DKTE Society's

TEXTILE & ENGINEERING INSTITUTE

Rajwada, Ichalkaranji 416115

(An Autonomous Institute)

DEPARTMENT: TEXTILES

CURRICULUM

B. Tech. Man Made Textile Technology Program

First Year

With Effect From 2023-2024



Promoting Excellence in Teaching Learning & Research

			2	Teaching scheme				
Sr. No.	Course Code	Course Title Course Category		L	Т	Р	Contact Hrs./wk	Course Credits
1	01TML151	Mathematics and Statistics-I	BSC	3	-	-	3	3
2	01TML152	Applied Mechanics	ESC	3	-	-	3	3
3	01TML153	Electrical Technology	ESC	3	-	-	3	3
4	01TML154	Textile Fibers	BSC	3	-	-	3	3
5	01TML101	Manmade staple Yarn Manufacturing - I	PCC	3	-	-	3	3
6	01TMP155	Electrical Technology Lab	AEC01	-	-	2	2	1
7	01TMP156	Manmade staple Yarn Manufacturing -I Lab	VSEC	_	-	2	2	1
8	01TMP157	Idea Lab	VSEC			2	2	1
9	01TMP158	Basic Computer Programming Lab	AEC01			2	2	1
		Total		15		08	23	19

First Year B. Tech – Man Made Textile Technology Semester-I

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester –I) 01TML151: Mathematics and Statistics- I

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 3 Hrs/Week	3	SE 1: 25 Marks
	5	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 ma equations (I	Rank of matrix (Normal form of matrix, Echelon form of Matrix), Solution of simultaneous linear equations (Homogeneous & Non- Homogeneous)					
Unit II	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	n of Partial Differentiation, Differentiation of implicit functions,	Euler's theorem on		
homogeneo	bus function. Jacobean (J.J'=1) only, Application of PD for Errors-	approximations and		
maxima-mi	nima.			
Unit IV	Introduction of Statistics	08 Hours		
Definitions	of Population, Variable, Attribute, Census Survey, Sample Survey	ey, Random sample.		
Raw statisti	ical data, collection, classification, Frequency distribution, class limi	ts & 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	f dispersion, consistency of data & computation.			
Unit VI	Measures of Skewness& kurtosis	05 Hours		
Skewness,	types, Karl Pearson's & Bowley's coefficient of skewness & Co	omputation. Kurtosis		
definition a	nd types only. (No Examples of Kurtosis)			
Reference B	Books:			
1. A tex	tbook of applied mathematics VolI & 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. Proba	ability & amp; Statistics for engineers by Johnson.			
6. Statis	6. Statistical methods by Kumbhojkar.			

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester– I) 01TML152: 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	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: In	troduction to friction, types of friction, Laws of friction. Cone of Frid	ction.			
Beams: Ty	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, Stu	udy and numerical examples on simple machines- Simple screw ja	ick, Simple axle and		
wheel, diffe	erential 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 va	ariable acceleration,		
motion und	er gravity.			
Kinematics	of Angular motion: Relation between angular motion & linear m	otion, Equations of		
angular mo	tion, Centrifugal & centripetal forces, Motion along a curved path, B	anking of roads.		
Kinetics: N	ewton's laws of motion, Mass moment of inertia, D'Alemberts prin	ciple, work, power,		
energy, imp	oulse, Work- Energy Principle, Impulse- Momentum Principle, Princ	iple 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, G	Gear trains, velocity		
ratio, advan	tages of gear drives, uses in textile machines, Concept of epicyclic g	gearing. Types of		
bearing and	their applications (Only theory, no numerical examples on this topic	c)		
Reference B	Books:			
1. Engii	neering Mechanics by R. K. Bansal and Sanjay Bansal, Laxmi Public	cations		
2. Appl	ied Mechanics by R.S. Khurmi, S. Chand Publications.			
3. Engii	neering Mechanics by S. S. Bhavikatti, New Age International Pvt. L	.td.		
4. Engii	neering Mechanics by S. Ramamrutham, DhanpatRai and Sons.			
5. Funda Publi	5. Fundamentals of Engineering Mechanics by S. Rajasekaran, Sankarasubramanian, Vikas Publishing House.			
6. Appl	6. Applied Mechanics by S.N. Saluja, SatyaPrakashan, New Delhi.			
7. Engii	7. Engineering Mechanics by S. B. Junnarkar, Charotar Publishing House Pvt. Ltd.			
8. Vecto Publi	or Mechanics for Engineers Vol. I & II, by Beer & Jonhstan, Tata cation.	a Mc-Graw Hill		

DKTES Textile and Engineering Institute, Ichalkaranji Frist Year B. Tech. (Man Made Textile Technology) (Semester I) 01TML153: Electrical Technology				
Teaching Sc	heme:	Credits		Evaluation Scheme:
Lectures: 3 H	Hrs/Week			SE 1: 25 Marks
		03		SE 2: 25 Marks
				SEE: 50 Marks
 Course Objectives: To understand basic concepts of Electrical and Magnetic circuits. To understand concepts of elements and parameters in Single Phase circuit. To understand concepts of elements and parameters in three phase AC circuits and Three phase Induction motor and Transformer. 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 To solve and design Electrical and Magnetic circuit. To solve and design Single phase A.C. circuit. To distribute three phase Electrical energy and use of Induction motor and Transformer. To implement Electrical Protection and Safety devices and importance Energy Efficient 				
		Course Contents		
Unit I	Unit I Electrical Circuit 07 Hours			
Basic electr Kirchhoff's	ical quantities, Cond laws, mesh and nod	cept of E.M.F, Potential Difference e analysis, Energy conversation	nce, current, Res s. Numericals.	istance, Ohm's Law,
Unit II		Magnetic Circuit		07 Hours
Flux, flux d and Magnet	lensity, Reluctance, t	field intensity, permeability, mn nd fringing, B-H, Numericals on	nf, comparison o simple magneti	f Electric c 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 Pha	se A. C. circuit and Induction Me	otor	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		
Constructio	n, operating principle, Types, EMF equation, Concept of I	deal and practical		
Transforme	r, Transformation Ratio, operation on No load and with load of	f ideal transformer,		
losses, effic	iency, 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	of CFL, LED lamp,		
Introduction	n of Energy efficient system & EEM motors. Concept of Power Qua	ality.		
Reference F	Books:			
1. Elem	ents of electrical Engineering by U.A. Bakshi			
2. Elect	rical Technology by U.A. Bakshi			
3. Basic	3. Basic Electrical Engineering by B. H. Deshmukh			
4. A tex	t book in electrical technology by B. L. Thareja.			
5. Fund	amentals of Electrical Engineering by Ashfaq Husain			
6.Basic	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			
Suppler	nentary Readings:			
https://i	https://nptel.ac.in			
https://e	easyengineering.net/basic-electrical-engineering-by-bakshi-nw/			

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester –I) 01TML154: Textile Fibres

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 explain the basics of textile fibres.

- 2. To describe the morphological and chemical structure of natural fibres.
- 3. To describe the manufacturing processes of manmade fibres.
- 4. To explain the properties of natural and manmade fibres.

Course Outcomes:

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

- 1. Explain the basics of textile fibres.
- 2. Describe the morphological and chemical structure of natural fibres.
- 3. Explain the manufacturing processes of manmade fibres.
- 4. Enunciate properties of natural and manmade fibres.

Course Contents

Unit I	Introduction	6 Hours			
Concepts o	Concepts of Fibre, Yarn and Fabric, Staple fibre, Filament, Regenerated fibre, Synthetic fibre,				
Degree of	Degree of polymerization, Crystallinity, Orientation. Classification of fibres. Advantages and				
disadvantages of natural & manmade fibres. Characteristics of fibre forming polymer. Essential and					
desirable characteristics of textile fibres, The requirement of fibre formation, Introduction to Textile					
Value Chain.					
Unit II	Vegetable Fibres	6 Hours			

Cotton Fibre: Cultivation and harvesting, Development of fibre in seed, Morphological structure,
Properties and applications of Cotton fibre. Bast Fibres: Retting and extraction process of Bast
fibres, Properties and applications of Jute fibres. Introduction to other vegetable fibres.Unit IIIAnimal Fibres6 Hours

Unit IIIAnimal Fibres6 HoursWool: Types and grading of wool, Morphological structure, Properties and applications. Silk: Types
of silk, Production of silk, Morphological structure, Properties and applications.

Unit IV	Manmade Fibre Formation Technologies	4 Hours
Melt Spinn	ing, Dry Spinning, Wet Spinning, Advantages and disadvantages	of these man mad

Melt Spinning, Dry Spinning, Wet Spinning, Advantages and disadvantages of these man madespinning technologies, Comparison between different man-made fibre formation technologies.Unit VManmade Fibres10 Hours

Polyester (Polyethylene Terephthalate): Manufacturing process, Properties and applications, Polyamide Fibres (Nylon 6 & Nylon 66): Manufacturing process, Properties and applications, Polyolefin Fibres (Polypropylene): Manufacturing process, Properties and applications. Polyacrylonitrile Fibre: Manufacturing process, Properties and applications. Extensibility and recovery mechanism, Manufacturing process, Properties and applications

Unit VI			Regenera	ted Fibres			4 Hou	rs
Viscose	Rayon:	Manufacturing	process,	Properties	and	applications.	Introduction	to other
regenerate	ed fibres.							
Reference	Books:							
1. S.F	P. Mishra	a, A Textbook o	of Fibre	Science and	Tecl	nnology, New	Age Internat	ional (P.)
Limite	ed, ISBN	: 978812241250	5 (2000).					
2. J. C	Gordon C	ook, Handbook (of Textile	Fibres. Volu	ime 1	Natural Fibres	s, Woodhead I	Publishing
Series	in Texti	les ISBN:978-1-	85573-484	4-5 (1984).				
3. J.	Gordon	Cook, Handboo	k of Tex	tile Fibres.	Volu	me 2 Man-M	lade Fibres, V	Noodhead
Publis	hing Ser	ies in Textiles, I	SBN: 978	-1-85573-48	5-2 (1984).		
4. Mu	irthy, H.	V. Sreenivasa,	Introduct	tion to Text	ile F	ibres, Woodhe	ad Publishing	g India in
Textil	es, ISBN	:978-93-85059-5	57-5 (1984	4).				
5. R. Y	W. Monc	rieff. Man-made	Fibres. H	evwood Bo	oks. C	Dpen Library-C	DL5656433M	(1966).
6. V.	R. Gowa	riker. Polymer S	Science. N	Jew Age Int	ernati	onal Publisher	rs: Third edition	on. ISBN:
93877	88644 (2019)					~,	,
25011								

	DKTES Textile and Engineering Institute, Ichalkaranji					
	First Year B.	Tech. (Man Made Textile Techno	ology) (Semester	- I)		
	01TML	.101: Manmade Staple Yarn Mai	nufacturing- I			
Teaching Sc	Feaching Scheme:CreditsEvaluation Scheme:					
Lectures: 03	Hrs/Week	03		SE-I: 25 Marks		
				SE-II: 25 Marks		
				SEE: 50 Marks		
Course Obj	ectives:					
1. To i	impart knowledge re	elated to textile terms, yarn clas	ssification and N	lanmade staple yarn		
man	ufacturing process f	low.				
2. 10 g	gain knowledge of y	arn numbering systems and cor	iversions related	to man-made staple		
	18. Avalain working prin	ciples of opening cleaning and	Blow Boom pro	CASS		
3.100	lescribe working prin	nciples of carding stripping acti	ons and Carding	Process		
Course Out	comes:	incipies of earening, surpping act		,1100055.		
At the end of	of the course, studen	ts will be able to				
1. Exp	lain the textile terms	, yarn classification and process	flow in Ring, R	otor and Air-jet yarn		
man	ufacturing.		-			
2. Des	cribe the systems of	yarn numbering and analyze con	nversions related	l to man-made staple		
yarr	1.					
3. Exp	lain the Blow Room	process.				
4. Exp	lain the Carding pro-	cess.				
		Course Contents				
Unit I	Texti	le Terms, Yarn Manufacturin	g	04 Hours		
	Proce	ss Flow and Yarn Classificatio	n			
Textile te	erms: Definition of t	erms – Textiles, Fibres, Staple f	ibre, Filament, S	Staple yarn,		
Filament	yarn.					
Classifica	tion of yarns.					
Yarn Ma	nufacturing: Proces	ss flow chart for Ring, Rotor and	l Air-jet yarn ma	anufacturing.		
Objects o	f each machine in th	e spinning process.				
Unit II		Yarn Numbering Systems		06 Hours		
Yarn nun	nbering systems: Int	roduction, Importance, Direct and	l Indirect yarn nu	mbering systems.		
Yarn num	bering conversion fac	ctors, Yarn count-related calculati	ons. Resultant ya	arn count		
	IIS. Blowroom – C	omponents and Working Zones		05 Hours		
Out III Diowroom – Components and working Zones 05 Hours Di 011 - 011 Di 011 - 011						
Blowroom: Objects of blowroom process, Evolution of opening and cleaning principles. Various						
involved	ins of blowfoolli filat	chines, Different working zones	in biowrooin an	u machines		
Unit IV	Involveu III II. Unit IV Blowroom - Constructional Datails and 10 Hours					
	Diowio	Performance Assessment				
Blowroo	n machines : Bale or	pening. Course cleaning machin	es. Mixing mach	nines. Fine cleaning		
machines, Intensive cleaning machines.						

Performance assessment of blowroom: cleaning efficiency, Nep removal efficiency, Fibre						
rupture, Openness value.						
Auxiliary equipments: Contamination removal machines, Fire/smoke detector, Metal detector	Auxiliary equipments: Contamination removal machines, Fire/smoke detector, Metal detector.					
Unit VChute feed, Carding Process and Its08 Hours						
Constructional Details						
Feed to Card – Principle and concept of chute feed to card. Advantages and limitations. Study	·					
of passage of material through chute feeding systems.						
Introduction to Carding – Objects of carding, Places of actions in carding - carding and stripping						
Constructional Details - Revolving Flat Card, Detailed study of design developments in Take	r					
in zone, Cylinder Flat Carding Zone, Doffer Zone, Sliver formation.						
Driving arrangement, production calculations, draft calculations, stop motion.						
Unit VI Assessment of Card Performance and 06 Hours						
Modern Development						
Auto-levelers at Card – Basic principles, concepts – Types– Working Principles–Setting of a	uto					
levelers. Card Clothing - evolution and Metallic wire details, Card wire grinding and mountin	g.					
Assessment of performance of card – Cleaning efficiency, Nep removal efficiency, fibre						
breakage e. Automation in Card.						
References Books:						
1. The Textile Institute Publication - Manual of Textile Technology – Short Staple Spini Series by W. Klein.	iing					
2. Essential calculations of practical cotton spinning by T.K. Pattabhiraman.						
3. The Characteristics of Raw Cotton' by P. Lord. The Textile Institute Publication, Manua	1 of					
Cotton Spinning Vol.II, Part-I.						
4. "Opening and Cleaning" by Shirley. The Textile Institute Publication, Manual of Co Spinning Vol. II, Part-II.	tton					
 Opening Cleaning and Picking' by Dr. Zoltan S. Szaloki, Institute of Textile Technology, Virginia 						
6. Blow room and Carding- Training Program conducted by NCUTE, IIT, Delhi.						
7. Carding by F. Charanlay						
Supplementary Readings:						
https://www.rieter.com						
https://www.lmwtmd.com/products-card-silver.php						
https://www.truetzschler.com/en/spinning/products/blow-room						
https://onlinecourses.nptel.ac.in/noc23_te09/preview						
https://youtube.com/playlist?list=PLp6ek2hDcoNBDaud0XKMV7VT1okU4ovfD						

DKTES Textile and Engineering Institute, Ichalkaranji Frist Year B. Tech. (Man Made Textile Technology) (Semester II) 01TMP155: 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.

- 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. (Man Made Textile Technology) (Semester – I) 01TMP156: Manmade Staple Yarn Manufacturing- I Lab						
Teachi	Teaching Scheme: Credits Evaluation Scheme					
Practic	als: 02 Hrs/Week	01	CIE: 50 Marks			
		01				
Course	e Objectives:	·	·			
1.	To impart knowledge re	elated to textile terms, yarn cla	ssification and Manmade staple yarn			
	manufacturing process f	low.				
2.	To gain knowledge of y	varn numbering systems and con	nversions related to man-made staple			
	yarns.					
3.	To explain working prin	ciples of opening, cleaning and	Blow Room process.			
4.	To describe working pri	nciples of carding, stripping acti	ions and Carding Process.			
Course	e Outcomes:					
At the	end of the course, studen	ts will be able to				
1.	Explain the textile term yarn manufacturing.	s, yarn classification and proce	ss flow in Ring, Rotor and Air-jet			
2.	Describe the systems o	f yarn numbering and analyze	conversions related to man-made			
	staple yarn.					
3.	Explain the Blow Room	process.				
4.	4. Explain the Carding process.					
		List of Experiments				
1.	1. Study of different types of drives, calculations and bearings.					
2.	Process Flow chart for	Carded, Combed yarn, Air jet ar	nd Rotor yarn manufacturing.			
3.	Testing of hank produce	ed from spinning preparatory ma	achines and Spinning Machines.			
4.	Study of blowroom line	e - flow chart - machine position	ing in blowroom.			
5.	Study of Bale Opening	- Dimensions, Driving arrangen	nent, speed calculations.			
6.	Study of Mild Opening	g machine - Dimensions, Driv	ing arrangement, speed calculations			
	and Opening Intensity of	calculation.				
7.	7. Study of Fine cleaning machine – Dimension, driving arrangement used, speed calculations.					
8.	8. Study of feeding (chute feed) to card machine – Dimension, driving arrangement used.					
	Speed calculations.					
9.	Carding Setting- Front	Zone				
	Carding Setting- Back Z	Zone				
10	. Study of Passage, Drivi	ing arrangement and calculation	s of carding machine.			
11	. Study of overall cleaning	ng efficiency of blowroom and c	carding.			
12. Mill visit – to study ring spinning process flow and blowroom and carding						

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. The Characteristics of Raw Cotton' by P. Lord. The Textile Institute Publication, Manual of Cotton Spinning Vol.II, Part-I.
- 4. 'Opening and Cleaning' by Shirley. The Textile Institute Publication, Manual of Cotton Spinning Vol. II, Part-II.
- 5. Opening Cleaning and Picking' by Dr. Zoltan S. Szaloki, Institute of Textile Technology, Virginia.
- 6. Blow room and Carding- Training Program conducted by NCUTE, IIT, Delhi.
- 7. Carding by F. Charanlay

Supplementary Readings:

https://www.rieter.com

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

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

https://onlinecourses.nptel.ac.in/noc23_te09/preview

https://youtube.com/playlist?list=PLp6ek2hDcoNBDaud0XKMV7VT1okU4ovfD

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester– I) 01TMP157: 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

- 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

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester– I) 01TMP158: Basic Computer Programming Lab

Credits	Evaluation Scheme:
1	CIE: 50 Marks
	Credits 1

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

- 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.

G	~		~	Teaching scheme				
Sr. No.	Course Code	Course Title	Course Category	L	Т	Р	Contact Hrs./wk	Course Credits
1	01TML161	Mathematics and Statistics- II	BSC	3	-	-	3	3
2	01TMP162	Indian Traditional Textiles	IKS		2		2	2
3	01TML163	Applied Physics	BSC	3	-	-	3	3
4	01TML164	Design Thinking and Drafting	ESC	2			2	2
5	01TML102	Manmade Fabric Manufacturing-I	PCC	3	-	-	3	3
6	01TML165	Industrial Chemistry	BSC	3	-	-	3	3
7	01TMP166	Design Thinking and Drafting	AEC01		-	2	2	1
8	01TMP167	Industrial Chemistry Lab	AEC01	-	-	2	2	1
9	01TMP168	Manmade Fabric Manufacturing-I Lab	VSEC	-	-	2	2	1
10	01TMP169	Professional Communication	AEC02		2		2	2
11	01TMI170	Democracy, Election and Good Governance (Audit)	IKS	-	-	-	-	-
		Total		14	4	6	24	21

First Year B. Tech - Man Made Textile Technology Semester-II

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester –II) 01TML161: Mathematics and Statistics- II

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 3 Hrs/Week	3	SE 1: 25 Marks
	5	SE 2: 25 Marks
		SFF: 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 of	coefficient & computation and interpretation. Regression: Regression	on concept and types.			
Lines of reg	ression X on Y & Y on X, regression coefficients with properties &	computation.			
Unit V	Probability distribution	07 Hours			
Introduction	n of probability and its basic laws. Random variable: Definition, ty	pes. Introduction of			
probability	distribution, types of probability distribution, pmf & pdf, expe	ectation of random			
variable. N	AGF of random variable. Standard discrete probability distr	ibutions: Binomial			
probability	distribution: Definition, properties, fitting & examples.	Poisson probability			
distribution	: Definition, properties, fitting & examples.				
Unit VI	Standard continuous probability distributions	06 Hours			
Normal pro	obability distribution: Definition, properties, standard normal distr	ibution & examples.			
Chi-square	probability distribution ($\chi 2$): Definition & properties only. t-pro-	bability distribution:			
Definition &	& properties only. F- probability distribution: Definition & properti	es only. Introduction			
of statistical	table for Z, t, χ^2 , & F				
Reference B	ooks:				
1. A tex	tbook of applied mathematics Vol1 & II by P.N. & J.N. Wartikar				
2. Highe	er 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 & amp; Statistics for engineers by Johnson.					
6. Statis	tical methods by Kumbhojkar.				

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester –II) 01TMP162: 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 IVIndian Traditional Dyeing and Printing4 HoursIntroduction 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

4 Hours

traditional	dyeing	and	printing	techniques.
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Unit V	Indian Ancient Costumes

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

Unit VICostumes in Different Parts of India6 HoursSpeciality 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.6 Hours

- 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 Veer B. Tech. (Mar. Mada Textila Technology) (Semester, H)			
	This I car b.	01TML163: Applied Physics	s (semester -	II)
Teaching S	cheme:	Credits		Evaluation Scheme:
Lectures: 3	3 Hrs/Week	3		SE 1: 25 Marks
				SE 2: 25 Marks
				SEE: 50 Marks
Course Ob	ojectives:			
1. To app	Understand propert lications.	ies of matter such as surface te	ension, viscosity	v, elasticity and their
2. To	Understand the conc	epts of diffraction, polarization a	and their applica	tions.
3. To	Understand working	principle of laser and photocell.		
4. To	Understand basic co	ncepts related to crystallography	у.	
Course Ou	itcomes:			
At the en	d of the course, stude	ents will be able to		
1. Uno	derstand properties o	f matter such as surface tension,	viscosity, elasti	city etc. and their
2 Cor	plications.	ts of diffraction polarization and	d their applicatio	one
2. COI	aly the working pring	viples of photocell I ASER and t	their application	s in engineering
	alvze crystal structur	e by y-ray diffraction	then application	is in engineering.
- , <i>T</i> (1)		Course Contents		
TT • 4 T				
Unit I		Elasticity		7 Hours
Stress, str	ain, Hooke's Law o	f elasticity, breaking stress, Wor	rking stress, Fac	ctor of safety. Some
peculiar tr	raits and Factors aff	ecting elasticity. Poisson's ratio	o, Young's mod	ulus, bulk Modulus
Torsional	rigidity.	tion between Y , η and K , T wish	ing couple on a	cylinder (for wire),
Unit II		Viscosity		6 Hours
Nouton'a	Low of viscosity St	roomling & Turbulant flow, Crit		
Significan	Law of Peynold's nun	ber Stokes law Terminal veloc	ity and its expre	accion
Poiseuille	's equation for flow	of a liquid through a horizontal of	capillary tube	.551011.
Experime	ntal determination of	n for a liquid by Poiseuille's m	ethod Working	of
Ostwald's	viscometer. Applica	tions of viscosity.		
Unit III	F	riction and Surface Tension		6 Hours
Emistion "	Types of friction I	awa of friction Coofficient of	friation Easter	affacting frictional
intensity	importance of friction	n in textile.		s affecting incuonal
Molecular	theory of surface te	nsion Surface energy Angle of	contact	
capillarv a	action, Expression fo	r rise of liquid in capillary-by-ca	apillary rise met	hod. Applications
of surface	tension. Excess pres	sure inside a liquid drop and soa	ap bubble.	11
Unit IV		Wave Optics	•	7 Hours
Laws of	refraction refractive	index total internal reflection	Magnifying P	ower and Resolving
power. Co	onstruction & workin	g of electron microscope	. wiaginiying r	ower and resolving

Polarizatio	on of li	ight, Double r	efraction, Ni	col prism, (Quarter way	ve and	d Half	wave	plate.
Production	n and and	alysis of circula	rly and ellipti	cally polarize	ed light.				
Unit V		Photonics					7 Hours		
Stimulated	Stimulated Absorption, Spontaneous emission, Stimulated emission. Characteristics of laser, Gas								
Laser (CO	2 laser),	Applications of	f Laser in text	ile industry.					
Photoelect	tric effec	ct, Einstein's ph	otoelectric eq	uation. Facto	rs affecting	the ph	otoelect	ric	
effect. Pho	otoelectr	ic sensors, Use	of photoelecti	ric sensors in	textile indus	stry.			
Unit VI			Crystallogr	aphy			61	Hours	
Production	n of	x-rays by	modern	Coolidge	tube,	Prop	erties	and	
Applicatio	ons of X-	rays, X-ray spe	ctrum.						
Introduction diffraction	on to cry 1, Bragg'	stallography, M s law, determin	liller indices of ation of crysta	of crystallogra al structure b	aphic planes y Bragg's x-	, inter ray sp	planar s ectrome	pacing, eter.	, x-ray
Reference	Books:		·						
1. Elem	ents of I	Properties of Ma	tter by D.S. N	Aathur					
2. Engineering Physics by B.L. Theraja									
3. Engineering Physics by R.K. Gour& Gupta									
4. Physi	ics for E	ngineers by M.I	R. Srinivasan						
5. Text	Book of	Optics by Brijl	al & Subrama	nyam					

6. Optics by A.K. Ghatak

	DKTES First Year B. 7 01	Fextile and Engineering Institute Fech. Man Made Textile Technol FML164: Design Thinking and E	, Ichalkaranji ogy (Semester –) Drafting	II)
Teaching Scl	heme:	Credits		Evaluation Scheme:
Lectures: 02	Hrs/Week	02		SE 1: 25 Marks
		02		SE 2: 25 Marks
				SEE: 50 Marks
Course Obje 1. To in 2. To c 3. To c 4. To u and	ectives: ntroduce procedure : convert 2-dimension convert 3-dimension understand procedur pyramid.	for converting an idea into desig al views in to 3-dimensional vie al view from given 2-dimension re for drawing development of	n. w. al views. solids such as c	cone, cylinder, prism
Course Outo At the end 1. Gend 2. Draw 3. Draw 4. Draw	comes: 1 of the course, stude erate ideas through of w 2-dimensional vie w 3-dimensional vie w Development of la	ents will be able to design thinking. ws from the given pictorial 3-din w from given 2-dimensional vie ateral surfaces of solids such as o	nensional view. ws. cone, cylinder, p	rism & pyramid.
		Course Contents		
Unit I	Int	roduction to Design Thinking		02 Hours
Principles o design think	f design thinking, st king, tools of design	ages of design thinking, benefits thinking.	s of design think	ing, team-based
Unit II	Apj	plications of Design Thinking		02 Hours
Design thin Design Thir	king for Business Pr 1king Workshop.	rocess Modeling, Prototyping, St	trategic Innovati	on, Importance of
Unit III		Introduction to Drafting		05 Hours
Lines, Lette Section of S	rings, and dimensio solids inclined to bot	ning. Introduction to Projection th planes H.P. and V.P.	of Points, Lines,	Planes, Solids and
Unit IV	Orthog	raphic Projections and Section Orthographic views	nal	06 Hours
General prindrawing ortheory	nciples, First angle r hographic views (El 3.	nethod, Third angle method, Cu evation, Plan and End view) and	tting plane, Type I sectional views	es of sections, of machine
Unit V		Isometric Projections		04 Hours
Principle, Is orthographi	sometric scale, Isom c views.	etric views, Making Isometric d	rawings of simpl	le objects from

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

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester-II) 01TML102: Manmade Fabric Manufacturing-I

Teaching Scheme:	Credits	Evaluation Scheme:
Lectures: 03 Hrs/Week	03	SE 1: 25 Marks
	00	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, jacquard and design features of automatic loom.
- 3. To identify the fabric weaves, construction of basic weaves, its derivatives.
- 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, jacquard and design features of automatic loom.
- 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)6 Hours
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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 Hou	rs
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- 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.

- 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. Construc	tion of fabric- Definitions of warp, weft, end, pick, selvedge, yarn cr	imp.		
2. Termino	logies used for fabric- warp and weft float, weave repeat size			
3. Elements	of fabric weave- Methods of fabric weave representation, design, dr	aft and peg plan,		
types of c	lraft.			
4. Basic we	aves and its derivatives – Plain, twill and satin/sateen.			
Unit V	Automatic Weaving	04 Hours		
1. Design f	eatures of automatic looms			
2. Basic con	2. Basic concept of weft feelers, Transfer mechanism, automatic let off motion, warp stop motion,			
center weft fork mechanism.				
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, ree	ed count			
Reference H	Books:			
1. Plai	n 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. Wa	tson's Textile Design and Colour by Z.J. Grosicki			
6. Wea	aving Calculation by Sengupta			

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. (Man Made Textile Technology) (Semester – II)					
	01TML165: Industrial Chemistry				
Teaching Sci	Feaching Scheme: Credits Evaluation Scheme:				
Lectures: 03	Hrs/Week	03		SE 1: 25 Marks	
		03		SE 2: 25 Marks	
				SEE: 50 Marks	
Course Obj	ectives:			-1	
1.10S	elect suitable advan	ced materials and various testing	methods for and	alysis.	
$\begin{array}{c} 2.108\\ 3.Tes \end{array}$	alact proper matalli	material and corresion proventi	on mothods in it	society.	
soci	ety.		on methods in n	ildustries and	
4. To a	nalyze and troubles	noot the problems related to ener	gy technology.		
 At the end of the course, students will be able to Select suitable advanced materials and various testing methods for analysis. Select appropriate structural materials and polymers in industries and society. Select proper metallic material and corrosion prevention methods in industries and society. Analyze and troubleshoot the problems related to energy technology. 					
	Course Contents				
Unit I	P	urification and Testing Methods		07 Hours	
Introduction, water quality parameters: pH, TS, TDS, Dissolved oxygen, Surface tension,					
Viscosity, Hardness of water: definition, types, units and numerical problems, Scale and Sludge					
formation, Caustic Embrittlement, Zeolite process, Ion exchange process, Reverse osmosis.					
Sublimation, Distillation, Solvent extraction, Determination of melting point and boiling point.					
Chromatography- Introduction, classification of chromatography, HPLC, GC, applications in					
textiles.	textiles.				

Unit II	Polymers	07 Hours
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Introduction to polymers, Glass transition temperature (Tg), factors affecting Tg. Thermo plastic and Thermosetting polymers, phenol formaldehyde and urea formaldehyde resins, Poly lactic acid. Self-healing polymers (Silicone rubbers). Conducting polymers (Synthesis of PANI) **Starch**: sources, properties of starch paste: soluble starch and dextrin, action of enzymes, manufacture of starch from maize,

Cellulose: sources, chemical and physical properties.

07 Hours

Nanomaterials: Introduction, classification of nanomaterials, Synthesis of nano-materials (Solution combustion and Sol-gel methods). Carbon nanotubes: Introduction, types, synthesis by modified CVD method, applications. Graphene and Graphene Oxides-Synthesis (Modified Hummer's method), fictionalization and

Advanced Material

applications.

Unit III

Borazene- Structure and its applications.

Piezoelectric materials: Introduction and their applications.

Unit IVMetallic Material & Corrosion07 HoursMetallicMaterials: Introduction to metallic materials, alloys: definition, classification,
purposes of making alloys, composition, properties and applications of ferrous alloys: plain
carbon steels, stainless steel, nonferrous alloys: Brass, Bronze, Nichrome, Duralumin.

Corrosion: Introduction to corrosion, definition, causes, classification, types of oxide films on metal surfaces, atmospheric corrosion, electrochemical corrosion and mechanisms, factors affecting the rate of corrosion, prevention of corrosion by Cathodic protection, Galvanizing, Tinning, Metal spraying, Electroplating.

Unit V	Structural material	05 Hours		
Refracto	ries: Introduction and classification of refractories, Propertie	s of refractories,		
Manufact	Manufacturing of refractories, Refractory bricks- Zirconia, High -Alumina, Chromite.,			
Abrasive	s: Introduction to abrasives, Natural abrasives- Diamond, Corundur	n, Emery, Garnets,		
Quartz. A	artificial abrasives- Carborandom, Boron Carbide.			
Composite material: FRP and GRP, processing of fibre reinforced composites. Glass wool.				
Composi	te material: FRP and GRP, processing of fibre reinforced composite	es. Glass wool.		
Composi	te material: FRP and GRP, processing of fibre reinforced composite	es. Glass wool.		
Composi Unit VI	te material: FRP and GRP, processing of fibre reinforced composite Energy Technology	es. Glass wool. 06 Hours		
Composi Unit VI Fuel: Intr	te material: FRP and GRP, processing of fibre reinforced composite Energy Technology roduction, classification, characteristics of good fuel, determination	06 Hours of calorific value		
Composi Unit VI Fuel: Intr by Bomb	Energy Technology roduction, classification, characteristics of good fuel, determination and Boy's calorimeter, numerical problems.	of calorific value		
Composi Unit VI Fuel: Intr by Bomb Battery:	te material: FRP and GRP, processing of fibre reinforced composite Energy Technology roduction, classification, characteristics of good fuel, determination and Boy's calorimeter, numerical problems. Introduction, Classification of batteries- Primary, Secondary and E	of calorific value Reserve batteries.		

Solar Cells: Introduction, working, photo electric effect.

Fuel cells: Introduction, classification, Alkaline fuel cell, Hydrogen – Oxygen fuel cell, and Phosphoric acid fuel cell.

Reference Books:

- A textbook, "Engineering Chemistry" (15th Ed.) by P. C. Jain & Monica Jain, Dhanpat Rai & Co.
- Engineering Chemistry, S. S Dhara, 2013, S. Chand Publications, 4th Edition, ISBN: 812-1997658.
- 3. Engineering Chemistry, O.G.Palanna, Tata McGraw Hill Education Pvt. Ltd. New Delhi, Fourth Reprint 2017. ISBN: 978-0070146105.
- 4. "Industrial Chemistry" by A. K. Sharma, Goel Publishing House.
- 5. Polymer sciences and technology by Joel R. Fried.
- 6. "Engineering Chemistry" by O.G.Palanna, Tata McGraw Hill Education Pvt. Ltd.
- 7. Material science and metallurgy by C. Daniel Yesudian and D.G. Harris Samuel.
- 8. Analytical Chemistry by Garry D. Christian fifth edition.
- 9. A Text book of Material Science by V.K. Manchanda.
- 10. The Nanoscope by Dr. ParagDiwan& Ashish Bharadwaj.
- 11. Advanced Materials and Nanotechnology for Sustainable Energy and Environmental Applications, ISBN 978-3-0365-5229-3 (hardback); ISBN 978-3-0365-5230-9 (PDF)
- doi.org/10.3390/books978-3-0365-5230-9.
- 10. Polymer sciences and technology by Joel R. Fried.
- 11. Text book of polymer science by Fred W. Billmeyer, Jr.
- 12. Organic chemistry of high polymers by Lenz.
- 13. Fundamentals of polymers by Anilkumar and Rakesh K. Gupta.
- 14. Principles of Polymerisation by George Odian.
- 15. Introduction to polymer chemistry by G.S. Mishra.
- 16. Polymer science and technology of plastics & rubbers by Dr. Premamoy Ghosh.
- 17. Polymer Science by V.R. Gowarikar, N.V. Viswanathan&JaydevShreedha.

Supplementary Readings:

Smart Polymers and Their Applications-2nd Edition– Elsevier, Editor - Maria Rosa Aguilar Julio San Roman ISBN: 9780081024171.

https://www.elsevier.com/books/smart-polymers-and-their-applications/aguilar/978-0-08-102416-4.

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. Man Made Textile Technology (Semester – II) 01TMP166: Design Thinking and Drafting Lab			
Teaching Scheme:	Credits	Evaluation Scheme:	
Practical: 02 Hrs/Week	01	CIE: 50 Marks	
 Course Objectives: To introduce procedure for converting an idea into design. To convert 2-dimensional views in to 3-dimensional view. To convert 3-dimensional view from given 2-dimensional views. To understand procedure for drawing development of solids such as cone, cylinder, prism and pyramid. 			
Course Outcomes:			
At the end of the course, stu	dents will be able to		
1. Generate ideas through a	lesign thinking.		
2. Draw 2-dimensional vie	w from given 2-dimensional vie	mensional view.	
4. Draw Development of la	ateral surfaces of solids such as	cone, cylinder, prism & pyramid.	
•	List of Experiments/ Pract	ical's	
1. PPT presentation/Assig	gnments on Design Thinking.		
2. PPT presentation/Assig	gnments on Applications of Des	ign Thinking.	
3. PPT presentation/Ass design/design for manu	ignments on Case study on Ifacturing and assembly.	design thinking/ redesign/modular	
4. Lines, Letterings & Dir	mensioning.		
5. Projection of Lines, Au	axiliary Plane Method.		
6. Projection of Planes, A	uxiliary Plane Method.		
7. Projection of Solids, A	uxiliary Plane Method.		
8. Projection of Section o	f Solids, Auxiliary Plane Metho	d.	
9. Conversion of pictorial view into orthographic views.			
10. Conversion of pictorial	view into sectional orthograph	ic views.	
11. Isometric Projections.			
12. Development and antic	levelopment of lateral Surfaces	of solids.	
Reference Books:			
2. Product Design and Dev	elopment- Karl Ulrich, Steven I	Eppinger, Anita Goyal.	
2. Engineering Design – G	eorge 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. V	/enkata Reddy.	

DKTES Textile and Engineering Institute, Ichalkaranji, First Year B. Tech. (Man Made Textile Technology) (Semester – II) 01TMP167: Industrial Chemistry Lab

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

Course Objectives:

- 1. To select suitable advanced materials and various testing methods for analysis.
- 2. To select appropriate structural materials and polymers in industries and society.
- 3. To select proper metallic material and corrosion prevention methods in industries and society.
- 4. To analyze and troubleshoot the problems related to energy technology.

Course Outcomes:

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

- 1. Select suitable advanced materials and various testing methods for analysis.
- 2. Select appropriate structural materials and polymers in industries and society.
- 3. Select proper metallic material and corrosion prevention methods in industries and society.
- 4. Analyze and troubleshoot the problems related to energy technology.

List of Experiments (Any Twelve)

- 1. Determination of total hardness of water by EDTA method.
- 2. Determination of chloride content of water by Mohr's method
- 3. Determination of dissolved oxygen of water.
- 4. Determination of total solids & suspended solids of water.
- 5. Separation and detection of cations by using Paper Chromatography.
- 6. Determination of viscosity of liquid samples by using Ostwald's viscometer.
- 7. Determination of the percentage composition of the given unknown mixture using Ostwald's viscometer by graphical method.
- 8. Preparation of urea-formaldehyde resin
- 9. Preparation of phenol-formaldehyde resin
- 10. Determination of the critical micelle concentration (CMC) of the given surfactant by surface tension measurement using a Stalagmometer.
- 11. Proximate analysis of starch.
- 12. Qualitative analysis of carbohydrates and proteins.
- 13. Estimation of copper in brass.
- 14. Determination of rate of corrosion of metal.
- 15. Demonstration of Daniel cell

- 16. Proximate analysis of solid fuel.
- 17. Purification of given compound by sublimation.
- 18. Purification of given compound by a simple distillation.
- 19. Extraction of soluble matter from cotton fabric using Soxhlet apparatus.

- 1. Practical Chemistry by Dr. O.P. Pandey, D. N. Bajpai, Dr. S. Giri, under publication S. Chand & Company pvt. ltd.
- 2. Experiments and Calculations in Engineering Chemsitry by S. S. Dara under S. Chand & Company pvt. ltd.
- 3. Profiles in analytical chemicals by Dr. N. F. Desai enlarge edition.
- 4. Analytical Chemistry by Garry D. Christian fifth edition.
- 5. Introduction to chemical engineering by Walter L. Badger, Juliust T. Banchero.
- 6. Chemical information a practical guid to utilization by Yecheskel Wolman 2nd edition.
- 7. Instrumental methods of chemical analysis by Galen W. Ewing fifth edition under McGraw-Hill international editions.
- 8. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denn.
- 9. Vogel's text-book of practical organic chemistry by Brian S. Furniss, Antony J. Hannford, Peter W.G. Smith, Austin R. Tatchell fifth edition under Pearson publication.
- 10. Industrial Chemistry by B. K. Sharma under Goel publication house.
- 11. Vogel's quantitative inorganic analysis by G. Svehla, B. Sivasankar under Pearson publication.
- 12. Laboratory practice of organic chemistry by G. Ross Robertson, Thomas L. Jacobs fourth edition under Amerind publishing co. Pvt. Ltd.
- 13. Chemistry of water by Alla Appa Rao under New age international.
- 14. Textbook of Quantitative Chemical Analysis by G. H. Jeffery, J. Bassett, J. Mendham, R. C Denny.
- 15. Instrumental Methods of Chemical Analysis by G. Chatwal and S. Anand.

DKTES Textile and Engineering Institute, Ichalkaranji First Year B. Tech. Manmade Textile Technology (Semester – II) 01TMP168: Manmade Fabric Manufacturing-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, jacquard and design features of automatic loom.
- 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, jacquard and design features of automatic loom.
 - 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 primary motions on plain loom.
- 3. Study of secondary motions on loom.
- 4. Study of auxiliary motions on loom.
- 5. Study of climax dobby and pattern chain making.
- **6.** Study of mechanical jacquard.
- 7. Study of drop box motion on loom.
- 8. Study of design features of automatic 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 and automatic loom shed.

- 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. (Man Made Textile Technology) (Semester– II) 01TMP169: 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

- 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, Biztantra6. 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. (Man Made Textile Technology) (Semester- II) 01TMI170: Democracy, Election and Good Governance				
		Evaluation Scheme:		
		CIE: 50 Marks		
Course Obj	jectives:			
1. By st	tudying on their own	, students will try to understand	importance of d	emocracy, election
to local	self-government boo	dies and good governance.		
Course Out At the en 1. Ansv governa	tcomes: d of the course, stude ver questions related ance.	ents will be able to to democracy, election to local	self-government	bodies and good
		Course Contents		
Unit I		Democracy in India		
• Din	nensions of Democra	cy: Social, Economic and Politi	cal	
• Dec	centralization: Grassr	oots Level Democracy		
Cha	allenges before Demo	ocracy: women and marginalized	d sections of the	society
Unit II	Electio	n to Local Self Government Bodi	ies	
• 73r	d and 74th Constitut	tional Amendment Acts: Institu	itions at the loc	al level and Role of
Stat	te Election commissi	on		
• Loc	al Body Elections: U	Jrban & Rural		
• Dut	ies of an Individual t	owards electoral process		
Unit III		Good Governance		
• Mea	aning and concept			
• Gov	vernment and Govern	nance		
Good Governance initiatives in India				
* Students 50, passing	have to pass this subj of this course is com	ect by studying on their own & b pulsory.	y securing minin	num 20 marks out of