Fibers:

Introduction, production, processing, properties and uses of natural mineral fibers such as asbestos

IM 207 COMPUTER PROGRAMING & DRAFTING

Introduction:

Introduction to programming concepts & languages, Compilation & Interpretation, Overview of modular programming, ASCII character set.

Building Blocks:

Identifiers and keywords, Data-types, Variables and Constants, Statements and Operators, Input and Output Functions.

Branching Statements:

Conditional branching and Looping (Counter and condition controlled loops).

Subroutine:s

A brief overview, Defining a subroutine, Accessing a subroutine, Passing arguments, Returning values and Recursion.

Arrays & Strings:

Defining an array, Referring to individual elements of an array, Processing an array, Multidimensional arrays, String handling and Manipulation, Overview of pointers.

Computer Aided Drafting:

Introduction, Application of computers in drafting and designing, Methods for creating drawing entities, Common editing features, Dimensioning with variable setting, Printing and Plotting.

MT 114: CALCULUS

Set and Functions

Define rational, irrational and real numbers; rounding off a numerical value to specified value to specified number of decimal places or significant figures; solving quadratic, and rational inequalities in involving modulus with graphical representation; Definition of set, set operations, Venn diagrams, DeMorgan's laws, Cartesian product, Relation, Function and their types (Absolute value, greatest integer and combining functions). Graph of some well-known functions. Limit of functions and continuous and discontinuous functions with graphical representation.

Differential Calculus

Differentiation and Successive differentiation and its application: Leibnitz theorem. Taylor and Maclaurin theorems with remainders in Cauchy and Lagrange form, power series. Taylor and Maclaurin series, L Hopitals rule, extreme values of a function of one variable using first and second derivative test, asymptotes of a function, curvature and radius of curvature of a curve, partial differentiation, exact differential and its application in computing errors, extreme values of a function of two variables with and without constraints. Solution of non-linear equation, using Newton Raphson method.

Integral Calculus

Indefinite integrals and their computational techniques, reduction formulae, definite integrals and their convergence. Beta and Gamma functions and their identities, applications of integration. Centre of pressure and depth of centre of pressure.

Sequence & Series:

Sequence, Infinite Series, Application of convergence tests such as comparison, Root, Ratio, Raabe's and Gauss tests on the behavior of series.

Complex Number

Argand diagram, De Moivre formula, root of polynomial equations, curve and regions in the complex plane, standard functions and their inverses (exponential, circular and Hyperbolic functions).

HS 105: PAKISTAN STUDIES

An Outline of Emergence of Pakistan:

A brief historical survey of Muslim community in the sub-continent. War of Independent 1857 and Aftermath. Sir Syed Ahmed Khan, Development of Two Nation Theory. Formation of Muslim League. Lucknow Pact. Khilafat & Non-Cooperation Movement. Political Events from 1924 to 1937. Pakistan Resolution - Struggle for Pakistan from 1940 to 1947. Emergence of Pakistan

Land of Pakistan:

Geophysical conditions, Territorial situation and its importance, Natural Resources - Minerals and Water

Constitutional Process:

Early effects to make constitution - Problems and issues. Constitution of 1956 and its abrogation. The constitution of 1962 and its annulment. Constitutional and Political Crisis of 1971; The constitution of 1973. Recent constitutional developments

Post Independence Development:

Education in Pakistan; Planning & Development in the Field of Education. Development of Science and Technology with special reference to Engineering and Architecture. Brief survey of Pakistan Economy: Industrial and Agricultural Development. Internal and external trade. Economic planning and prospects

Cultural Developments in Pakistan:

Definition, Contents and Contributing factors in culture, Development of Art, Philosophy and literature

Foreign Policy:

Relations with neighbors, Super powers and the Muslim World

HS 127: PAKISTAN STUDIES FOR FREIGNERS

Chapter 1 – Land of Pakistan

- Land & People – Physical features and demography
- Geographical and strategic importance of Pakistan
- Natural resources – Mineral, water, and power
- Natural Landscape

- Environmental issues in Pakistan
- Cultural heritage: important remnants of ancient civilizations in Pakistan

Chapter 2 – Creation of Pakistan

- A brief Historical survey of Muslim community in the sub-continent
- Two-Nation theory – its origin & development
- Rationale for Pakistan – Factors leading to the demand of Pakistan
- Emergence of Pakistan
- Role of Quaid-e-Azam the struggle for Pakistan

Chapter 3 - Government & Politics in Pakistan

- Political History of Pakistan – A brief account (1947 to date)
- Constitution of Pakistan 1973 – Salient features
- Governmental structure – Federal, Provincial and Local

Chapter 4 – Pakistan in the Community of Nations

- An overview of Pakistan’s foreign policy
- Relations of Pakistan with neighbors, Super Powers, and the Muslim World

Chapter 5 – Pakistan’s Stand Point on Human Rights

- Constitutional provisions
- Comparative analysis of Western and Islamic perspective of Human Rights
- Pakistan’s Stand on national and international level

PH 122: APPLIED PHYSICS

Introduction:

Scientific notation and significance figures. Types of errors in experimental measurements. Units in different systems. Graphic techniques (Log, semi,-log and other non linear graphs)

Vectors:

Review of vectors, vector derivatives. Line and surface Integrals. Gradient of a scalar

Mechanics:

The limits of Mechanics. Coordinate systems. Motion under constant acceleration, Newton Laws and their applications. Galilean invariance. Uniform circular motion. Frictional forces. Work and energy. Potential energy. Energy conservation. Energy and our environment. Angular momentum

Electrostatics And Magnetism:

Coulombs law. Electrostatic potential energy of discrete charges. Continuous charge distribution. Gauss’s law. Electric field around conductors. Dielectrics. Dual trace oscilloscope with demonstration

Magnetic field. Magnetic force on current. Hall effect. Biot-savart Law. Ampere's Law. Fields of rings and coils. Magnetic Dipole. Diamagnetism, Paramagnetism, and Ferromagnetism

Semiconductor Physics:

Energy levels in a semiconductor. Hole concept. Intrinsic and Extrinsic regions. Law of Mass Action. *P-N* junction. Transistor. Simple circuits

Waves and Oscillations:

Free oscillation of systems with one or more degrees of freedom Solution for Modes. Classical Waves equation. Transverse modes for continuous string. Standing waves. Dispersion relation for waves. LC network and coupled pendulums. Plasma oscillations

Optics and Lasers:

Harmonic traveling waves in one dimension. Near and far fields Two-slit interference. Huygens Principle. Single slit diffraction. Resolving power of optical instruments. Diffraction Grating

Lasers. Population inversion. Resonant cavities. Quantum efficiency. He-Ne, Ruby and CO₂ lasers. Doppler effect and sonic boom.

Modern Physics:

Inadequacy of classical physics, Planck's explanations of black body radiation Photoelectric effect, Compton effect. Bohr theory of Hydrogen atom, Atomic spectra, Reduce mass, De-Broglie hypothesis Braggs Law, Electron microscope, Uncertainty relations Modern atomic model, Zeeman effect, Atomic nucleus, Mass-energy relation, Binding energy, Nuclear forces and fundamental forces, Exponential decay and half-life. Radioactive equilibrium in a chain, Secular equilibrium, Nuclear stability, Radiation detection instruments, Alpha decay, Beta decay, Gamma decay attenuation Nuclear radiation hazards and safety, Medical uses of Nuclear Radiation. Fission, Energy release. Nuclear Reactors. Breeder Reactor, Nuclear Fusion

TS 108 TEXTILE RAW MATERIAL-II

Fundamental Concepts:

Monomers and Polymers, degree of polymerisation, classification of polymers, Mechanisms and methods of polymerisation.

Structure of polymers: Amorphous and crystalline regions. Chemical bonds in important textile polymers. Correlation of molecular structure and properties of polymers in solution and in bulk.

Regenerated Fibers:

Manufacturing methods of viscose, acetate, tencel and lyocell fibers. Their properties and uses in textile industry.

Synthetic Fibers:

Manufacturing methods of polyester, polyamide and acrylic fibers. Their properties and uses in textile industry. Manufacturing methods of various elastane fibers. Their properties and uses in textile industry

HS 205: ISLAMIC STUDIES

Fundamentals of Islam:

Tauheed: Arguments for the Oneness of God. Impact of Tauheed on human life. Place of Man in the Universe; Purpose of Creation; Textual study of Surah Al-Rehman and Al-Furqan; Prophethood; Need for Prophet, Characteristics of a Prophet, Finality of Prophethood. Seerat-Life of the Prophet as Embodiment of Islamic Ideology. Faith in the Hereafter Akhrat. Effects of the belief on worldly life

Ibadat:

Concept of Ibadat, Major Ibadat-Salat, Saom, Zakat, Hajj and Jihad

Basic Sources of Shariah:

The Holy Quran: Its revelation and compilation. The authenticity of the text. Hadith: Its need authenticity and importance. Consensus Ijma, Analogy Qiyas

Sources of Knowledge:

Islamic approach to intuition, Reason and experience. Revelation Wahi as a source of knowledge

Moral and Social Philosophy of Islam:

The concept of good and evil. Akhlaq-e-Hasna with special reference to Surah Al-Hujrat. Professional Ethics Kasb-e-Halal

Islamic Political Principles:

Salient features of the Islamic state. Madina character. Responsibilities of the Head of the State. Rights and Duties of citizens

Economic Order of Islam:

Right to Property. System of Taxation. Distribution of Wealth Zakat and Ushar. Interest Free Economy Shirakat and Muzarabat

Islam as Living Force:

Application of Islamic Teachings to the Socio-Economic development in the 20th century

ME 217 ELEMENTS OF MACHINE DYNAMICS & DESIGN

Machine Dynamics

Kinematics of Motion; kinetics of Motion; Simple Crank and Cam Mechanisms; Linkages; Types of Links; Structure; Kinematic Pair; Mechanism; Cams

Principle of Design

Mechanical properties of Materials; Elasticity; Plasticity; Modulus of Resilience; Modulus of Toughness; Ductility, Brittleness; Endurance limits Hardness; Creep; Stress concentration; Notch Sensitivity; Wear, Theories of Failures including Fatigue failure; Soderberg and Goodman Diagrams; Design Parameters and Operating Conditions; Safety and Reliability in Design

Introduction to Design of Simple Machine Elements

Joints: Knuckle, Cotter and Universal joints; Threaded and Riveted Fasteners

Couplings: Flanged and Muff Coupling, Flexible Coupling, Universal Coupling, Oldham Coupling, Chain Coupling, Gear Coupling, Design of Key and Pins; Fluid Couplings.

Clutches: Friction Clutches; Types of Friction Clutches; Design of Single Disc or Plate Clutch, Multiple Disc Clutch, Cone Clutch, Centrifugal Clutch.

Springs: Types of Springs, Helical Spring, Terms used in Helical Spring, Stresses in Helical Spring of Circular wire, The Curvature Effect; Deflection in Helical Spring of Circular wire Eccentric loading; Buckling of compression Springs, Energy stored in springs, Springs in Series and Parallel, Concentric spring, Leaf Springs,

Flexible Mechanical Elements: Belts, Flat and Round Belt drives, V Belts, Timing Belts, Design of a Belt Conveyor; Chain Drives, Roller Chains; Design of Chains including Drag Chain Conveyor; Apron Feeder,

Brakes and Dynamometers: Types of Brakes; Materials of brake lining; Block or Shoe Brake; Simple Band Brake; Differential Band Brake; Band and Block Brake; Internal Expanding Brake; Dynamometer; Type of Dynamometer; Prony Brake Dynamometer

HS 206: ETHICAL BEHAVIOUR

Nature, Scope and methods of Ethics and religion. Ethical teachings of world religions. Basic Moral concepts, Right and wrong, Good and evil

An outline of Ethical systems in philosophy; Hedonism, Utilitarianism, Rationalism and Kant. Self Realization Theories, Intuitionism

Islam Moral Theory:

Ethics of Quran and its philosophical basis. Ethical precepts from Quran and Hadith and promotion of moral values in Society

TS 209 COLOUR SCIENCE

Specification of Colour:

Importance and application of colour, Elements of colour perception, Standard illuminants, Visual perception and defective colour vision Subjective and Objective methods of colour specification, Opponent color theory and the CIELAB Concept

Measurement of Colour:

Spectrophotometer: components and effect of viewing geometry, sample size, specular component and different illuminants on colour evaluation, types of spectrophotometers Colorimeter, difference between colorimeter and spectrophotometer

Color Difference evaluation:

Acceptability and Perceptibility of colour in setting up tolerance limits, color difference formulae: CIE DE1976, CMC, CIE DE94, CIEDE2000

Assessment of Whiteness and Degree of Yellowness:

Formulae for Computing Whiteness Indices and Yellowness Index

Colour matching:

Recipe prediction for matching a shade Theory of Computer Colour Matching, Accuracy of Match Prediction, Preparation of Database , Data Verification and Rectification . Measurement of Reflectance, Compatibility of Dyes , Batch Correction

Strength Analysis of Dyes from Solution:

Lambert-Beer Law , Determining Strength Ratios from a Mixture of Dyes , Transmission Measurements of modern color system , Relative dye strength and tone analysis,

Shade Sorting:

Purpose, factors affecting shade sorting, difference between shade sorting and pass-fail system Shade sorting methods

TS 205 PRE-SPINNING PROCESSES

Blow room

Basic principles of the blow room. Raw material, re-usable waste, Acclimatization of the raw material. Blow room installation as a sequence of machines. The components of blow room machines, General factors influencing opening and cleaning. Description of pre-cleaning and fine-cleaning machines of conventional and modern blow rooms. Blending purpose, evaluation and types of blending operations. Structure and functioning of blow room scutcher. Transport of material, Machine damage prevention and fire protection, metal detection. Foreign Contamination detection and removal system; Waste management; Evaluation of blow room output material. Running and cleaning efficiency.

Carding Process

Carding principles; the objectives of pre-carding, carding and post-carding zones; the operating zones of the card, The machine drive. Card clothing, grinding and geometry of card clothing. Integrated grinding system (IGS).Auto-leveling equipment, Principles of short-term, medium-term and long-term auto-leveling, machine settings and auxiliary equipment, Running and cleaning efficiency; Evaluation of card sliver.

Drawing Process:

Task of the draw frame; Theory of roller drafting; equalizing, parallelizing, blending, dust removal, creel (sliver feed), the drafting arrangement, coiling, the delivery arrangement, condensing, sliver coiling, can changers. Auto-leveling at draw frame. Evaluation of draw frame sliver.

Calculations:

Calculation of draft count and production of blow room, carding and draw frame

TS 207 HIGH PERFORMANCE FIBRES

Non conventional fibres, Concept of functionality in Textiles, Fibres used for specific purpose

Aramid Fibres :

High strength high modulus, flame retardant fibres, Manufacturing techniques, structure, properties, end uses

Polyethylene and polypropylene Fibres:

Light weight fibres Geo-Textiles, Polymerization, Manufacturing techniques, structure, physical and chemical properties, applications such as Geo-textiles

Carbon Fibres:

High strength high modulus fibre, Manufacturing techniques, sources of manufacturing, structure, physical and chemical properties, end uses such as products used in aero-space industry

Glass Fibres

Commonly used for manufacturing composites and insulators, Methods of manufacturing, physical and mechanical and chemical properties, applications

Chemical Resistant Fibres

Raw material for producing chemical protective clothing Manufacturing techniques, chemical resistance and mechanical properties

Thermally Resistant Fibres

Raw material for manufacturing heat protective clothing, Methods for manufacturing, Chemical

composition, Mechanical and thermal properties

MT 225: LINEAR ALGEBRA & ORDINARY DIFFERENTIAL EQUATIONS

Linear Algebra:

Linearity and linear dependence of vectors, basis, dimension of a vector space, field matrix and type of matrices (singular, non-singular, symmetric, non-symmetric, upper, lower, diagonal tri-diagonal matrix), Rank of a matrix using row operations and special method, echelon and reduced echelon forms of a matrix, determination of consistency of a system of linear equation using rank, transitions matrix, basic concept of tensors, eigen value and eigen vectors of a matrix, diagonalization, Cayley-Hamilton theorem. Applications of linear algebra in Engineering

Euclid Space and Transformation:

Geometric representation of vector, norm of vector, Euclidean inner product. projections and orthogonal projections, Euclidean n spaces n properties Cauchy- Schwarz inequality, Euclidean transformations, apply geometric transformations to plane figure, composition of transformations

1st Order Differential Equations:

Basic concept; Formation of differential equations and solution of differential equations by direct integrations and by separating the variables; Homogeneous equations and equation reducible to homogeneous form; Linear differential equations of the order and equations reducible to the linear form; Bernoulli's equations and orthogonal trajectories; Application in relevant Engineering

2nd and Higher Orders Equations:

Special types of 2nd order differential equations with constant coefficients and their solution; The operator D ; Inverse operator $1/D$; Solution of differential by operator D method; Special cases, Cauchy's differential equations; Simultaneous differential equations; simple application of differential equations in relevant Engineering

Laplace Integral & Transformation:

Definition, Laplace transforms of some elementary functions, first translation or shifting theorem, second translation or shifting theorem, change of scale property, Laplace transform of the n th order derivative, initial and final value theorem Laplace transform of integrals, Laplace transform of functions $t^n F(t)$ and $F(t)/t$. Laplace transform of periodic function, evaluation or integrals, Definition of inverse Laplace transform and inverse transforms, convolution theorem, Solutions of ordinary differential using Laplace transforms

MF 303: APPLIED ECONOMICS FOR ENGINEERS

Introduction:

Engineering economy defined; Measures of financial effectiveness; Non-monetary factors and multiple objectives; principles of engineering economy

The Economic Environment:

Consumer and producer goods; Measures of economic worth; Price, Supply, & Demand relationship; Production; Factors of production; Laws of return

Cost Concepts & Analysis:

Sunk & opportunity costs; Fixed, variable, and incremental costs; Recurring & nonrecurring costs; Direct, indirect, and overhead costs; Standard costs; Breakeven analysis; Unit cost of production; Cost-benefit analysis; Feasibility studies; Value analysis in designing & purchasing

Time Value of Money:

Simple interest; Compound Interest; Cash flow diagrams; Interest formulas; Nominal versus effective interest rates; Continuous compounding

Depreciation and Depletion:

Purpose of depreciation; Types of depreciation; Economic life; What can be depreciated?

Comparing Alternatives:

Present economy; Selection among machines, materials, processes, and designs; Payback period method; Present worth method; Uniform annual cost method; Rate of return method; Alternatives having identical lives, Alternatives having different lives

Production Concepts & Mathematical Models:

Manufacturing lead time; Production rate; Capacity; Utilization; Availability; Work in process; WIP and TIP ratios

Linear Programming:

Mathematical statement of linear programming problems; Graphic solution; Simplex method; Duality problems

Capital Financing and Budgeting:

Types of ownership; types of stock; Partnership & joint stock companies; Banking & specialized credit institutions

Industrial Relations:

Labour problems; Labour organizations; Prevention & settlement of disputes

TS 206 YARN PRODUCTION PROCESSES

Lap Forming Process:

Lap former, preparation of stock for combing, conventional and modern preparation system. Evaluation of sliver lap.

Combing Process:

Combing principles. Sequence of operations in a rectilinear comber. Combing theory. Technology of combing. Waste removal. Automation in the combing section. Comparison of carded and combed slivers.

Roving Formation:

Roving frame as a production necessity, tasks of the roving. Operating zones of the roving frame, Imparting twist, winding system. Package formation; Machine drive system, mechanical drive systems and electronic drive systems. Manual and automatic doffing, Transport of bobbins to ring spinning machine. Evaluation of roving.

Ring Spinning:

Functions and mode of operation, Ring structure and its functions. Traveller, types, shape, mass and traveler clearer. Machine drive and cop buildup. Automation, the potential for automation. Monitoring systems and auxiliary equipment. Developments in ring spinning; Compact spinning: principle and advantages of compacting

Calculations:

Calculation of draft count and production of comber, roving frame and ring frame, Mill Planning

Yarn Conditioning and Packaging:

Conventional and modern yarn conditioning systems; Merits of conditioning by autoclaves; Impact of yarn conditioning on yarn quality and productivity

TS 208 WEAVING PREPARATORY PROCESSES

Winding:

Objectives, working principle of yarn winding; types of yarn package and their building; types of winding machines; uniform build-up of cones; automatic electronic yarn clearer and its settings; yarn tensioners; patterning, reasons and their remedies; yarn faults classifying systems; basic features of auto-winders; latest developments in winding machinery; optimum process atmospheric conditions

Warping:

Warping process; types of machines (ball, direct, and indirect warping); creel types (V and parallel); advancement and tension control on warping machines; production, yarn breakage rate, efficiency and machine speed; cost factors

Sizing:

Sizing process; machine parts and their functions; types of machine and beam creel; machine drive; tension control and advanced mechanisms; yarn breakage rate; its effects and production and efficiency of the process

Classification and properties of sizing materials; sizing ingredients and their use for various types of yarns; recipe of sizing solution and mixing procedure; pick-up of sizing liquor and its governing factors; wastages & losses in sizing process; viscosity measurement of sizing liquor; count of sized yarn; variations of the process for terry towel, and denim.

Drawing-in, Knotting and Article Change Processes:

Drawing-in process: manual and automatic drawing-in; basic weaves, their drawing-in and drafting plans; accessories; drawing hooks, reed knife. Knotting and Article changing processes.

TS 245 PRE-TREATMENT IN TEXTILES**Inspection:**

Greige fabric faults and their grading systems: 2-point and 10-point System

Shearing and singeing:

Principles, methods and machineries for shearing and singeing of cellulosic material and their blends.

Desizing:

Identification of different sizes onto the fabric, Desizing mechanisms and process design for cellulosic materials and their blends, desizing of synthetic materials

Scouring:

Mechanism of removal of impurities, Processes and machinery for scouring and bleaching of cotton, wool, flax, and re-generated fibres, Bio-scouring, Crabbing and carbonization of wool. Scouring of blended fabrics.

Bleaching:

Bleaching agents in textiles and their limitations, Chemistry of bleaching for cellulosic, woolen and regenerated fibres and their blends, Role of stabilizers and process parameters in bleaching operations

Heat-setting:

Thermal behaviour of synthetic fibres, Stages and methods of heat-setting Heat-setting conditions for different kinds of fibres and blended fabrics, Effect of heat-setting on properties of synthetic fibres, machines for heat setting

Mercerization:

Conditions for mercerization and causticization, Changes in properties of cellulose on mercerization, yarn and fabric mercerization, Slack & Tension Mercerization both in the cold and hot conditions,

Pretreatment faults:

Identification and classification of faults during different pre-treatment processes and their remedial measures

TS 233 TEXTILE TESTING-I**Textile Testing:**

Objectives, General requirement and standards for textile testing

Sampling:

Selection of Samples for Testing, Techniques for fibre, Yarn and Fabric sampling

Textiles and Moisture:

Effect of Moisture on Physical Properties, Atmospheric moisture and its measurement, Regain and moisture content, Regain-humidity relation of textile, Factor affecting regain and methods of regain measurement, Control of Testing Room Atmosphere

Fibre Testing:

Determination of length and length uniformity, Fineness, Strength, Maturity, Trash Content and colour by conventional and modern testing instruments and techniques

Yarn Testing:

Determination of count, Twist, Strength, Elongation, Evenness, Hairiness of yarn by conventional and modern testing instruments Evaluation of lap, sliver and Roving irregularities and Grading of Yarn

Fabric Testing:

Measurement of fabric strength viz Tensile, Tear, Bursting, Seam Strength, stretch and recovery and their relation with usage of fabric, Assessment of fabric construction

TS 341 ADVANCED YARN PRODUCTION PROCESSES**Introduction**

Fiber characteristics, Requirements for different leading spinning technologies, Possibilities and limitations of different spinning techniques.

Rotor Spinning

The principle of rotor spinning, Structure and operation of the rotor spinning machine, Yarn waxing device, Machine and transport automation, Selection and influence of draft and yarn twist, Economics and new developments in rotor spinning.

Air-jet Spinning

Principle of operation, Raw material requirements, Yarn structure and properties, False twist and its structure, Downstream processing and end products; Economics. Comparison of air-jet and vortex spinning systems.

Friction Spinning

Principle and raw material preparation, process and machine parameters affecting product quality. Assessment of DREF-II and DREF-III yarn structures and properties.

Other Spinning Techniques

Warp spinning, Siro spinning, solo spinning, hollow spindle spinning, and Self twist spinning

TS 343 WEAVING MECHANISM

Introduction:

Warp Shedding, Filling Insertion, Beat-up, Warp Let-off and Take-up mechanisms. Auxiliary motions of loom; Control of fabric width and selvages

Woven fabric design and construction

Symbolic representation of weave, drawing-in draft, reed plan, cam draft or chain draft. Weave designs: plain; warp and filling ribs; basket weave; twill weave and its derivatives; satin weave and its derivatives; other designs

Mill Planning

Weaving based on solid carriers:

Shuttle weaving machines: Parts, mechanisms and loom timings

Projectile Weaving Machine: Picking Mechanism; Drive Transmission; Parts and functions of Picking and Receiving Units; Weft tension variation; Transfer of weft from Projectile feeder to Projectile

Types of Projectile and Projectile feeder; Phases of Weft Insertion

Calculations for Picking Force and Energy utilization; Color control change units; Tucking Unit and selvedge formation; Lubrication System

Rapier Weaving Machine: Classification of rapier machine; Drive transmission; Weft tension variations; Positive and negative tip-to-tip weft transfer; Rapier movement and velocity profile; Weft cutting and selvedge making; Weft feeder and color control systems

Humidity of weaving shed

Importance of humidity in a weaving unit, air quality in weaving shed. Types of humidification systems

TE 305: QUALITY CONTROL IN TEXTILES

Fundamentals of Probability and Statistics:

Set theory and set operations; Venn diagram; Definition of probability; Probability laws; Conditional probability; Bayes's rule

Deterministic and probabilistic data; Grouping of data; Measures of central tendency and dispersion; Calculation of mean, mode, median; standard deviation, and range, weighted average, and coefficient of variation

Random variable; discrete and continuous random variable; Mathematical expectation; Laws of expectation

Probability Distribution:

Discrete probability distributions: Uniform, Binomial, Multinomial, Hypergeometric, Poisson, & Negative Binomial distribution

Continuous probability distributions: Normal, Exponential, Weibull, Chi-square, F & T distributions. Transformation of variables; Moment generating function; Random sampling; Sampling distribution of mean; Central limit theorem

Control Charts:

Properties of the distribution of sample means, sample range estimation of standard deviation, chance and assignable causes, control charts for mean and range, control charts for mean and standard deviation, control charts for proportion defective and defects per assembly. Tests of significance to compute confidence limits

Acceptance Sampling:

Introduction, OC curve, consumer and producer risks, AQL & LTPD, sampling errors, acceptance sampling for continuous production, acceptance by variables, single, double, and sequential sampling

Quality, Reliability, & Maintainability:

Definitions, management of quality control, total quality control, Taguchi method, economic aspects of quality decisions, process capability and variability analysis, Various aspects of life testing, reliability, & maintainability, introduction to ISO 9000

Application of QC in Textile Engineering:

International and Pakistan standard of various textile products such as fibers, Yarn, filaments, woven and knitted fibers, finished goods and garments, with emphasis on cotton products

TS 356 TEXTILE DYEING

Dyestuff classification

Early attempts to classify dyes and pigments, classification of dyes based upon chemical structure and application, Colour index classification, Principle of dye selection for various fibrous substrates

Theory of dyeing

Relationship between fiber structure and dyes during the dyeing process, dyeing equilibrium, thermodynamics of dyeing, isotherms, dyeing kinetics, Essential definitions and terms used in dyeing and their explanation

Dyeing of natural fibres

Mechanisms, application methods, and various process routes of dyeing cellulosic materials with direct, reactive, vat and sulphur dyes. Dyeing of denim yarn with indigo dyes. After-treatment of textiles dyed with direct dyes Behavior of different dyes in dyeing processes

Mechanism, application method, and various process routes of dyeing protein fibres with acid dyes

Dyeing of synthetic fibres

Mechanisms of dyeing with disperse dyes, Exhaust/batch-wise, semi-continuous and continuous application of disperse dyes, After-treatment of textiles dyed with disperse dyes, dyeing of acrylic fibre with cationic dyes. Dyeing method for Polyamide fibres with acid dyes

Blend dyeing

Objective and need of blending, Dyeing of P/C blend with disperse/vat and disperse/reactive dyes by different methods, Different routes adopted in continuous dyeing of p/c blend, Design of recipes and processes for dyeing different blends

Dyeing machinery

Descriptions of machines used in dyeing of fibre, yarn and fabric forms. Dyeing Machinery for knit and pile fabrics. Continuous and batch processes for dyeing and their comparison

HS 304: BUSINESS COMMUNICATION & ETHICS

PART – I: Business Communication:

1. Writing formal & business letter

2. Writing formal memos
3. Drafting notices and minutes of meetings
4. Drafting tender notices
5. Theoretical Knowledge & comprehension of contracts & agreements
6. Preparing proposal and technical report
7. Conducting & Writing a project report on a mini research (sessional work)
8. Conducting seminar and interviews
9. Writing and presenting conference papers
10. Solving IELTS type papers

PART – II: Engineering Ethics:

INTRODUCTION

Objective of the course

Definite of (a) a code (b) ethic

Defining needs for a code of ethics

1. NEED FOR A CODE OF ETHICS

For who and why

Review of Code of Ethics of international engineering and other bodies

Review of Code of Ethics of other professional bodies of Pakistan

2. COMPARING/CONTRASTING

Review of PECs' Code of Ethics, Code of Conduct

Comparison between PEC's Codes & those of similar international bodies

TS 354 KNITTING TECHNOLOGY

Introduction to knitting technology:

History and Evolution of Knitting Technology. General knitting Terminologies. Classification of Knitting Machines: Circular and Flat-bed weft knitting machines; Tricot and Raschel Warp knitting Machines. General comparison of Knitting with other fabric forming methods. Comparison of weft and warp knitting technology Knitting Needles; Classification, Sequence of loop formation, and Comparison

Weft knitting technology:

Features, Mechanisms, Loop formation sequence, and Productivity of Flat-bed and Circular knitting machines. Garment Length Sequence Knitting; Loop transfer stitches, Welts, Separation Elements of weft knitted loop structure. Design, structure, needle notation, manufacturing and application of Weft knitted structures; Single Jersey, Double Jersey, Purl, Interlock, Half Cardigan, Full Cardigan, and Pique. Techniques to produce Coloured stitch designs; striping, intarsia, plating and individual stitch selection.

and Shaping. Application of CAD/CAM. Whole Garment knitting system. Seamless Gloves and Socks knitting machines. Relation between geometry and properties of weft knitted loop

Warp knitting technology:

Features, Mechanisms, Loop formation sequence, and Productivity of Tricot and Raschel knitting machines. Laying-in and Weft Insertion in Warp knitting. Guide Bar Controlling Binding elements of warp knitted structure. Development of Lapping Diagram, Chain notation, yarn parts per repeat of the basic warp knitted stitches; Pillar, tricot, atlas, and koper stitches. Design and fabrication of two guide bar and multi guide bar structures e.g. Lock-knits, Sharkskin, Queens-cord, Satin, Velour, Overfed pile structures, Raschel Meshes, Marquissette, voile and Jacquard Raschels.

Mechanism; Chain links, Pattern drive, SU drive, Electronic guide bar control. Yarn let off and fabric take up systems. Yarn directing and tensioning devices. Special Warp knitted structures for Technical Textile applications

TE 307: UTILITIES FOR TEXTILES

Utilities for textiles:

Water, Natural Gas, Steam, Compressed Air and Electrical power; Piping Network for Utilities

Power generation:

Basic principles and Cycles used; Steam Power Plant and its types; Gas Power Plant; Combined Heat and Power Generation; Solar Cells and Fuel Cells

Internal combustion engines:

Internal Combustion Engines: Types and Classification; Fuels; Speed and Load Control; Supercharging; Exhaust Gas Recovery; Engine Lubrication System; Knocking and Detonation

Combustion:

Stoichiometric Equations; Higher and Lower Heating Values; Fuel Rating; Adiabatic Flame Temperature

Water supply:

Sources and Demand of Water; Quality and Treatment of water; Water Desalination

Steam generation:

Properties of Steam, Boilers and Types; Heating Surface Area calculations; Fuels, Feed Water Systems; Air Preheaters; Economizers; Super heaters; Condensers; Separators; Ejectors

Turbines:

Steam and Gas Turbines: Classification, Operation and Maintenance

Air conditioning & ventilation:

Principles of Air conditioning; Relevant Codes & Standards; Primary and Secondary Refrigerants; Vapour Compression and Absorption cycles, Simple Air-conditioning System; Ventilation Equipment

Psychrometric Chart and its Uses; Air Distribution Systems; Duct Design; Distribution Equipment

HVAC Equipment Selection: Humidifiers, Dehumidifiers, Fans, Diffusers and Cooling Towers

TS 361 TEXTILE PRINTING**Introduction to textile printing:**

Pre-treatment and fabric requirements for printing, design details of printing. Repeats and its types. Style and methods of printing. Special printing processes. Print designs

Printing auxiliaries:

Auxiliaries for printing with pigments and dyes, General characteristics of, classification, Rheology and selection criteria for thickeners

Pigment printing:

Pigment systems and preparations, different style of application

Dyestuff printing

Printing system for Direct, Reactive and Vat dyes with various styles

Printing of blended material

Dye selection and Printing Process for common Blends

Identification of printing faults (Mechanism and Process), and their remedies

Inkjet printing:

Fabric preparation for inkjet printing, dye selection, inkjet printing process and application

Printing machines:

Block, Roller, Manual and automatic carriage flat screen printing machine, rotary printing machine and dryers for printing. Rotary Screen Engraving, CAD/CAM

Inkjet printing machines

Fixation machine:

Fixation Mechanism for dyes and pigments. Different types of steamers and agers their advantages and disadvantages. After treatment machines for printing

TS 361 TEXTILE TESTING II**Colour fastness:**

Importance of color fastness, color fastness to crocking/rubbing, washing, light, water, perspiration, bleach and dry cleaning, Subjective and Objective evaluation

Dimensional stability:

Factors affecting dimensional stability, types of shrinkages, drying procedures, methods and equipment used for measuring dimensional change; Care labelling and its importance; Appearance of fabrics and garments after laundering; methods and equipment used for measuring skew and bow

Fibre Identification:

Methods and equipment used for the identification of fibre in yarn/fabric/garment

Pilling and abrasion test;

Introduction and Factors affecting Pilling and Abrasion and its measurement

Flammability of textile:

Difference between flame retardant, flame resistant and flame proof fabric, Factors affecting flammability of Textile, 45 degree flammability Test and vertical flammability test

Oil and water repellency test:

Difference between oil repellency, soil release, and stain resistant fabric, Wetting & wicking, water resistant, water repellent and water proof. Test methods and equipment used for measuring water and oil repellency

HS 405: ORGANIZATIONAL BEHAVIOUR

Introduction to Organizational Behaviour:

- Foundations of OB: Management functions, roles, and skills
- Effective versus successful managerial activities
- Replacing intuition with systematic study
- Exploring OB challenges and opportunities facing globalization: Improving quality and productivity
- Improving people skills
- Managing work force diversity
- Responding to globalization
- Empowering people
- Stimulating innovation and change
- Coping with temporariness
- Handling declining employee loyalty
- Improving ethical behavior

Foundations of Individual Behaviour:

- Individuals & Organizations: Biographical traits and ability
- Personality
- Perceptions and individual decision making: Understanding perception and its significance, factors influencing perception
- Linking perception and individual decision making
- Optimizing decision making model
- Alternative decision making models
- Issues in decision making
- Values, attitudes and job satisfaction: Importance, sources, types of values
- Sources and types of attitude
- Attitude and consistency
- Measuring job satisfaction
- Determinants of job satisfaction
- Effect of job satisfaction on employee performance
- Ways employees can express dissatisfaction
- Motivation - basic concepts and applications

Foundations of Group Behaviour:

- Group in OB: Defining and classifying groups
- Stages of group development, work group behaviour
- Dynamics of groups
- Understanding work teams: Team versus group; types of teams, creating high performance teams
- Turning individuals into team players

- Communication: communicating at interpersonal and organizational level
- Leadership: basic approaches and contemporary issues
- Conflict & negotiation: defining conflict; transition in conflict thought
- Conflict process
- Negotiation - strategies, process and issues

Foundations of Organizational Structure:

- Organizational structure and design
- Work design
- Work stress
- Organizational culture: definition
- Culture's functions, employees and organizational culture
- Organization change and development: forces for change
- Managing planned change, resistance to change
- Approaches to managing organizational change

TS 455 ADVANCED FABRIC MANUFACTURING TECHNIQUES

Shedding systems:

Cam Shedding: Cam Design; Negative Cam Shedding; Positive Cam Shedding. Dobby shedding: Mechanism; Types and parts of Negative, Positive and rotary Shedding. Jacquard shedding: Mechanism; Types and parts of Single and double lift Cylinder Jacquard; Electronic Jacquard

Weaving based on fluid carriers

Air jet System: Historical developments; Design of Main and relay nozzle; Air flow from the Nozzle; Weft motion through the shed; Performance of weft; Functional Characteristics of modern Airjet weaving machines; Air compression system and quality of compressed air. Water Jet System: mechanism of water jet weft insertion system. Multiphase Weaving Principles: Multi-Linear Shed principle; Filling and Warp direction shed wave principles; Circular multiphase principle

Nonwoven technology:

Web formation processes: Carding , Parallel-lay , Cross-lay , Perpendicular-lay, Air-lay, and Wet-lay processes; Spunbond and Meltblown technologies. Web bonding processes: Mechanical bonding; Thermal bonding; Chemical bonding

Braiding technology:

Types of braided structures; Horizontal and vertical braiding machines; Braiding geometry; 2-step and 4-step braiding process; 2D & 3D braiding products

Special fabric manufacturing:

Denim: Mechanisms and calculations of Denim warping, dyeing, re-beaming and sizing. Terry-towel, Carpet and Velvet weaving: Structure, Mechanisms, and machine setting. 3D Woven Fabrics: 3D concept of weaving; Multilayer fabric formation. Narrow Fabrics: Technologies to manufacture narrow fabrics such as labels, ribbons, belts, ropes and laces

Fabric defects:

Fabric defects based on fibre, yarn and fabric manufacturing and their remedies

TE 452: TEXTILE FINISHING

Mechanical finishing:

Processes and machines involved in mechanical finishing of various textile substrates viz Heat Setting, Napping, Shearing, Sueding, Calendering, Sanforizing, Compacting, Relaxation, Decatizing

Chemical finishing:

Application processes and mechanism of chemical finishing of various textiles substrates. Softening finishes, Hand-building finishes, Easy-care and durable press finishes, Oil and Water repellent finishes, Soil release finishes, Flame retardant finishes, Antistatic and Anti-pilling finishes, Elastomeric finishes, Nonslip finishes. Finishes to improve colour fastness; Ultraviolet protection finishes, Antimicrobial and bio-finishes

TE 318: TEXTILE & ENVIRONMENT

Atmospheric pollution:

Origin and prevention; emission and control technology; industrial air pollution; air quality pollution and criteria setting

Noise & noise control:

General consideration; environmental noise sources evaluation; methods and techniques to control and reduce noise level

Solid waste management:

Composition of textile wastes; collection systems and alternatives for treatments and reuse

Health and industrial safety:

ESSA requirements related to the safety of workers; OSHA standard

Environmental management systems and eco-labeling:

ISO14000, Oeko-tex 100, EU-EcoLabel

Environmental impact assessment, Environmental audits, National Environmental Quality Standards

Cleaner production technologies in textiles:

Sources, impact, monitoring, reduction and control of pollution in textile industry

Water pollution:

Waste water characteristics, effluents standards, terminology in waste water treatments, primary treatments, secondary treatments, recycle and reuse of waste water

TE 453: GARMENT MANUFACTURING

Overview of the garment industry; apparel development process charts; apparel sizing and measurements; pattern making; fabric spreading and cutting; sewing and other textile joining methods; types and components of sewing machines; fundamentals of sewing process; garment washing, finishing, pressing and packing; garment quality control: performance, appearance, fit and comfort; garment care labeling

HS 403: ENTERPNEURSHIP

Understanding the Entrepreneurship Mind-set:

- The revolution impact of Entrepreneurship
- The individual Entrepreneurship Mind-set
- Corporate Entrepreneurship Mind-set
- The Social and Ethical perspectives of Entrepreneurship

Launching Entrepreneurship Ventures:

- Creativity and innovations
- Methods to initiate ventures
- Legal challenges in Entrepreneurship
- The search for Entrepreneurship Capital

Formulation of Entrepreneurship Plan:

- The assessment of function with opportunities
- The marketing aspects of new ventures
- Financial statements in new ventures
- Business plan preparation for new ventures

Strategic Perspectives in Entrepreneurship:

- Strategies growth in Entrepreneurship
- Valuation challenges in Entrepreneurship
- Final harvest of a new venture

Teaching Methodology:

Lectures: Interspersed with interactive sessions in class

Practical work: Spoken language, pronunciation, accent reduction, discussion etc.

TE454: TEXTILE MERCHANDIZING

Introduction to Merchandizing and scope; Merchandize: Raw and Finished merchandizes; Main markets and potential markets; Sampling and new developments; Outsourcing; Costing; Communication; coordination and follow-ups; Merchandizing process: Program purchase order, Time & Action, Approval Phases, Fabric working, Follow up, Inspections, Shipments, Export documents, shipment, Modes of payment; Complaints handling and Claims; Quality assurance and compliance; Retail trends: International markets and local market; International trends and policies; Case Studies

TS 470 TECHNICAL TEXTILES

Introduction:

Concept of functionality in Textiles; Overview of Technical Textiles Market; Manufacturing techniques for making different technical textile products such as special yarns and fabrics

Technical textile fibres:

Development in fiber materials such as high performance fibers for special applications in different technical textile products

Application areas:

Requirements, Functions, Manufacturing and Applications of Technical Textiles in the field of Agriculture, Civil Engineering, Automobile Industry, Sports Industry, Packaging Industry, Medicine, Protective Clothing, Home Textiles, and Environmental Protection

TE 406: TEXTILE PRODUCTION MANAGEMENT

Production Management and Systems:

Introduction to production Management; System concept; Functions of management; Managerial decision making; Models as decision aids

Plant Location & Plant Layout:

Selection of region; Selection of community; Site selection; Location factor dependence; Sources of assistance; Plant location trends; Quantitative analysis and Plant layout; Product and process layout analysis and comparison; Material handling considerations in layout

Production Planning and Control:

Formalized production planning; Production planning methods; Master scheduling; MRP; MRP inputs, MRP outputs; Product Structures; Types of MRP; Capacity planning and control; Production control systems; Scheduling techniques

Planning & Control techniques:

Inventory control; types of inventory; Inventory costs; Independent versus dependent demand; EQQ/EPN models; Types of control systems; Selective inventory control; Inventory system development; Project Planning; CPM/PERT; Network development; Determination of activity times; Establishment of critical path; Probabilistic statements

Method Study:

Definition; Objectives; Procedure; Process chart symbols; Outline process chart; Flow process charts; Multiple activity chart; Two handed chart; Critical examination, Principles of motion economy, Case studies and Application

Work Measurement:

Definition; Objectives; Techniques of work measurement; Stop watch time study; Timing methods; Performance rating; Standard timing; Allowance factors. Work sampling; Confidence level; Determination of samples size; Making random observations; Scope of work sampling. Predetermined time standards; Definition; Advantages and criticisms; Motion classification; TMU; Use of PTS systems

Maintenance:

Types of maintenance; Breakdown maintenance; Preventive maintenance; Individual versus group replacement; Internal versus external maintenance; Queuing theory; Application of queuing theory; Input characteristics; Queue characteristic; Service characteristic; Mathematical approach