DKTE Society's

TEXTILE & ENGINEERING INSTITUTE

Rajwada, Ichalkaranji 416115

(An Autonomous Institute)

DEPARTMENT: TEXTILES

CURRICULUM

B. Tech. Textile Plant Engineering Program

First Year

With Effect From

2023-2024

DKTE

Promoting Excellence in Teaching
Learning & Research

First Year B. Tech – Textile Plant Engineering
Semester-I

Sr. No.	Course Code	Course Title	Course Category	Teaching scheme				Course Credits
				L	T	P	Contact Hrs./wk	
1	01TPL151	Mathematics and Statistics- I	BSC	3	-	-	3	3
2	01TPL152	Applied Mechanics	ESC	3	-	-	3	3
3	01TPL153	Electrical Technology	ESC	3	-	-	3	3
4	01TPL154	Engineering Materials	ESC	3	-	-	3	3
5	01TPL101	Yarn Manufacturing Machinery - I	PCC	3	-	-	3	3
6	01TPP155	Electrical Technology Lab	AEC01	-	-	2	2	1
7	01TPP156	Yarn Manufacturing Machinery - I Lab	VSEC	-	-	2	2	1
8	01TPP158	Basic Computer Programming Lab	AEC01	-	-	2	2	1
9	01TPP157	Idea Lab	VSEC	-	-	2	2	1
		Total		**15**	**-**	**8**	**23**	**19**

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester –I)
01TPL151: Mathematics and Statistics- I

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 3 Hrs/Week	3	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. Introduce students with Normal form, Echelon form and Rank of matrix& use them to solve the system of equations. Also introduce students with the theory of finding derivative numerically & use it to solve problems of numerical differentiation.
2. Introduce students with the theory of finding partial derivatives & apply it for finding errors, approximations maxima and minima.
3. Introduce students with basic concept of statistical data, collection and types of data, classification, graphical representation, frequency distribution with construction, measures of central tendency and dispersion. Prepare them to solve problem of these concepts with interpretation.
4. Introduce students with concept of skewness and kurtosis, measures of skewness and kurtosis. Prepare them to solve and interpret problems of skewness.

Course Outcomes:

At the end of the course, students will be able to

1. The theory of normal form, echelon form and rank of matrix & apply it to solve system of equations, the theory of finding derivative numerically and also able to solve problems of numerical differentiation.
2. The theory of finding derivative partially and able to solve the problems of application of partial differentiation.
3. Concept of statistical data collection, types of data, classification, graphical representation, frequency distribution and its construction, central tendency and dispersion of data, measures of central tendency and dispersion. Also, they are able to analyze and interpret given statistical data using these concepts.
4. Concept of skewness and kurtosis, measures of skewness and kurtosis. Also, they are able to solve and interpret problems of skewness.

Course Contents

Unit I	Matrix	05 Hours

Rank of matrix (Normal form of matrix, Echelon form of Matrix), Solution of simultaneous linear equations (Homogeneous & Non- Homogeneous)

Unit II	Numerical Differentiation	05 Hours

Newton’s forward & backward difference formulae, Sterling’s central difference formula. Newton’s divided difference formula.

Unit III	Partial Differentiation	10 Hours
Introduction of Partial Differentiation, Differentiation of implicit functions, Euler's theorem on homogeneous function. Jacobean (J.J'=1) only, Application of PD for Errors- approximations and maxima-minima.		
Unit IV	**Introduction of Statistics**	**08 Hours**
Definitions of Population, Variable, Attribute, Census Survey, Sample Survey, Random sample. Raw statistical data, collection, classification, Frequency distribution, class limits & boundary, class width, mid-point. Histogram, Frequency polygon, Frequency curve. Measures of central tendency: Arithmetic Mean (A.M.), Median, Mode, Combined Mean & Partition values: Quartiles Deciles and Percentiles with computation.		
Unit V	**Measures of dispersion**	**07 Hours**
Range, Quartile deviation, Mean deviation, Standard deviation as Absolute measures of dispersion, Coefficient of range, quartile deviation, mean deviation, coefficient of variation as Relative measures of dispersion, consistency of data & computation.		
Unit VI	**Measures of Skewness& kurtosis**	**05 Hours**
Skewness, types, Karl Pearson's & Bowley's coefficient of skewness & Computation. Kurtosis definition and types only. (No Examples of Kurtosis)		

Reference Books:

1. A textbook of applied mathematics Vol.-I & II by P.N. & J.N. Wartikar
2. Higher engineering mathematics by B.S. Grewal
3. A textbook of applied mathematics by Bali, Saxena, Iyangar.
4. Mathematical Statistics by J.E. Fruend.
5. Probability & Statistics for engineers by Johnson.
6. Statistical methods by Kumbhojkar.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester– I)
01TPL152: Applied Mechanics

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 03 Hrs/Week	3	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To explain the concept of forces, couple and laws related to force with basic principles and theorems.
2. To analyze the concepts like static equilibrium, support reactions, friction and moment of inertia to solve basic engineering problems.
3. To analyze the effect of various types of forces on the bodies in dynamic equilibrium conditions to solve basic engineering problems.
4. To explain the concept of transmission of motion and power in various machines by using various drives, bearings and simple lifting machines used in textiles.

Course Outcomes:

At the end of the course, students will be able to

1. Use the concept of forces and various laws related to force with basic principles, theorems.
2. Use concepts like equilibrium, support reactions, friction and moment of inertia to solve basic engineering problems.
3. Analyze the effect of various types of forces on the bodies in dynamic conditions to solve basic engineering problems.
4. Interpret the concept of transmission of motion and power in various machines by using various drives, bearings and simple lifting machines used in textiles.

Course Contents

Unit I	Fundamentals of statics	05 Hours

Statics, dynamics, Force, system of forces, Resultant force and equilibrant, principle of transmissibility of force, moment of force. Couple, Law of parallelogram of forces, Varignon's theorem, Composition and resolution of Coplanar concurrent and non-concurrent forces.

Unit II	Equilibrium	10 Hours

Equilibrium of Coplanar forces, Conditions of equilibrium, free body diagram, Lami's theorem.
Friction: Introduction to friction, types of friction, Laws of friction. Cone of Friction.
Beams: Types of beams, Types of Loads, Types of supports, Analysis of Simply supported beams.

Unit III	Moment of Inertia	06 Hours

Centroid and Centre of gravity, Centroid of composite areas, Radius of Gyration, parallel axis theorem, perpendicular axis theorem, Moment of inertia of composite sections

Unit IV	Lifting Machines	04 Hours
Mechanical advantage, velocity ratio, efficiency, law of machine, effort lost in friction, load lost in friction, Study and numerical examples on simple machines- Simple screw jack, Simple axle and wheel, differential axle and wheel, worm and worm wheel.		
Unit V	**Kinematics and Kinetics**	**08 Hours**
Kinematics of Linear motion: Equations of linear motion with constant and variable acceleration, motion under gravity. Kinematics of Angular motion: Relation between angular motion & linear motion, Equations of angular motion, Centrifugal & centripetal forces, Motion along a curved path, Banking of roads. Kinetics: Newton's laws of motion, Mass moment of inertia, D'Alemberts principle, work, power, energy, impulse, Work- Energy Principle, Impulse- Momentum Principle, Principle of conservation of energy.		
Unit VI	**Transmission of motion and power**	**06 Hours**
Belt, rope, chain and gear drives, P.I.V. drives, Type of gears and gear drives, Gear trains, velocity ratio, advantages of gear drives, uses in textile machines, Concept of epicyclic gearing. Types of bearing and their applications (Only theory, no numerical examples on this topic)		

Reference Books:

1. Engineering Mechanics by R. K. Bansal and Sanjay Bansal, Laxmi Publications
2. Applied Mechanics by R.S. Khurmi, S. Chand Publications.
3. Engineering Mechanics by S. S. Bhavikatti, New Age International Pvt. Ltd.
4. Engineering Mechanics by S. Ramamrutham, DhanpatRai and Sons.
5. Fundamentals of Engineering Mechanics by S. Rajasekaran, Sankarasubramanian, Vikas Publishing House.
6. Applied Mechanics by S.N. Saluja, SatyaPrakashan, New Delhi.
7. Engineering Mechanics by S. B. Junnarkar, Charotar Publishing House Pvt. Ltd.
8. Vector Mechanics for Engineers Vol. I & II, by Beer & Jonhstan, Tata Mc-Graw Hill Publication.

DKTES Textile and Engineering Institute, Ichalkaranji
Frist Year B. Tech. (Textile Plant Engineering) (Semester I)
01TPL153: Electrical Technology

Teaching Scheme: Lectures: 3 Hrs/Week	Credits 03	Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To understand basic concepts of Electrical and Magnetic circuits.
2. To understand concepts of elements and parameters in Single Phase circuit.
3. To understand concepts of elements and parameters in three phase AC circuits and Three phase Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

Course Outcomes:

At the end of the course, students will be able to

1. To solve and design Electrical and Magnetic circuit.
2. To solve and design Single phase A.C. circuit.
3. To distribute three phase Electrical energy and use of Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

Course Contents

Unit I	**Electrical Circuit**	**07 Hours**

Basic electrical quantities, Concept of E.M.F, Potential Difference, current, Resistance, Ohm's Law, Kirchhoff's laws, mesh and node analysis, Energy conversations. Numericals.

Unit II	**Magnetic Circuit**	**07 Hours**

Flux, flux density, Reluctance, field intensity, permeability, mmf, comparison of Electric and Magnetic circuit, leakage and fringing, B-H, Numericals on simple magnetic circuit

Unit III	**Single phase A. C. circuit**	**06 Hours**

Faraday's Laws, Lenz's Law, self and mutual emfs, generation of sinusoidal E.M.F. in single phase alternator, R.M.S. & Average value, form factor, peak factor, Phasor representation, R-L, R-C, R-L-C series circuits, powers, power factor and its improvement capacitor method Numerical. Single line diagram.

Unit IV	**Three Phase A. C. circuit and Induction Motor**	**07 Hours**

Introduction to three phase supply and its advantages, Generation of three phase A.C. voltage, balanced system, relation between line and phase quantities in star and delta its numerical. Three Phase Induction Motor Working Principle, Constructional Details, Types, Rotating Magnetic field, Necessity of starters, Speed Control by variable Frequency Drive (VFD) used in Ring frame, motors used in Textile Industry.

Unit V	Transformer	07 Hours
Construction, operating principle, Types, EMF equation, Concept of Ideal and practical Transformer, Transformation Ratio, operation on No load and with load of ideal transformer, losses, efficiency, voltage regulation, its Numerical. Use in Textile Industry.		
Unit VI	**Electrical Protecting Devices.**	**05 Hours**
Importance of Earthing, Fuse (Rewirable and HRC), MCB. Construction of CFL, LED lamp, Introduction of Energy efficient system & EEM motors. Concept of Power Quality.		

Reference Books:

1. Elements of electrical Engineering by U.A. Bakshi
2. Electrical Technology by U.A. Bakshi
3. Basic Electrical Engineering by B. H. Deshmukh
4. A text book in electrical technology by B. L. Thareja.
5. Fundamentals of Electrical Engineering by Ashfaq Husain
6. Basic Electrical Engineering by Mehta V.K. & Mehta Rohit
7. Basic Electrical Engineering by J.B. Gupta
8. Basic Electrical Engineering by DP Kothari, I J Nagrath

Supplementary Readings:

https://nptel.ac.in

https://easyengineering.net/basic-electrical-engineering-by-bakshi-nw/

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester – I)
01TPL154: Engineering Materials

Teaching Scheme: Lectures: 03 Hrs/Week	Credits 03	Evaluation Scheme: SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To explain engineering materials, their need and uses.
2. To makes students familiar with ceramic, organic and composite materials.
3. To makes students familiar with textile materials, corrosion and its preventions.
4. To teach properties of engineering materials, their types, applications, alloying, heat treatments etc. also to explain the electrical & magnetic materials.

Course Outcomes:

At the end of the course, students will be able to,

1. To describe engineering materials and select proper material for engineering and textile applications.
2. To understand properties and decide applications of various types of ceramic, organic and composite materials.
3. To explain the textile materials, process of corrosion and suggest various methods of its prevention.
4. To explain mechanical & thermal properties of engineering materials, their types, applications, alloying, heat treatments etc. To describe various electrical & magnetic materials.

Course Contents

Unit I	Introduction to Engineering Material	06 Hours

Definition of engineering materials, classification, scope of the subject, structural studies of materials – 1) Types of bonds - a) Primary- ionic, covalent, co-ordinate and metallic b) Secondary- Hydrogen bond and Van der Waal forces 2) Crystal structures – simple cubic, BCC, FCC.

Unit II	Properties of Engineering Materials	06 Hours

Mechanical – Hardness, Strength (compression, tension), Ductility, Malleability, Machinability, Weldability, Fatigue and Creep. Thermal – Specific heat, Thermal conductivity, Thermal expansion and Thermoelectric effect.

Unit III	Properties of Engineering Materials	06 Hours

Pig Iron, Wrought iron, Steel & Cast iron, classification, alloying of steel -effect of addition of elements such as C, Si, P, Mn, Ni, Mo, V, Co to steel, Stainless steel, Heat treatment of steels, Non-ferrous metals – Copper, Aluminium & their alloys such as Brass, Bronze, Duralumin, Alnico, Nichrome, Solder material.

Unit IV	Electrical and Magnetic Materials	07 Hours

Factors affecting the resistivity of conductors, properties of materials used as electrical contact materials, electrical conductors, resistors, insulating materials. Types of insulating materials such as PVC, Mica Fibre glass, Mineral oil and Asbestos. Magnetisation, soft and hard magnetic materials

such as iron silicon alloys, Alnico type alloys and Ferrites.

Unit V	Ceramics, Composites and Organic Materials	09 Hours

A) Organic Materials: -

Polymers – Introduction, classification, properties and applications of Bakelite, urea - formaldehyde resin, Nylon-66, Rubber, Plastics – properties and applications. Paints.

B) Ceramic Materials: -

Introduction and types of ceramic materials, Abrasives - Introduction and properties. Refractory material - refractory's such as Chromate bricks, Zircon bricks, High alumina, Porcelain. Cement - types, manufacturing process, setting & hardening, applications.

C) Composite Materials: -

Introduction, constituents of composites, types of composites, FRP and GRP, processing of fibre reinforced composites, failure of fibre reinforced composites.

Unit VI	Corrosion and Textile Materials	05 Hours

Definition, types, mechanism, factors affecting rate of corrosion. Prevention of corrosion – alloying, electroplating, cementation, cladding. Selection of material and designing. Passivity. Various textile materials, their properties and applications. Glass wool, polyester film, insulation felts and filters.

Reference Books:

1. Material Science and Processes by S. K. HajraChoudhary.
2. Material Science and Metallurgy by V.D.Kodgire.
3. Material Science by R.B. Gupta.
4. A Text book of Material Science by V.K. Manchanda.
5. Material Science and Engineering by V. Raghavan.
6. The Nanoscope by Dr. ParagDiwan& Ashish Bharadwaj.
7. Green Chemistry; A textbook by V. K. Ahluwalia.
8. Green Chemistry by Desai K. R.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester – I)
01TPL101: Yarn Manufacturing Machinery- I

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures : 03 Hrs/Week	03	SE-I: 25 Marks SE-II: 25 Marks SEE: 50 Marks

Course Objectives:

1. To impart knowledge related to textile terms, yarn classification and yarn numbering systems.
2. To gain knowledge of process flow in Ring, Rotor and Air-jet yarn manufacturing.
3. To impart knowledge of the cotton and cotton ginning process.
4. To understand the blowroom process.

Course Outcomes:

At the end of the course, students will be able to

1. Explain the textile terms, yarn classification and yarn numbering.
2. Describe the process flow in Ring, Rotor and Air-jet yarn manufacturing.
3. Explain the cotton fibre and cotton ginning process.
4. Explain the blowroom process.

Course Contents

Unit I	Textile Terms, Yarn Manufacturing Process Flow and Yarn Classification	06 Hours

Textile terms: Definition of terms – Textiles, Fibres, Staple fibre, Filament, Staple yarn, Filament yarn.
Yarn Manufacturing: Process flow chart for Ring, Rotor and Air-jet yarn manufacturing. Objects of each machine in the spinning process.
Classification of yarns.

Unit II	Yarn Numbering Systems	07 Hours

Yarn numbering systems: Introduction, Importance, Direct and Indirect yarn numbering systems. Yarn numbering conversion factors, Yarn count-related calculations. Resultant yarn count calculations.

Unit III	Cotton and Cotton harvesting	04 Hours

Introduction: Cotton fibre, Different cotton species, Cotton cultivation,
Essential and desirable properties of cotton fibre, Spinability of different cotton varieties.
Types of cotton harvesting – manual and mechanical. Defoliation process in mechanical harvesting.

Unit IV	Cotton Ginning and Conditioning Equipments	06 Hours

Cotton Ginning: objective and introduction**.**
Conditioning equipments: Pre and Post Ginning Process – Objects, machines used and their importance.
Ginning: Introduction of ginning process, types of ginning- Knife roller ginning, Saw ginning, Macarthy ginning.
Pressing and bailing of cotton: Importance and construction of the baling pressing machine,

Cotton grading: Importance and methods used by different countries.

Unit V	Blowroom – Components and Working Zones	06 Hours

Blowroom: Objects of blowroom process, Evolution of opening and cleaning principles. Various components of blowroom machines, Types of material feed, Different working zones in blowroom and machines involved in it.

Unit VI	Blowroom -Constructional Details and Auxiliary Equipments	10 Hours

Blowroom machines: Bale opening, Course cleaning machines, Mixing machines, Fine cleaning machines, Intensive cleaning machines.

Method used for - material transport in blowroom- Waste removal- Dust removal-

Performance assessment of blowroom: Cleaning efficiency, Nep removal efficiency, Fibre rupture, Openness value.

Auxiliary equipments: Contamination removal machines, Fire/smoke detector, Metal detector.

References Books:

1. The Textile Institute Publication - Manual of Textile Technology – Short Staple Spinning Series by W. Klein.
2. Essential calculations of practical cotton spinning by T.K. Pattabhiraman.
3. ‘Cotton Ginning’ Textile Progress, The Textile Institute Publication.
4. The Characteristics of Raw Cotton’ by P. Lord. The Textile Institute Publication, Manual of Cotton Spinning Vol.II, Part-I.
5. ‘Opening and Cleaning’ by Shirley. The Textile Institute Publication, Manual of Cotton Spinning Vol. II, Part-II.
6. Blow room and Carding- Training Program conducted by NCUTE, IIT, Delhi.

Supplementary Readings:

https://www.rieter.com

https://www.lmwtmd.com/products-card-silver.php

https://www.truetzschler.com/en/spinning/products/blow-room

DKTES Textile and Engineering Institute, Ichalkaranji
Frist Year B. Tech. (Textile Plant Engineering) (Semester I)
01TPP155: Electrical Technology Lab

Teaching Scheme:	Credits	Evaluation Scheme:
Practical: 2 Hrs/Week	01	CIE: 50 Marks

Course Objectives:

1. To understand basic concepts of Electrical and Magnetic circuits.
2. To understand concepts of elements and parameters in Single Phase circuit.
3. To understand concepts of elements and parameters in three phase AC circuits and Three phase Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

Course Outcomes:

At the end of the course, students will be able to

1. To solve and design Electrical and Magnetic circuit.
2. To solve and design Single phase circuit.
3. To distribute three phase Electrical energy and use of Induction motor and Transformer.
4. To implement Electrical Protection and Safety devices and importance Energy Efficient Systems.

List of Experiments

1. General Introduction to Electrical Engineering laboratory.
2. Verification of Ohm's Laws.
3. Verification of Kirchhoff' Current Law.
4. Verification of Kirchhoff' Voltage Law.
5. Determination of Power factor in ac circuit.
6. Determination of Resistance & Inductance of a coil.
7. Study of Phasor Relationship in R-L-C series circuit.
8. Verification of phase and line parameters in three phase system.
9. Determination of Efficiency and Regulation of Single Phase Transformer.
10. Study of different types of Earthing.
11. Study of different types of Protective devices.
12. Study of different types of lamps.

Reference Books:

1. Elements of electrical Engineering by U.A. Bakshi
2. Electrical Technology by U.A. Bakshi
3. Basic Electrical Engineering by B. H. Deshmukh

4. A text book in electrical technology by B. L. Thareja.
5. Fundamentals of Electrical Engineering by Ashfaq Husain
6.Basic Electrical Engineering by Mehta V.K. & Mehta Rohit
7. Basic Electrical Engineering by J.B. Gupta
8. Basic Electrical Engineering by DP Kothari, I J Nagrath

Supplementary Readings:

https://nptel.ac.in

https://easyengineering.net/basic-electrical-engineering-by-bakshi-nw/

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester – I)
01TPP156: Yarn Manufacturing Machinery-I Lab

Teaching Scheme: Practicals: 02 Hrs/Week	Credits 01	Evaluation Scheme: CIE: 50 Marks

Course Objectives:

1. To impart knowledge related to textile terms, yarn classification and yarn numbering systems.
2. To gain knowledge of process flow in Ring, Rotor and Air-jet yarn manufacturing.
3. To impart knowledge of the cotton and cotton ginning process.
4. To understand the blowroom process.

Course Outcomes:

At the end of the course, students will be able to

1. Explain the textile terms, yarn classification and yarn numbering.
2. Describe the process flow in Ring, Rotor and Air-jet yarn manufacturing.
3. Explain the cotton fibre and cotton ginning process.
4. Explain the blowroom process.

List of Experiments

1	Study of different types of drives and calculations.
2	Study of various types of bearings used on spinning machines.
3	Process Flow chart for carded and combed yarn manufacturing
4	Process Flow chart for Air jet, Rotor yarn manufacturing.
5	Testing of hank produced from spinning preparatory machines
6	Testing of hank produced from Spinning Machines.
7	Study of ginning machine: Construction, working and gearing calculation.
8	Study of blowroom line - flow chart - machine positioning in blowroom
9	Study of Bale Opening and Mild Opening machine - Dimensions, Driving arrangement, speed calculations and Opening Intensity calculation.
10	Study of Fine cleaning machine – Dimension, driving arrangement used, speed calculations and Opening Intensity calculation.
11	Study of De-dusting machines – Working, dimension, driving arrangement and calculations, and overall cleaning efficiency of blowroom
12	Mill visit – to study ring spinning process flow and blowroom.

Reference Books:

1. The Textile Institute Publication - Manual of Textile Technology – Short Staple Spinning Series by W. Klein.
2. Essential calculations of practical cotton spinning by T.K. Pattabhiraman.
3. 'Cotton Ginning' Textile Progress, The Textile Institute Publication.
4. The Characteristics of Raw Cotton' by P. Lord. The Textile Institute Publication, Manual of Cotton Spinning Vol.II, Part-I.

5. 'Opening and Cleaning' by Shirley. The Textile Institute Publication, Manual of Cotton Spinning Vol. II, Part-II.
6. Blow room and Carding- Training Program conducted by NCUTE, IIT, Delhi.

Supplementary Readings:

https://www.rieter.com
https://www.lmwtmd.com/products-card-silver.php
https://www.truetzschler.com/en/spinning/products/blow-room

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester –I)
01TPP158: Basic Computer Programming Lab

Teaching Scheme: Practical: 2 Hrs/Week	Credits 1	Evaluation Scheme: CIE: 50 Marks

Course Objectives:

1. To describe basic Computer architecture and generation of computer.
2. To explain advanced features of MS Office application
3. To illustrate scripting language and programming
4. To explain basic structure of 'C' programming formation and implementation

Course Outcomes:

At the end of the course, students will be able to

1. Understand basic of computer architecture and generation of computer.
2. Creating professional-quality documents using MS Office.
3. Design and implement web pages using scripting language.
4. Understand programming concept and develop simple application programs in 'C' programming language.

List of Experiments

1. Create a document in MS Word to study different ribbon tag.
2. Create spreadsheet application to manipulate numbers, formula, analysis and graphs in MS Office
3. Create a Power Point presentation application using Text, Image, Animation using MS Office
4. Study of basic formulation tag of HTML
5. Create a simple web page using List, Image, Hyperlink and Frame in HTML
6. Create a simple personal web page using HTML
7. Program for Addition, Subtraction, Multiplication, Division of two numbers using 'C' Language
8. Program for decision making statement –Nested if- Else and switch statement in 'C' Language
9. Program for different types of loops using 'C' Language
10. Program for one-dimensional array using 'C' Language
11. Program for two-dimensional array using 'C' Language
12. Program for graphics design using 'C' Language

Reference Books:

1. Fundamentals of Computers by V. Rajaram, PHI Publications.
2. HTML for beginners by Firuza Aibara
3. Let us C by Y.P. Kanetkar, BPB Publication
4. https://support.microsoft.com/en-us/training.

Supplementary Readings:

web links, journal articles, conference proceedings book chapters etc.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester– I)
01TPP157: Idea Lab

Teaching Scheme:	Credits	Evaluation Scheme:
Practical: 02 Hrs/Week	01	CIE: 50 Marks

Course Objectives:

1. Understand social innovation concepts and approaches.
2. Identify new and unaddressed social needs.
3. Develop self-awareness concerned to social problems.
4. Design innovative solutions with social impact through application of new models of leadership, team work and creativity techniques.

Course Outcomes:

At the end of the course, students will be able to

1. Identify the problems faced by the society.
2. Generate different ideas through creativity and brainstorming.
3. Apply problem solving techniques to derive best solution.
4. Design and develop innovative solution to the social problems.

List of Experiments

1. Visit to the social sites for identification of social needs and community problems.
2. Understanding of the need, description, problem definition, social and economic constraints for affordable and appropriate technology.
3. Sessions on creativity, innovation and new product development
4. Demonstration of modern manufacturing facilities available at the institute
5. Demonstration of automation and programming tools.
6. Personal implementation of social awareness concerned to community problems
7. Active sessions on brainstorming, idea generation and problem solving techniques
8. Mini project to develop solutions regarding social needs

Reference Books:

1. The Open Book of Social Innovation: Ways to Design, Develop and Grow Social Innovation, Paperback March, 2010 by Robin Murray, Julia Caulier-Grice, Geoff Mulgan
2. The Power of Social Innovation: How Civic Entrepreneurs Ignite Community Networks for Good, 1st Edition by Stephen Goldsmith, Michael R. Bloomberg, Gigi Georges, Tim Glynn Burke.
3. Social innovator series: ways to design, develop and grow social innovation, the open book of social innovation by robin murray julie caulier-grice geoff mulgan.
4. The International Handbook on Social Innovation: Collective Action, Social Learning

and Transdisciplinary Research Paperback by Frank Moulaert, Diana MacCallum.
5. Guide to Social Innovation by Johannes HAHN and Laszlo ANDOR7.

Supplementary Readings:

- https://epdf.tips/the-power-of-social-innovation-how-civic-entrepreneurs-ignite-communitynetworks.html
- http://www.idmais.org/desislab/wp-content/media/social.pdf

First Year B. Tech - Textile Plant Engineering
Semester-II

Sr. No.	Course Code	Course Title	Course Category	Teaching scheme				Course Credits
				L	T	P	Contact Hrs./wk	
1	01TPL161	Mathematics and Statistics - II	BSC	3	-	-	3	3
2	01TPP162	Indian Traditional Textiles	IKS	-	2	-	2	2
3	01TPL163	Applied Physics	BSC	3	-	-	3	3
4	01TPL164	Design Thinking and Drafting	ESC	2	-	-	2	2
5	01TPL165	Manufacturing Processes I	MDM	3	-	-	3	3
6	01TPL102	Fabric Manufacturing Machinery - I	PCC	3	-	-	3	3
7	01TPP166	Design Thinking and Drafting Lab	AEC 01	-	-	2	2	1
8	01TPP167	Manufacturing Processes - I Lab	AEC01	-	-	2	2	1
9	01TPP168	Fabric Manufacturing Machinery - I Lab	VSEC	-	-	2	2	1
10	01TPP169	Professional Communication	AEC02	-	2	-	2	2
11	01TPI170	Democracy, Election and Good Governance (Audit)	IKS	-	-	-	-	-
		Total		**14**	4	**6**	**24**	**21**

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester –II)
01TPL161: Mathematics and Statistics- II

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 3 Hrs/Week	3	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. Prepare students to understand mathematical rules used for tracing Cartesian and Polar curves. Also, to prepare them for curve fitting using method of least square.
2. Prepare students with the multiple integrals and its applications. Also, to prepare them with complex numbers, Hyperbolic functions.
3. Prepare students with statistical methods so that they can understand analysis of bivariate data, correlation and regression.
4. Prepare students to understand probability, random variable and probability distributions. Also, to solve textile engineering problems using probability distributions.

Course Outcomes:

At the end of the course, students will be able to

1. Rules of tracing Cartesian and Polar curves. Also, they are able for trace curves.
2. The theory multiple integrals and its applications. Also, they are able to use the theory of complex numbers to separate real and Imaginary Parts.
3. Concept of bivariate statistical data, Correlation analysis and Regression analysis with examples.
4. The concept of random variable with type and probability distribution of random variable with types. Also, they are able to solve textile problems using Binomial, Poisson and Normal probability distributions.

Course Contents

Unit I	**Curve Tracing & Curve fitting**	**07 Hours**

Rules and examples of curve tracing in Cartesian and Polar Equations only,
Fitting of curves: linear equation y=a+bx, quadratic equation y=a+bx+cx^2 using least square method

Unit II	**Integral Calculus & Applications**	**08 Hours**

Reduction formulae of sine and cosine functions, Gamma function, Beta Function (NO EXAMPLES),
Multiple integrals: Introduction, solution of multiple integral also solution using change of order & Change of variables method. Application of integrals for finding Area, Mass of lamina up to double integrals only.

Unit III	**Complex Numbers**	**05 Hours**

Introduction of Complex numbers, De Moivre's theorem, Circular, Hyperbolic and Inverse hyperbolic functions, Separation into real & imaginary parts.

Unit IV	Bivariate data	07 Hours
Correlation: Definition, types, coefficient of correlation, properties & interpretation. Rank correlation coefficient & computation and interpretation. Regression: Regression concept and types. Lines of regression X on Y & Y on X, regression coefficients with properties & computation.		
Unit V	**Probability distribution**	**07 Hours**
Introduction of probability and its basic laws. Random variable: Definition, types. Introduction of probability distribution, types of probability distribution, pmf & pdf, expectation of random variable. MGF of random variable. Standard discrete probability distributions: Binomial probability distribution: Definition, properties, fitting & examples. Poisson probability distribution: Definition, properties, fitting & examples.		
Unit VI	**Standard continuous probability distributions**	**06 Hours**
Normal probability distribution: Definition, properties, standard normal distribution & examples. Chi-square probability distribution ($\chi 2$): Definition & properties only. t-probability distribution: Definition & properties only. F- probability distribution: Definition & properties only. Introduction of statistical table for Z, t, $\chi 2$, & F		

Reference Books:

1. A textbook of applied mathematics Vol.-I & II by P.N. & J.N. Wartikar
2. Higher engineering mathematics by B.S. Grewal
3. A textbook of applied mathematics by Bali, Saxena, Iyangar.
4. Mathematical Statistics by J.E. Fruend.
5. Probability & Statistics for engineers by Johnson.
6. Statistical methods by Kumbhojkar.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester –II)
01TPP162: Indian Traditional Textiles

Teaching Scheme:	Credits	Evaluation Scheme:
Tutorial: 2 Hrs/Week	2	CIE: 50 Marks

Course Objectives:

1. Explain fibres, yarns, fabrics, processing methods and apparels used in historical India.
2. Explain the distinctiveness of Indian traditional textiles.
3. Explain the historical and cultural influences on Indian traditional textiles.
4. Explain importance of preserving and promoting Indian traditional textile techniques and their cultural heritage.

Course Outcomes:

At the end of the course, students will be able to

1. Describe the distinctiveness of Indian traditional textiles.
2. Analyse the historical and cultural influences on Indian traditional textiles.
3. Explain importance of preserving and promoting Indian traditional textile techniques and their cultural heritage.
4. Develop effective research and presentation skills through topics related to Indian traditional textiles.

Course Contents

Unit I	**Indian Traditional Fibres**	**3 Hours**

Introduction to Indian traditional fibres. Plant fibres: cotton, jute, flax, hemp, etc., Animal fibres: wool, silk, camel hair, etc. Historical significance and cultural relevance of traditional fibres. Techniques and tools used for processing of traditional fibres. Properties and applications of traditional fibres.

Unit II	**Indian Traditional Yarns**	**3 Hours**

Traditional spinning techniques: Hand spinning, Charkha, Takli, Drop spindle, etc. Different types of traditional yarns: handspun cotton, silk and woolen yarn. Evolution of yarn-making techniques in India. Role of yarns in Indian textile traditions and crafts. Applications of traditional yarns.

Unit III	**Indian Traditional Fabrics**	**4 Hours**

Overview of Indian traditional fabrics. Handloom weaving techniques: Pit loom, Frame loom, Backstrap loom, etc. Region-wide variations in weaving styles and motifs. Muslin cloth. Historical and cultural significance of Indian traditional fabrics. Revival and preservation of traditional fabric techniques.

Unit IV	**Indian Traditional Dyeing and Printing**	**4 Hours**

Introduction to Indian traditional dyeing and printing techniques. Natural dyeing methods: Indigo, Madder, Turmeric, Lac, etc. Traditional block printing: Bagru, Sanganer, Kalamkari, Ajrakh, etc. Tie and dye techniques: Bandhani, Leheriya, Patola, etc. Preservation and modern adaptations of

traditional dyeing and printing techniques.

Unit V	Indian Ancient Costumes	4 Hours

Male and female attire in Indus valley civilization, Vedic era, Maurya period, Kushan period, Chola period, Gupta period.

Unit VI	Costumes in Different Parts of India	6 Hours

Speciality fabrics of different parts of India: Maheshwari, Banarasi, Jamdani, Paithani, Kota, Gadwal, Venkatgiri, Gharchola, Kanjeeveram, Batik, Barabanki, Dhoti, Lungi, Kurta Pajama, Shervani, Ghagra, Lehenga, Choli, Pagri, etc.

Reference Books:

1 Jasleen Dhamija, Handwoven Fabrics of India, Abhinav Publications, 2004, ISBN: 978-8170174342.
2 Ritu Kumar, Costumes and Textiles of Royal India, Antique Collectors' Club, 2006, ISBN: 978-1851493174.
3 B.N. Goswamy, Indian Costumes in the Collection of the Calico Museum of Textiles, Mapin Publishing, 2009, ISBN: 978-1890206842.
4 K.R. Subanna, Indian Dyes and Dyeing Industry in the 18th and 19th Centuries, Manohar Publishers, 1999, ISBN: 978-8173042730.
5 Jasleen Dhamija, Asian Embroidery, Brijbasi Art Press, 2003, ISBN: 978-8188230062.
6 Rahul Jain, Indian Textiles: Past and Present, Aryan Books International, 2012, ISBN: 978-8173054085.
7 Rta Kapur Chishti, Saris: Tradition and Beyond, Roli Books, 2012, ISBN: 978-8174369213.
8 Martand Singh, Indian Embroideries, Roli Books, 2009, ISBN: 978-8174365055.
9 Usha Balakrishnan, Carpets and Floor Coverings of India, Roli Books, 2010, ISBN: 978-8174367707.
10 Manorama Bawa, Indian Cotton Textiles: Seven Centuries of Chintz from the Karun Thakar Collection, Prestel Publishing, 2013, ISBN: 978-3791352666.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester- II)
01TPL163: Applied Physics

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 3 Hrs/Week	3	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To Understand properties of matter such as surface tension, viscosity, elasticity and their applications.
2. To Understand the concepts of diffraction, polarization and their applications.
3. To Understand working principle of laser and photocell.
4. To Understand basic concepts related to crystallography.

Course Outcomes:

At the end of the course, students will be able to

1. Understand properties of matter such as surface tension, viscosity, elasticity etc. and their applications.
2. Comprehend the concepts of diffraction, polarization and their applications.
3. Apply the working principles of photocell, LASER and their applications in engineering.
4. Analyze crystal structure by x-ray diffraction.

Course Contents

Unit I	**Elasticity**	**7 Hours**

Stress, strain, Hooke's Law of elasticity, breaking stress, Working stress, Factor of safety. Some peculiar traits and Factors affecting elasticity. Poisson's ratio, Young's modulus, bulk Modulus and Modulus of rigidity. Relation between Y, η and K, Twisting couple on a cylinder (for wire), Torsional rigidity.

Unit II	**Viscosity**	**6 Hours**

Newton's Law of viscosity, Streamline & Turbulent flow, Critical velocity,
Significance of Reynold's number, Stokes law, Terminal velocity and its expression.
Poiseuille's equation for flow of a liquid through a horizontal capillary tube.
Experimental determination of η for a liquid by Poiseuille's method, Working of Ostwald's viscometer. Applications of viscosity.

Unit III	**Friction and Surface Tension**	**6 Hours**

Friction, Types of friction, Laws of friction, Coefficient of friction, Factors affecting frictional intensity, importance of friction in textile.
Molecular theory of surface tension. Surface energy, Angle of contact,
capillary action, Expression for rise of liquid in capillary-by-capillary rise method. Applications of surface tension. Excess pressure inside a liquid drop and soap bubble.

Unit IV	**Wave Optics**	**7 Hours**

Laws of refraction, refractive index, total internal reflection. Magnifying Power and Resolving power. Construction & working of electron microscope.

Polarization of light, Double refraction, Nicol prism, Quarter wave and Half wave plate. Production and analysis of circularly and elliptically polarized light.

Unit V	Photonics	7 Hours

Stimulated Absorption, Spontaneous emission, Stimulated emission. Characteristics of laser, Gas Laser (CO_2 laser), Applications of Laser in textile industry.

Photoelectric effect, Einstein's photoelectric equation. Factors affecting the photoelectric effect. Photoelectric sensors, Use of photoelectric sensors in textile industry.

Unit VI	Crystallography	6 Hours

Production of x-rays by modern Coolidge tube, Properties and Applications of X-rays, X-ray spectrum.

Introduction to crystallography, Miller indices of crystallographic planes, interplanar spacing, x-ray diffraction, Bragg's law, determination of crystal structure by Bragg's x-ray spectrometer.

Reference Books:

1. Elements of Properties of Matter by D.S. Mathur
2. Engineering Physics by B.L. Theraja
3. Engineering Physics by R.K. Gour& Gupta
4. Physics for Engineers by M.R. Srinivasan
5. Text Book of Optics by Brijlal & Subramanyam
6. Optics by A.K. Ghatak

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. Textile Plant Engineering (Semester – II)
01TPL164: Design Thinking and Drafting

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 02 Hrs/Week	02	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To introduce procedure for converting an idea into design.
2. To convert 2-dimensional views in to 3-dimensional view.
3. To convert 3-dimensional view from given 2-dimensional views.
4. To understand procedure for drawing development of solids such as cone, cylinder, prism and pyramid.

Course Outcomes:

At the end of the course, students will be able to

1. Generate ideas through design thinking.
2. Draw 2-dimensional views from the given pictorial 3-dimensional view.
3. Draw 3-dimensional view from given 2-dimensional views.
4. Draw Development of lateral surfaces of solids such as cone, cylinder, prism & pyramid.

Course Contents

Unit I	**Introduction to Design Thinking**	**02 Hours**

Principles of design thinking, stages of design thinking, benefits of design thinking, team-based design thinking, tools of design thinking.

Unit II	**Applications of Design Thinking**	**02 Hours**

Design thinking for Business Process Modeling, Prototyping, Strategic Innovation, Importance of Design Thinking Workshop.

Unit III	**Introduction to Drafting**	**05 Hours**

Lines, Letterings, and dimensioning. Introduction to Projection of Points, Lines, Planes, Solids and Section of Solids inclined to both planes H.P. and V.P.

Unit IV	**Orthographic Projections and Sectional Orthographic views**	**06 Hours**

General principles, First angle method, Third angle method, Cutting plane, Types of sections, drawing orthographic views (Elevation, Plan and End view) and sectional views of machine components.

Unit V	**Isometric Projections**	**04 Hours**

Principle, Isometric scale, Isometric views, Making Isometric drawings of simple objects from orthographic views.

Unit VI	Development of Surfaces	07 Hours
Introduction to solids (Types of solids only), Development of lateral surfaces of cubes, prisms, pyramids, cylinders & cones.		

Reference Books:

1. Product Design and Development- Karl Ulrich, Steven Eppinger, Anita Goyal.
2. Engineering Design – George Dieter.
3. Engineering Drawing by N. D. Bhatt & V. M. Panchal.
4. Engineering Drawing by Venugopal.
5. Machine Drawing by N. D. Bhatt & V. M. Panchal.
6. Machine Drawing by K. L. Narayana, Kannaiah P., K. Venkata Reddy.

Supplementary Readings:

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester – II)
01TPL165: Manufacturing Processes- I

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 03 Hrs/Week	03	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To understand function of pattern - its materials, design considerations, types etc. To get acquainted with moulding sands, its properties, testing, preparation & conditioning, different molding methods & core making process.
2. To understand construction & working of furnaces used in foundries, sand mold casting, cleaning of casting, casting defects & special casting processes.
3. To understand principle & operation of Lathe, Milling & Drilling machines, their types and concerned job holding & tool holding devices on it.
4. To understand principle, construction & working of Press machine, its types & operations performed on it.

Course Outcomes:

At the end of the course, students will be able to

1. To explain function of pattern - its materials, design considerations, types etc. with the help of diagrams. To describe ingredients of molding sands, their properties & testing, its preparation & conditioning, different molding methods & core making process, types of cores with sketches.
2. To describe construction & working of furnaces used in foundries, sand mold casting, cleaning of casting, casting defects & special casting processes with the help of diagrams.
3. To describe with diagrams principle & operation of Lathe, Milling & Drilling machines and concerned job holding & tool holding devices on it.
4. To explain with sketch principle, construction & working of Press machine, its types operations performed on it.

Course Contents

Unit I	Pattern making	04 Hours

Introduction, Pattern materials – selection criteria, Design considerations of pattern, Types of patterns, color codes, Master pattern.

Unit II	Molding & Core making	09 Hours

Molding material, Molding sand classification, sand preparation & conditioning, Properties of molding sand & sand testing, Molding methods – Bench molding, Floor molding, Pit molding, Shell Molding & CO_2 molding. Core making –Introduction, use, core requirements, core sands, types of cores, core making procedure.

Unit III	Foundry	07 Hours

Cupola furnace, Induction furnace, Foundry processes – sand mold casting – melting, pouring – cooling of molten metal – cleaning of casting, casting defects. Special casting processes – Die

casting (Cold chamber, Hot chamber), Centrifugal casting – types.		
Unit IV	**Lathe Machine**	**07 Hours**
Principle, Types, Principal parts of lathe, Important operations, Job holding devices, Tool holding devices, Safety precautions associated with lathe, Capstan and Turret lathe.		
Unit V	**Milling & Drilling Machines**	**08 Hours**
A) Milling Machine: Principle, Types, milling cutters, fundamentals of the milling processes, milling machine operations, milling cutter material, safety measures in milling. **B) Drilling Machine:** Principle, Types, drilling machine operations, drill material, safety precautions associated with drilling.		
Unit VI	**Press Work**	**04 Hours**
Types of Presses, press machine terminology and its parts, press size, various press working operations like cutting & forming.		

Reference Books:

2. Elements of Workshop Technology – Vol – I &Vol - II by S. K. Hajra Choudhary, A.K. Hajra Choudhary & Nirjhar Roy.
2. A course in Workshop Technology – Vol – I &Vol - II by B. S. Raghuwanshi.
3. Workshop Technology (Manufacturing Processes) by S. K. Garg.
4. Production Technology – by R. K. Jain.
5. Foundry Technology by Sinha & Goyal.
6. Manufacturing Engineering & Technology by Serope Kalpakjian & Steven Schmid.

Supplementary Readings:

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester-II)
01TPL102: Fabric Manufacturing Machinery-I

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 03 Hrs/Week	03	SE 1: 25 Marks SE 2: 25 Marks SEE: 50 Marks

Course Objectives:

1. To state the structure of textile industry in India and methods of fabric forming-weaving, knitting, nonwoven, braiding.
2. To explain motions of a plain loom, dobby, drop box and jacquard.
3. To identify the fabric weaves, construction of basic weaves, its derivatives, towel weaves.
4. To estimate weight of warp, weft, fabric warp cover, weft cover, fabric cover, loom production.

Course Outcomes:

At the end of the course, students will be able to

1. Explain the structure of textile industry in India and methods of fabric forming-weaving, knitting, nonwoven, braiding.
2. Describe motions of a plain loom, dobby, drop box and jacquard.
3. Illustrate the fabric weaves, construction of basic weaves, its derivatives, crepe, towel weaves
4. Calculate warp cover, weft cover, fabric cover, loom production, weight of warp, weft and fabric.

Course Contents

Unit I	Introduction	06 Hours

Introduction:
1. Nature of textile industry in India
2. Methods of fabric forming: - Weaving, knitting, braiding, nonwoven and their applications.
3. Weaving processes: Process flow charts of Grey, warp and weft stripes, checks fabrics.

Unit II	Fabric Forming	10 Hours

1. Classification of weaving machines, passage of yarn through loom.
2. Objects of loom motions - primary, secondary and auxiliary.
3. Construction and working principle of loom motions - primary, secondary and auxiliary.

Unit III	Weaving Machine Mechanism	06 Hours

1. Dobby shedding- Types, Construction and working principle, method of dobby design and pegging plan.
2. Jacquard Shedding- Types, Construction and working principle, figuring capacity, harness ties.
3. Multiple box motion- Types, Construction and working principle of 4x1 drop box motion, pattern chain.

Unit IV	Fabric Basic Weaves	09 Hours
1. Construction of fabric- Definitions of warp, weft, end, pick, selvedge, yarn crimp. 2. Terminologies used for fabric- warp and weft float, weave repeat size 3. Elements of fabric weave- Methods of fabric weave representation, design, draft and peg plan, types of draft. 4. Basic weaves and its derivatives – Plain, twill and satin/sateen.		
Unit V	**Towel and Crepe Weaves**	**04 Hours**
1. Toweling weaves: Ordinary and brighten honeycomb, huck a back, mock leno. 2. Construction of crepe weave using different methods.		
Unit VI	**Weaving Numerical**	**04 Hours**
1. Loom production and efficiency calculations. 2. Calculations - Weight of warp, weft and fabric, warp and weft crimp, warp and weft cover, cloth cover, reed count		
Reference Books:		

1. Plain Weaving Motions by K.T. Aswani.
2. Fancy Weaving by K.T. Aswani
3. Principles of weaving by Marks A.T.C. & Robinson
4. Weaving machines, Mechanisms, Management by Talukdar, Sriramulu and Ajgaoankar
5. Watson's Textile Design and Colour by Z.J. Grosicki
6. Weaving Calculation by Sengupta

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester – II)
01TPP166: Design Thinking and Drafting Lab

Teaching Scheme:	Credits	Evaluation Scheme:
Practical: 02 Hrs/Week	01	CIE: 50 Marks

Course Objectives:

1. To introduce procedure for converting an idea into design.
2. To convert 2-dimensional views in to 3-dimensional view.
3. To convert 3-dimensional view from given 2-dimensional views.
4. To understand procedure for drawing development of solids such as cone, cylinder, prism and pyramid.

Course Outcomes:

At the end of the course, students will be able to

1. Generate ideas through design thinking.
2. Draw 2-dimensional views from the given pictorial 3-dimensional view.
3. Draw 3-dimensional view from given 2-dimensional views.
4. Draw Development of lateral surfaces of solids such as cone, cylinder, prism & pyramid.

List of Experiments/ Practical's

1. PPT presentation/Assignments on Design Thinking.
2. PPT presentation/Assignments on Applications of Design Thinking.
3. PPT presentation/Assignments on Case study on design thinking/ redesign/modular design/design for manufacturing and assembly.
4. Lines, Letterings & Dimensioning.
5. Projection of Lines, Auxiliary Plane Method.
6. Projection of Planes, Auxiliary Plane Method.
7. Projection of Solids, Auxiliary Plane Method.
8. Projection of Section of Solids, Auxiliary Plane Method.
9. Conversion of pictorial view into orthographic views.
10. Conversion of pictorial view into sectional orthographic views.
11. Isometric Projections.
12. Development and antidevelopment of lateral Surfaces of solids.

Reference Books:

3. Product Design and Development- Karl Ulrich, Steven Eppinger, Anita Goyal.
2. Engineering Design – George Dieter.
3. Engineering Drawing by N. D. Bhatt & V. M. Panchal.
4. Engineering Drawing by Venugopal.
5. Machine Drawing by N. D. Bhatt & V. M. Panchal.
6. Machine Drawing by K. L. Narayana, Kannaiah P., K. Venkata Reddy.

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester – II)
01TPP167: Manufacturing Processes– I Lab

Teaching Scheme:	Credits	Evaluation Scheme:
Practical: 02 Hrs/Week	01	CIE: 50 Marks

Course Objectives:

1. To visualize the pattern from the diagram of a given pattern drawing.
2. To study the drawing of the pattern & understand the procedure for producing the same.
3. To visualize the metal turning job from the given job drawing.
4. To study the drawing of the metal turning job & understand the procedure for producing the same.

Course Outcomes:

At the end of the course, students will be able to

1. To draw the diagram of a given pattern & interpret the same.
2. To produce the wooden pattern according to the given diagram.
3. To draw the diagram of a given metal turning job & interpret the same.
4. To produce the metal turning job on the lathe machine according to the given diagram.

List of Experiments/ Practical's

13. Introduction to equipment's & tools used in metal turning section.
14. Preparing one job in Metal turning section.
15. Introduction to equipment's & tools used in carpentry section.
16. Preparing one job in Pattern making (Carpentry) section.

Reference Books:

4. Elements of Workshop Technology – Vol – I &Vol - II by S. K. Hajra Choudhary, A.K. Hajra Choudhary & Nirjhar Roy.
2. A course in Workshop Technology – Vol – I &Vol - II by B. S. Raghuwanshi.
3. Production Technology – by R. K. Jain.
4. Manufacturing Engineering & Technology by Serope Kalpakjian & Steven Schmid.

Supplementary Readings:

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. Textile Plant Engineering (Semester – II)
01TPP168: Fabric Manufacturing Machinery-I Lab

Teaching Scheme:	Credits	Evaluation Scheme:
Practical: 02 Hrs./Week	01	CIE: 50 Marks

Course Objectives:

1. To state the structure of textile industry in India and methods of fabric forming-weaving, knitting, nonwoven, braiding.
2. To explain motions of a plain loom, dobby, drop box and jacquard.
3. To identify the fabric weaves, construction of basic weaves, its derivatives, towel weaves.
4. To estimate weight of warp, weft, fabric warp cover, weft cover, fabric cover, loom production.

Course Outcomes:

At the end of the course, students will be able to

1. Explain the structure of textile industry in India and methods of fabric forming-weaving, knitting, nonwoven, braiding.
2. Describe motions of a plain loom, dobby, drop box and jacquard.
3. Illustrate the fabric weaves, construction of basic weaves, its derivatives, crepe, towel weaves
4. Calculate warp cover, weft cover, fabric cover, loom production, weight of warp, weft and fabric.

List of Experiments

1. Study of weaving preparatory and weaving process flow charts.

2. Study of passage of yarn through plain loom.

3. Study of primary motions on plain loom.

4. Study of secondary motions on loom.

5. Study of auxiliary motions on loom.

6. Study of climax dobby and pattern chain making.

7. Study of mechanical jacquard.

8. Study of drop box motion on loom.

9. Fabric structure: plain and its derivative.

10. Fabric structure: twill and its derivative.

11. Fabric structure: satin/sateen, toweling weave.

12. Mill visit for plain loom shed.

Reference Books:

1. Plain Weaving Motions by K.T. Aswani.
2. Fancy Weaving by K.T. Aswani
3. Principles of weaving by Marks A.T.C. & Robinson
4. Weaving machines, Mechanisms, Management by Talukdar, Sriramulu and Ajgaoankar
5. Watson's Textile Design and Colour by Z.J. Grosicki
6. Weaving Calculation by Sengupta

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester– II)
01TPP169: Professional Communication

Teaching Scheme:	Credits	Evaluation Scheme:
Tutorial: 2 Hrs/Week	2	CIE: 50 Marks

Course Objectives:

1. Understand the importance of listening, speaking, reading and writing skills which are beneficial to enhance communication skill.
2. To acquaint the students with English phonology and make them practice correct Pronunciation.
3. To make them aware about effective writing skills along with accurate grammar and vocabulary.
4. To help them communicate effectively and to present their ideas confidently.

Course Outcomes:

At the end of the course, students will be able to

1. Apply the learnt knowledge of LSRW skills while communicating.
2. Comprehend English Sounds, stress pattern and intonation.
3. Compose formal letters, emails and job application with accurate grammar and vocabulary.
4. To exhibit oratorical skills by giving oral presentations.

List of Experiments

1. SWOT Analysis --Understanding self
2. Communicative Grammar
3. Communicative vocabulary
4. Drafting Simple application letter and E mail writing
5. Writing Effective Resume
6. Common Errors in pronunciation (phonetics)
7. Interview techniques
8. Extempore
9. Formal presentation on given topic
10. Group Discussion

Reference Books:

1. Communication skills for Engineers by Sunita Mishra & C. Muralikrishna (Pearson)
2. Communication Techniques and Skills by R K Chaddha
3. Body Language by Allen Pease.
4. Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press

New Delhi
5. Soft Skills for Managers by Dr. T. KalyanaChakravarthi, Dr. T. LathaChakravarthi, Biztantra
6. Soft Skills for every one by Jeff Butterfield, Cengage
7.Professional communication skills by A.K. Jain,S.Chand
8. Developing Communication Skills by Krishna Mohan & Meera Banerji (Macmillan)

Supplementary Readings:

Language lab ---- softwares to enhance communication skill and pronunciation.

SCHEME OF ASSESSMENT: CIE

Submission – Completed Journal and assignments.

TUTORIALS	30 MARKS (Attendance, writing, performance)
ASSIGNMENTS	10 MARKS
ORAL	10 MARKS

DKTES Textile and Engineering Institute, Ichalkaranji
First Year B. Tech. (Textile Plant Engineering) (Semester- II)
01TPI170: Democracy, Election and Good Governance

	Evaluation Scheme: CIE: 50 Marks	

Course Objectives:

1. By studying on their own, students will try to understand importance of democracy, election to local self-government bodies and good governance.

Course Outcomes:

At the end of the course, students will be able to

1. Answer questions related to democracy, election to local self-government bodies and good governance.

Course Contents

Unit I	**Democracy in India**	

- Dimensions of Democracy: Social, Economic and Political
- Decentralization: Grassroots Level Democracy
- Challenges before Democracy: women and marginalized sections of the society

Unit II	**Election to Local Self Government Bodies**	

- 73rd and 74th Constitutional Amendment Acts: Institutions at the local level and Role of State Election commission
- Local Body Elections: Urban & Rural
- Duties of an Individual towards electoral process

Unit III	**Good Governance**	

- Meaning and concept
- Government and Governance
- Good Governance initiatives in India

*** Students have to pass this subject by studying on their own & by securing minimum 20 marks out of 50, passing of this course is compulsory.**