

Textile Engineering

DEGREE STANDARD

UNIT I

FIBRE PRODUCTION :-

Classification of textile fibres. Principles of polymerization, Manufacturing details of viscose rayon, Poly ethylene terephthalate, nylon 6 and 6,6, poly-acrylonitrile, poly propylene, polyaramides carbon and glass fibres. Texturization of fibres.

UNIT II

FIBRE COMPOSITES :-

Resins, additives to resins. Types and characteristics of the re-inforcing fibres, Different textile structure used for re-inforcements.

UNIT III

SPINNING PREPARATORY PROCESSES :-

Sequence of processes used to prepare the staple fibres (cotton, jute, wool and man-made fibres) for yarn spinning. Process optimization.

UNIT IV

CONVENTIONAL YARN SPINNING :-

Yarn formation using ring spinning method. Spinning limitations. Doubling of yarns.

UNIT V

NEW METHODS OF YARN SPINNING:-

Yarn production by open end, friction and air-jett spinning methods. Techno - economic comparison with conventional method.

UNIT VI

PREPARATORY PROCESSES FOR FABRIC FORMATION:-

Sequence of processes used to prepare the yarn for fabric formation in looms and knitting machines. Process optimization.

UNIT VII

WEAVING MACHINES:-

Fabric formation in conventional and high speed looms. Process optimization. Economic viability of high speed looms.

UNIT VIII

KNITTING MACHINES:-

Fabric production in weft knitting machines. Comparison of woven and knitted fabrics, Principles of warp knitting. Production of garments from woven and knitted fabrics.

UNIT IX

CHEMICAL PROCESSING:-

Preparation of material for coloration and finishing, principles involved in dyeing and printing. Physical and chemical finishing operation.

UNIT X

QUALITY ASSESSMENT:-

Sampling method, Determination of sample size. Testing of fibres yarns and fabrics for various qualities. Statistical Significance Test.

PAPER -II

Textile Engineering

UNIT I

STRUCTURAL MECHANICS OF YARN :-

Yarn geometry, Fibre migration and its characterization, Prediction of filament and spun yarn tensile behaviour under different conditions.

UNIT II

STRUCTURAL MECHANICS OF FABRICS :-

Fabric geometry, Prediction of deformation behaviour of woven, knitted and non - woven fabrics.

UNIT III

TEXTILE MACHINE DESIGN :-

Design of Cams, gear trains, clutches and brakes for application in textile machines. Kinematics of comb and loom operations.

UNIT IV

MACHINING OPERATIONS :-

Material Selection, Different machining operations. Surface treatments, Tolerance Limits.

UNIT V

PNEUMATICS:-

Application of free air and compressed air in textile machinery. Air pressure measurements and its control.

UNIT VI

WORK STUDY:-

Work and time measurement. Motion time analysis. Resources allocation and scheduling.

UNIT VII

PRODUCTION PLANNING:-

Balancing of textile machines in different departments to produce required quantity of and products taking into account various process parameters.

UNIT VIII

MACHINERY MAINTENANCE:-

Break-down and preventive maintenance for textile machines. Types and Selection of Lubricants, Lubrication devices, Depreciation and replacement studies.

UNIT IX

SELECTION OF MOTORS:-

Selection of electric motors for various textile machines. Application of variators and invertors. Smooth starting of machines. Microprocessor applications. Power requirements.

UNIT X

ENVIRONMENTAL CONDITIONS IN TEXTILE MILLS:-

Plant lay-out, Material handling. Lighting and humidification, Safety devices.