

DKTE Society's
TEXTILE & ENGINEERING INSTITUTE

Rajwada, Ichalkaranji 416115
(An Autonomous Institute)

DEPARTMENT: TEXTILES

CURRICULUM
B. Tech. Fashion Technology Program

First Year
With Effect From
2017-18



**First Year B.Tech Fashion Technology
Semester-I**

Sr. No.	Course Code	Name of the Course	Group	Teaching Scheme				Credits
				Theory Hrs/ Week	Tutorial Hrs/ Week	Practical Hrs/ Week	Total	
1	TFL131	APPLIED PHYSICS	A	3			3	3
2	TFL132	TEXTILE MATHEMATICS-I	A	3			3	3
3	TFL133	ELECTRICAL TECHNOLOGY	B	3			3	3
4	TFL134	TEXTILE FIBRES	D	3			3	3
5	TFL135	FUNCTIONAL ENGLISH-I	C	3			3	3
6	TFL136	TEXTILE MANUFACTURING - I	D	4			4	4
7	TFP137	ELECTRICAL TECHNOLOGY LAB	B			2	2	1
8	TFP138	FUNCTIONAL ENGLISH-I LAB	C			2	2	1
9	TFP139	TEXTILE MANUFACTURING-I LAB	D			3	3	1.5
10	TFP140	FUNDAMENTALS OF COMPUTING AND PROGRAMMING LAB	B			3	3	1.5
		Total		19	0	10	29	24

Group Details

- B: Engineering Science
 C: Humanities, Social Science & Management
 D: Professional Core Courses & Professional Elective
 E: Free Elective
 F Seminar/Training/ Project

First Year B. Tech. Fashion Technology – Semester I

TFL131: APPLIED PHYSICS

Teaching Scheme	
Lectures	3 Hrs/ Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. Understand significance of basic concepts of physics involved in textiles
2. Discuss the different factors from physics affecting yarn and fabric properties
3. Explain the different principles from physics involved in textiles.
4. Explain the different methods of measurement and calculate the different quantities of physics involved in textiles.

Course Outcomes

At the end of the course students will be able to

1. Understand significance of basic concepts of physics involved in textiles
2. Discuss the different factors from physics affecting yarn and fabric properties
3. Explain the different principles from physics involved in textiles.
4. Explain the different methods of measurement and calculate the different quantities of physics involved in textiles.

	Course Contents	Hrs.
Unit 1.	Elasticity: Stress, strain, Hooke's Law of elasticity. Some peculiar traits, working stress and factor of safety. Factors affecting elasticity. Young's modulus, bulk Modulus and Modulus of rigidity. Relation between Y , η and K . Poisson's ratio, relation between K , η and Poisson's ratio.	08
Unit 2.	Friction and Viscosity: Newton's Law of viscosity, streamline & turbulent flow, critical velocity, significance of Reynold's number. Experimental determination of η for a liquid by Poiseuille's method, Stokes law. Terminal velocity and its expression. Ostwald viscometer Applications of viscosity.	08

- Unit 3. Surface Tension:** Molecular theory of surface tension. Angle of contact and its characteristics. Excess pressure inside a liquid drop & soap bubble. Relation between radii of curvature, pressure & surface tension. Applications of surface tension. **07**
- Unit 4. Optics:** Laws of refraction, refractive index, total internal reflection. Magnifying power of simple and compound Microscope. Construction & working of electron microscope. Double refraction, Nicol prism. Quarter & half wave plates. **06**
- Unit 5. Photoelectric Effect:** Concept, Einstein's equation of photoelectric effect. Factors affecting the photoelectric effect. Study of various photocells. Use of photo sensors. **05**
- Unit 6. Crystallography:** Lattice, Basis, Crystal structure, seven crystal systems. Production of x-rays, Bragg's law, Bragg's x-ray spectrometer. **05**

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

First Year B. Tech. Fashion Technology – Semester I
TFL132: TEXTILE MATHEMATICS-I

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. Introduce students to mathematical methods which suits to solve the problems of matrices.
2. Prepare students so that they can understand mathematical treatments used in tracing the curves and the rules of differentiation & partial differentiation.
3. Introduce students to statistical methods which suits to statistical applications needs of Textile Math's III & IV of textile engineering.
4. Develop ability to collect, formulate & analyse textile testing data.

Course Outcomes

At the end of the course students will be able to

1. Solve problems related to matrices, successive differentiation, partial differentiation and its application
2. Solve the problems of successive differentiation, partial differentiation and its application
3. Collect textile testing data & classify and represent graphically also evaluate and interpret measures of central tendency and dispersion.
4. Evaluate and interpret measures of skewness and kurtosis understand mathematical models used in textile engineering

Course ContentsHrs

- Unit 1. Matrix:** Rank of matrix (Normal form of matrix, Echelon form of Matrix) **07**
 Solution of simultaneous linear equations (Homogeneous & Non Homogeneous) Characteristic equation, eigen values, eigen vectors. Caley Hamilton's theorem.

Unit 2.	Successive Differentiation & Partial Differentiation:	07
	Introduction, standard results, Leibnitz rule. Introduction of p. d., total differentiation, Euler's theorem on homogeneous function. Jacobean ($J.J'=1$) only, Errors & approximation.	
Unit 3.	Curve Tracing:	05
	Rules & examples of curve tracing in Cartesian and Polar Equations only.	
Unit 4.	Introduction of Statistics:	07
	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 & Computation Partition values : Quartiles deciles and percentiles & Computation	
Unit 5.	Measures of dispersion:	07
	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 6.	Measures of Skewness& kurtosis:	06
	Skewness, types, Karl Pearson's & Bow ley'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&Iyengar.
4. Mathematical Statistics by J.E. Freund.
5. Probability & Statistics for engineers by Johnson.
6. Statistical methods by Kumbhojkar

First Year B. Tech. Fashion Technology – Semester I

TFL133: ELECTRICAL TECHNOLOGY

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To understand various definitions, laws and concepts involved in electrical & magnetic circuits.
2. To understand concepts of elements & parameters in single phase & three phase AC circuits.
3. To understand working of electrical equipments like Transformer & Three phase induction Motors.
4. To explain concept of energy audit, power quality & modern methods.

Course Outcomes

At the end of the course students will be able to

1. Understand fundamental principles of electrical & magnetic circuit.
2. Understand to predict the behaviour of any element with respect to AC supply.
3. Design and conduct experiments, as well as to calculate the ratings & parameters of Transformer & Three phase induction Motors.
4. Understand concept of energy audit & its content related to saving.

Course content

Hrs.

Unit 1.	Fundamentals of Electrical circuits	7
	A) D.C. Circuits: Ohm's Law, Kirchoff's laws, mesh and node analysis, Energy conversions between electrical, mechanical, thermal quantities.	
	B) Magnetic Circuits: Flux, flux density, Reluctance, field intensity, B-H curve, series magnetic circuits.	
Unit 2.	Single Phase A.C. Circuits: Generation of sinusoidal voltage, R.M.S. & Average value, form factor, phasor representation of A.C. quantities, impedance, R-L, R-C, R-L-C series circuits, powers, power factor improvement by capacitor method.	7
Unit 3.	Three Phase A.C. Circuits: Introduction to three phase supply and its necessity, Generation of three phase A.C. voltage, balanced system, relation between line and phase quantities in star and delta.	7

Unit 4.	Single Phase Transformer Construction, operating principle, Types, emf equation, Transformation Ratio, operation on no load and with load, losses, efficiency, voltage regulation, applications.	8
Unit 5.	Three Phase Induction Motor Working Principle, Constructional Details, Types, Rotating Magnetic Field Theory, Torque Equation, Torque – Slip Characteristics, Speed Control Methods, Necessity of starters, Types of Starters, Variable Frequency Drive (VFD), application in Textile Industry.	8
Unit 6.	Energy Audit Introduction of energy audit, power quality, concept of energy efficient lighting system & motors.	2

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.

First Year B. Tech. Fashion Technology – Semester I**TFL134: TEXTILE FIBRES**

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To explain basics of textile fibres.
2. To describe morphological and chemical structure of natural fibres.
3. To describe manufacturing processes of manmade fibres.
4. To explain 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 morphological and chemical structure of natural fibres.
3. Demonstrate manufacturing processes of manmade fibres
4. Enunciate properties of natural and manmade fibres.

Course Contents

	Hrs.
Unit 1. Introduction: Definition of fibre, Staple fibre, Filament, Classification of fibres, Essential and desirable properties of textile fibres, Concepts of molecular weight, Degree of polymerization, Orientation and Crystallinity, Characteristics of fibre forming polymer, Advantages and disadvantages of natural & manmade fibres.	5 Hrs
Unit 2. Natural fibres:	7 Hrs
Vegetable Fibres	
i. Cotton fibre - Cultivation and harvesting, Development of fibre in seed, Morphological structure, Properties and applications of Cotton fibre.	
ii. Bast fibres - Retting and extraction process of Bast fibres, Properties and applications of Jute fibres.	
Unit 3. Animal Fibres:	7 Hrs
i. Wool - Grading of wool, Morphological structure, Properties and applications.	

- ii. Silk - Types of silk, Production of silk, Morphological structure, Properties and applications.

Unit 4. Man Made fibres: 4 Hrs

Introduction to methods of fibre formation - Melt spinning, Dry spinning and Wet spinning, Comparison between different man-made fibre formation technologies.

Unit 5. Synthetic fibres: 13 Hrs

- i. Polyamide: Nylon 6 & Nylon 66 fibres - Manufacturing process, Properties and applications.
- ii. Polyester (Polyethylene Terephthalate) - Manufacturing process, Properties and applications.
- iii. Polypropylene - Manufacturing process, Properties and applications.
- iv. Polyacrylonitrile Fibre- Manufacturing process, Properties and applications.
- v. Polyurethane Fibre –Extensibility and recovery mechanism, Manufacturing process, Properties and applications.

Unit 6. Regenerated Fibres: 3 Hrs

- i. Viscose rayon: Manufacturing process, Properties and applications.

Reference Books

1. Textile Fibres - Vol. - I by V.A.Shenai, Sevak Publications, Bombay, 1971.
2. Textile Fibres - H V S Murthy, Textile Association Publication, 1995.
3. A Text book of Fibre Science And Technology by S.P. Mishra, New age international (p) Limited, 2000.
4. Hand book of Textile Fibres Vol. I & II by Gorden & Cook, Merrrow Publication Ltd, England.
5. Man Made Fibres - R.W. Moncrieff, Heywood Books, London, 1998.
6. Polymer science - V. Govariker, Wiley Eastern Ltd, New Delhi, 1990.

First Year B. Tech. Fashion Technology – Semester I**TFL135: FUNCTIONAL ENGLISH-I**

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To explain the concept of communication.
2. To give information about international phonetic alphabets, stress and transcription
3. To develop communication and behavioural skills.
4. To give information about the LSRW skills

Course Outcomes

At the end of the course students will be able to

1. Understand the concept of communication
2. Apply the knowledge about IPA alphabets, stress and intonation while communicating
3. Understand the importance of communication and life skills
4. To understand the importance of listening, speaking, reading and writing skills throughout life

Course Contents**Hrs.**

- Unit 1. Understanding Communication:** Etymological perspective and definition of communication, Nature and Importance of Communication, Process of communication – idea or source, sender, encoding process, message, medium or channel, noise, receiver, decoding process, feedback, Barriers to Communication – Physical barriers – mechanical barriers – socio-cultural - psychological barriers – linguistic and semantics barriers, Forms of Communication – Formal and informal communication – oral and written communication – upward, downward, horizontal, grapevine Communication, Techniques of Formal Speech. Verbal Communication Non Verbal Communication – appearance – gestures – facial expressions – postures – kinesics – eye contact – silence – haptic – proxemics – paralinguistic **7 Hrs.**
- Unit 2. Fundamentals of English:** Parts of speech – Basic sentences – voices – reported speech – Framing questions – Wh questions- Yes/no questions – question tag – editing a passage – punctuation – spelling and common errors. **4Hrs.**

Unit 3.	Business Correspondence: – seven C’s of good business letter – Application and resume writing. Paragraphwriting – narrative – descriptive – argumentative – comparative –contrastive – E mail etiquettes – report writing – survey inspection and investigation	6 Hrs.
Unit 4.	Oratorical Efficiency: The phonemic alphabet in English–vowel sounds – short vowels – long vowels – diphthongs and trip thongs -Consonantal sounds – practice of transcription – stress – intonation,Extempore and elocution – group discussion and debate – interview -Presentation techniques and meeting.	10 Hrs.
Unit 5.	Behavioural Skills: Understanding Self - Developing Positive attitude - Decision Making Skills - Leadership Skills - Emotional Intelligence - Stress Management - Time Management - Team Work.	8Hrs.
Unit 6.	International Dexterity: Trans coding graphical representations–line graph –bar chart –flow chart –pie chart and tree chart – synonyms – antonyms – idioms – phrases – homonyms – homophones	4 Hrs.

Reference Books

1. Better English Pronunciation by J.D. O’Connor.
2. Communication Skills Handbook: How to succeed in written and oral communication by Jane Summers, Brette Smith, Wiley India Pvt.Ltd.
3. Soft Skills for Managers by Dr. T. KalyanaChakravarthi, Dr. T. LathaChakravarthi, Biztantra.
4. Soft Skills for every one by Jeff Butterfield, Cengage.
5. Behavioral Science by Dr.Abha Singh, Wiley India Pvt.Ltd.
6. An Introduction to Professional English and Soft Skills by Bikram K. Das, KalyaniSamantray, Cambridge University Press New Delhi.
7. Speaking Accurately, K.C. Nambiar, Cambridge University Press New Delhi.
8. Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press New Delhi.
9. Communication skills for engineers by Sunita Mishra.
10. Body Language by Allen Pease.
11. Business English And Communication by Cleark
12. Communication Techniques & Skills by R K Chaddha

First Year B. Tech. Fashion Technology – Semester I**TFL136: TEXTILE MANUFACTURING-I**

Teaching Scheme	
Lectures	4 Hrs. /Week
Total Credits	4

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To describe textile terminologies.
2. To explain spinning processes.
3. To describe the weaving operation.
4. To describe the fabric analysis.

Course Outcomes

At the end of the course students will be able to

1. Explain textile terminologies.
2. Explain the different spinning processes.
3. Describe the working of weaving machines.
4. Analyse the basic fabric designs.

	Course Contents	Hrs.
Unit 1.	Textile terms and definitions: Textile, fibres, yarns & fabrics.	04
Unit 2.	Yarn- numbering system and classification	07
Unit 3.	Ginning: Objects, types of ginning machines, pressing & baling of cotton.	05
Unit 4.	Introduction to spinning: Process flow chart for conversion of fibres into yarns. Object of each process. Objects and passage of material through blow room, card, draw frame, speed frame, comber and ring frame machines. Brief introduction of different spinning system.	13

Unit 5.	Introduction to weaving:	14
	Introduction to Textile Industry.	
	Process flow chart for woven, knitted fabric and non-wovens fabrics.	
	Yarn preparation – objects and passage of yarn on winding, warping, sizing & drawing-in, pirn winding.	
	Classification of looms, drop box, dobby, jacquard loom & their purpose.	
	Shedding, picking, beat-up, let-off & take-up, warp protector & weft stop motion of non-automatic power looms. Weaving calculations.	
Unit 6.	Fabric structures:	13
	Fabric constructional details of light, medium & heavy weight fabrics and capability of weaving machine. Warp, weft and cloth cover, crimp, contraction in warp & weft way. Presentation of weave & its importance.	
	Study of weaves – plain, twill & satin (basics only).	

Reference Books

1. Cotton Ginning, Textile Progress, The Textile Institute Publication. Fundamentals of Spun Yarn Technology by Carl A Lawrence.
2. Blowroom Carding, Drawframe by Prof. A.R. Khare.
3. Essential Calculations of Practical Cotton Spinning by T.K. Pattabhiraman.
4. Weaving by Prof. D.B. Ajgaonkar, Prof.Sriramalu, Prof. M.K. Talukdar.
5. Weaving by N.N. Banerjee.
6. Weaving Calculation by Sengupta.
7. Winding & Warping by M.K. Talukdar.
8. Textile Colour & Design by Watson.

First Year B. Tech. Fashion Technology – Semester I
TFP137: ELECTRICAL TECHNOLOGY LAB

Teaching Scheme	
Practical	2 Hrs. /Week
Total Credits	1

Evaluation Scheme	
CIE	50
Total	50

List of Experiments

1. Introduction to Electrical Engineering Lab.
2. Verification of Ohm's Law.
3. Verification of Kirchhoff's Current Law.
4. Verification of Kirchhoff's Voltage Law.
5. Determination of power factor of R L series circuit.
6. Determination of R & L of a choke coil.
7. Study of Phasor Relationship in R-L-C series circuit.
8. Direct load test on Single Phase Transformer.
9. Reversal of Rotation of Three Phase Induction Motor.
10. Speed control of Three Phase Induction Motor.
11. Direct load test on Three Phase Induction Motor.
12. Study of starters.

Submission

1. Completed Journal.

First Year B. Tech. Fashion Technology – Semester I
TFP138: FUNCTIONAL ENGLISH- I LAB

Teaching Scheme	
Practical	2 Hrs. /Week
Total Credits	1

Evaluation Scheme	
CIE	50
Total	50

List of Experiments

1. About myself
2. Extempore and elocution
3. Debate and public speaking
4. Phonology and Transcription
5. Grammatical activities
6. Verbal and nonverbal communication
7. Exercises on listening and reading
8. Vocabulary
9. Written communication (Formal letters)
10. Process and barriers to communication
11. Types of reports
12. Exercise on paragraph writing

Submission

Completed Journal and assignments

First Year B. Tech. Fashion Technology – Semester I
TFP139: TEXTILE MANUFACTURING-I LAB

Teaching Scheme	
Practical	3 Hrs.
Total Credits	1.5

Evaluation Scheme	
CIE	50
SEE	-
Total	50

List of Experiments

1. To study the different types of drives & calculation based on the same.
2. Introduction to spinning, sequence, machines (carded / combed).
3. Study of passage of material through blow room.
4. To study the passage of material in carding & drawframe.
5. To study the passage of material in comber and comber preparatory.
6. To study the passage of material through speedframe & ringframe.
7. Study of all weaving processes to observe the machines & operation to understand objects of all processes.
8. To study the primary motions and secondary motions to understand their functioning & objectives.
9. To study the auxiliary motions to understand their functioning & objectives.
10. To study the object & method of fabric analysis and calculation of crimp, covers & fabric weight.
11. Fabric analysis of fabric samples with plain weaves.
12. Fabric analysis of fabric samples with twill & satin & sateen weaves.

Submission

Completed Journal

First Year B. Tech. Fashion Technology – Semester I
TFP140:FUNDAMENTALS OF COMPUTER AND PROGRAMMING LAB

Teaching Scheme		Evaluation Scheme	
Practical	3 Hrs. /Week	CIE	50
Total Credits	1.5	Total	50

Course Objectives

1. To describe basic Computer architecture and Generation of computers.
2. To explain operating system concept with its structure and features
3. To illustrate scripting language and programming
4. To explain basic structure of ‘C’ programming and formation, 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. Understand basic of operating system and programming language
3. Design and implement web pages using scripting language.
4. Understand programming concept and develop simple application programs in ‘C’ language

Experiments will be based on following topics
Unit 1. Introduction to Computers

Introduction: Characteristics of Computers, Block diagram of computer. Types of computers and features, Mini Computers, Micro Computers, Mainframe Computers, Super Computers. Types of Programming Languages (Machine Languages, Assembly Languages, High Level Languages). Data Organization, Drives, Files, Directories. Types of Memory (Primary And Secondary) RAM, ROM, PROM, and EPROM. Secondary Storage Devices (FD, CD, HD, Pen drive) I/O Devices (Scanners, Plotters, LCD, Plasma Display) Number Systems Introduction to Binary, Octal, Hexadecimal number system Conversion, Simple Addition, Subtraction, Multiplication

Unit 2. Computer Software

Operating System: Types of operating system, Functions, Unix/Linux, Windows 7/Windows 8-structures & features, Unix/Linux commands: Listing, changing, copying and moving files & directories (LS, CD, CAT, MKDIR, RMDIR, and other

commands), any editor in Linux. Application Software's: Word processor, spreadsheets, presentation, application, DBMS, etc.

Unit 3. Dynamic Web Page Design

HTML: use of commenting, headers, text styling, images, formatting text with , special characters, horizontal rules, line breaks, table, forms, image maps, <META> tags, <FRAMESET> tags, file formats including image formats. Introduction to VBscript, basics of VB scripting, Java script.

Unit 4. Programming with 'C' Language

Introduction to 'C' Programming: Algorithm & flowchart, keywords, statements, Loops, Array representation, one dimensional array, structure, define structure variable, accessing structure member, pointer, pointer arithmetic, pointer & array

Reference Books

1. Fundamentals of Computers by V. Rajaram, PHI Publications.
2. Introduction to Information Technology, ITL Education Solutions LTD. Pearson Education
3. Let us C by Y.P. Kanetkar, BPB Publication
4. Beginning Java Script ,4Ed by Jeremy Mcpeak Paul Wilton

List of Experiments

1. Study of basic structure of computer system – Internal Components & peripherals.
2. Study of windows/Linux commands & create a file using any editor in Linux.
3. Create a document using any word processor (In Linux (open office) /Windows (Microsoft office)).
4. Use any spreadsheet application to manipulate numbers, formulae and graphs (In Linux/Windows).
5. Use any power point presentation application and create a professional power point Presentation using text, image, animation etc. (In Linux/Windows).
6. Create a simple web page using HTML/VB Script
7. Create a simple web page using Java Script.
8. Five programs of 'C' Language on Linux/Windows platform.

Submission: Completed Journal

First Year UG Program in Fashion Technology

Semester-II

Sr. No.	Course Code	Name of the Course	Group	Teaching Scheme				Credits
				Theory Hrs/Week	Tutorial Hrs/Week	Practical Hrs/Week	Total	
1	TFL141	APPLIED MECHANICS	B	3			3	3
2	TFL142	TEXTILE MATHEMATICS-II	A	3			3	3
3	TFL143	FASHION AND DESIGN CONCEPTS	D	3			3	3
4	TFL144	ENGINEERING GRAPHICS	B	2			2	2
5	TFL145	TEXTILE MANUFACTURING-II	D	4			4	4
6	TFL146	BASICS OF APPAREL TECHNOLOGY	D	3			3	3
7	TFP147	FASHION AND DESIGN CONCEPTS LAB	D			3	3	1.5
8	TFP148	ENGINEERING GRAPHICS LAB	B			3	3	1.5
9	TFP149	TEXTILE MANUFACTURING – II LAB	D			3	3	1.5
10	TFP150	FUNCTIONAL ENGLISH-II LAB	C			3	3	1.5
		Total		18		12	30	24

Group Details

- A: Basic Science
- B: Engineering Science
- C: Humanities, Social Science & Management
- D: Professional Core Courses & Professional Elective
- E: Free Elective
- F: Seminar/Training/ Project

First Year B. Tech. Fashion Technology – Semester II

TFL141: APPLIED MECHANICS

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To understand the concept of forces and various laws related to force with basic principles, theorems and concepts of mechanics.
2. To understand the concepts like equilibrium, support reactions, friction, moment of inertia and use of simple machines.
3. To study and analyse the effect of various types of forces on the bodies in static and dynamic conditions.
4. To interpret the concept of transmission of motion and power in various machines by using various drives and bearings used in textile machines.

Course Outcomes:

1. Understand the concept of forces and various laws related to force with basic principles, theorems and concepts of mechanics.
2. Understand the concepts like equilibrium, support reactions, friction, moment of inertia and use of simple machines.
3. Analyse the effect of various types of forces on the bodies in static and dynamic conditions.
4. Interpret the concept of transmission of motion and power in various machines by using various drives and bearings used in textile machines

Unit	Course Contents	Hrs.
Unit 1	Fundamentals of statics	7
	Statics, dynamics, Fundamental units of measurements, Metric system of units, SI. System, Scalar and Vector quantities. 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 nonconcurrent forces.	
Unit 2	Equilibrium	7
	Equilibrium of Coplanar forces, Conditions of equilibrium, free body diagram, Lami's theorem. Friction: Introduction to friction, types of friction, Laws of friction. (No numerical examples on friction).	

Beams: Types of beams, Types of Loads, Types of supports, Analysis of Simply supported beams.

Unit 3	Moment of Inertia	7
	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 4	Lifting Machines	5
	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 5	Kinematics and Kinetics	7
	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 6	Transmission of motion and power	6
	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 &Johstan, Tata Mc-Graw Hill Publication

First Year B. Tech. Fashion Technology – Semester II

TFL142: TEXTILE MATHEMATICS-II

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. Introduce students with the formulae, methods related to reduction formulae, special functions, multiple integrals and its applications.
2. Introduce students to mathematical methods which suits to numerical differentiation and curve fitting.
3. Prepare students with mathematical knowledge so that they can understand bivariate data distribution, correlation and regression.
4. Develop ability to identify, formulate & solve textile engineering problems of probability distribution.

Course Outcomes

At the end of the course students will be able to

1. Solve problems related to reduction formulae, special functions, multiple integrals and its applications.
2. Solve problems related to numerical differentiation and curve fitting.
3. Collect textile testing data & find the correlation and regression.
4. Evaluate and interpret probability distribution.

Course Contents

- Unit 1. Integral Calculus:** **7Hrs.**
- $\pi/2$ $\pi/2$ Reduction formulae for $\int \sin x dx$, $\int \cos x dx$, Gamma function, Beta Function, Multiple integrals: Introduction, solution, change of order & Change of variables method.
- Unit 2. Applications of integration:** **6Hrs.**
- Area, Mass of lamina using double integrals only. Volume using triple integral only.

Unit 3.	Numerical Differentiation & curve fitting: Newton's forward & backward formulae, Sterling's formula. Newton's divided difference formula. Fitting of curves $y=a+bx$, $y=a+bx+cx^2$, $y=abx$ by least square method.	7 Hrs.
Unit 4.	Bivariate data: Correlation: types, coefficient of correlation, properties. Rank correlation coefficient & computation. Regression: lines of X on Y & Y on X, regression coefficients, properties & computation.	7Hrs.
Unit 5.	Probability distribution: Random variable: types, introduction laws 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	7Hrs.
Unit 6.	Standard continuous probability distributions: Normal probability distribution: Definition, properties, standard normal distribution & examples. Chi-square probability distribution (χ^2): Definition & properties only. t-probability distribution: Definition & properties only. F-probability distribution: Definition & properties only. Examples of t, χ^2 , & F are not expected.	5Hrs.

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&Iyengar.
4. Mathematical Statistics by J.E. Freund.
5. Probability & Statistics for engineers by Johnson.
6. Statistical methods by Kumbhojkar

First Year B. Tech. Fashion Technology – Semester II

TFL143: FASHION AND DESIGN CONCEPTS

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To explain and illustrate various elements of design
2. To explain and illustrate various principles of design
3. To explain basic tools and equipment used for fashion drawing.
4. To explain drawing of human body by using 8, 10, 12 head measurements.

Course Outcomes

At the end of the course students will be able to

1. Work as a member of team and demonstrate practical applications of various elements and principles of art in fashion dress designing.
2. Choose appropriate design details to rectify body irregularities.
3. Use appropriate tools and equipments for fashion drawing.
4. Analyze and create 8- head, 10- head and 12- head figures.

Course Contents

Unit 1. Introduction to Fashion Design: Definition and meaning of design, aspects of design: structural, functional & decorative. Optical illusion and its role in fashion designing.	4 Hrs.
Unit 2. Elements of Design: Line: types and characteristics. Shape: types and characteristics. Silhouette: A-line, bell, balloon, V-line, etc. Size. Texture. Type. Space. Colour: source of colour, light and pigment colour theory, colour properties like hue, value and saturation, Munsell colour theory, colour schemes like monochromatic, analogous, complementary, split-complementary, triad, etc., colour psychology.	10 Hrs.
Unit 3. Principles of Design: Balance: definition, aspects, types, role in designing. Rhythm: Definition, rhythm through repartition, Alteration, gradation, parallelism, radiation. Proportion: The comparison of dimensions or distribution of forms. Relationship in scale between one element and another, or between a whole object and one of its parts. Emphasis: Varying degrees of dominance in design. Visual weight of a composition, establishment space and perspective. Unity: The aspects of a given design that are	10 Hrs.

necessary to tie the composition together, to give it a sense of wholeness, or to break it apart and give it a sense of variety, Mobility and concentration.

Unit 4.	Fashion Illustration: Art materials: features, advantages, limitations and applications. Pen and Ink Techniques. Wash Techniques. Figure drawing versus fashion illustration. 8-head, 10-head, 12-head female figure illustration. Male figure illustration.	4 Hrs.
Unit 5.	Fashion Concepts Fashion Terminology - Fashion, Fad, Trend, Classic, High Fashion, Mass Fashion. Fashion Cycle. Fashion theories – Trickle up, Trickle down and Trickle across theory.	5 Hrs.
Unit 6.	Computer Aided Fashion Design Vector versus bitmap software. Tools, menus and workspace in Adobe Photoshop, Adobe Illustrator and CorelDraw. Bitmap software: Basic Photo Corrections, various selection techniques, layers, masking of layers, colour applications, filters, etc. Vector Software: working with pen, freehand tools, text, colour and texture, mesh tools, blend tool, interactive fill tools, and tracing bitmaps.	6 Hrs.

Reference Books

1. Fashion Sketchbook by Bina Abling (2012), Bloomsbury Publishing India Private Limited. ISBN: 1609012283
2. Fashion Designer's Handbook for Adobe Illustrator by Marianne Centner and Frances Vereker (2011), John Wiley & Sons. ISBN: 1119978114.
3. A Complete Guide to Fashion Designing by Davis (2008), Abhijeet Publications. ISBN: 8182471184.
4. Colour Forecasting by Tracy Diane and Tom Cassidy (2008), Wiley-Blackwell. ISBN: 9781405143776.
5. Figure Drawing for Fashion Design by Elisabetta Drudi (2010), The Pepin Press. ISBN: 9054961503.
6. Rendering Fashion, Fabric and Prints With Adobe Photoshop by Steve Greenberg and M. K. Colussy (2007), Pearson Education. ISBN: 8131709973.
7. Fashion Design: The Complete Guide by John Hopkins (2012), AVA Book Production Pvt. Ltd. ISBN: 9782940411528.
8. McKelvey, Kathryn and Munslow, Janine. Fashion Design: Process, Innovation and Practice. New York: John Wiley & Sons, 2003. ISBN: 0632055995.
9. Elements of Fashion and Apparel Design by G.J. Sumathi (2002), New Age International (P) Ltd. ISBN: 8122413714.
10. Inside fashion Design by Sharon L. Tate and Mona S. Edwards (2006), Pearson Education. ISBN: 8131706958.
11. The Language of Fashion Design: 26 Principles Every Fashion Designer Should Know by Laura Volpintesta (2014), Rockport Publishers. ISBN: 1592538215.

First Year B. Tech. Fashion Technology – Semester II
TFL144: ENGINEERING GRAPHICS

Teaching Scheme	
Lectures	2 Hrs. /Week
Total Credits	2

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To understand procedure for converting a pictorial view into orthographic view.
2. To understand procedure for converting an orthographic view in to isometric view.
3. To understand procedure for drawing Development and anti-development of solids such as cone, cylinder, prism and pyramid.
4. To study IS convections for various materials and mechanical elements, free hand sketches of various mechanisms used in textile machines. To know the use of Auto-CAD Commands.

Course Outcomes

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

1. Draw orthographic views from a given pictorial view.
2. Draw isometric view from given orthographic views.
3. Draw Development and anti-development of solids such as cone, cylinder, prism and pyramid.
4. Draw IS convections for various materials and mechanical elements, free hand sketches of various mechanisms used in textile machines. To write Commands for various entities in Auto-CAD.

	Course Contents	Hrs.
Unit 1.	Introduction & use of instruments: Line, Lettering, Conventions of section lines, I.S. conventions of machine parts like knurling, square end of shaft, bearing, springs, external & internal thread.	3
Unit 2.	Orthographic Projections: General principles, First angle method, Third angle method,	3

	Dimensioning.	
Unit 3.	Sectional Orthographic views: Cutting plane, Types of sections, drawing sectional views of machine components.	5
Unit 4.	Isometric Projections: Principle, Isometric scale, Isometric views, Making Isometric drawings of simple objects from orthographic views.	6
Unit 5.	Development of Surfaces: Introduction to solids (Types of solids only), Development of lateral surfaces of cubes, prisms, pyramids, cylinders & cones.	6
Unit 6.	Free hand sketches & Introduction to Auto- CAD Making free hand sketches of various textile machine parts & mechanisms used in spinning, weaving, processing, garments & Commands for drawing lines, circles, polygons, ellipse etc.	3

Reference Books

1. Engineering Drawing by N. D. Bhatt & V. M. Panchal.
2. Engineering Drawing by Venugopal.
3. Machine Drawing by N. D. Bhatt & V. M. Panchal.
4. Machine Drawing by K. L. Narayana, Kannaiah P., K. Venkata Reddy.
5. Principles of Weaving by Marks & Robinson.
6. Engineering Graphics by H. G. Phakatkar

First Year B. Tech. Fashion Technology – Semester II
TFL145: TEXTILE MANUFACTURING-II

Teaching Scheme	
Lectures	4 Hrs. /Week
Total Credits	4

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To explain doubling and twisting process
2. To explain various spinning technologies
3. To explain various weaves derivatives & weft patterning.
4. To explain chemical processing of fabric/ garment.

Course Outcomes

At the end of the course students will be able to

1. Explain doubling and twisting process
2. Explain various spinning techniques
3. Create and design various fabric weaves
4. Explain chemical processing of fabric/garment.

	Course Contents	Hrs.
Unit 1.	Doubling and Twisting: Objects, properties and applications of doubled yarns, various doubling & twisting methods (Ring doubler, Uptwister and TFO).	08
Unit 2.	New Spinning Systems: Introduction to principle of working of Rotor spinning, Airjet spinning, Vortex spinning, Compact spinning and Friction spinning. Comparison of yarn structures.	14
Unit 3.	Blend Yarns: Objects of blending of different fibres, concept of blend spinning. Properties and application of blended yarns.	08

Unit 4.	Weft patterning: Study of systems available, types of box motions, introduction to Weft patterning on modern weaving machines, card saving.	06
Unit 5.	Fabric Design: To represent following weaves on graph paper with design, draft, per plan and dealing order. a. Derivative of plain weave, warp and welt rib matt (regular and irregular). b. Derivatives of Twill c. Derivatives of satin / sateen weave irregular satin, satin cheeks. d. Toweling structures, ordinary and Brighton Honeycombs, Huckaback. e. Mock leno, Creps by Various methods. Give the weaving requirements for above weaves. State the constructional details of various fabrics.	16
Unit 6.	Need of chemical processing in Textiles along with garment processing & finishing.	04

Reference Books

1. The textile Institute publication – Manual of Textile Technology – Short Staple Spinning series. Vol. V: New Spinning System by W. Klein. Vol. I: The Technology of Short Staple Spinning by W. Klein.
2. Essential Calculations of practical cotton spinning by T. K. Pattabhirerman.
3. Elements of Ring frame and doubling by A. R. Khare.
4. Spun Yarn Technology by Eric Oxtoby.
5. TFO Technology and Technique for spun yarn by M. S. Kulkarni and H. V. S. Murthy. 6. Fundamentals of Spun Yarn Technology By Carl A. Lawrence.
6. Principles of Weaving by Marks ATC and Robinson.
7. Textile Color and design by Watson.
8. Weaving by Prof. D. B. Ajgaonkar, Prof.Sriramalar& M. K. Takddar
9. Weaving Mechanism by K. T. Aswani.

First Year B. Tech. Fashion Technology – Semester II
TFL146: BASICS OF APPAREL TECHNOLOGY

Teaching Scheme	
Lectures	3 Hrs. /Week
Total Credits	3

Evaluation Scheme	
SE-I	25
SE-II	25
SEE	50
Total	100

Course Objectives

1. To explain the basics of apparel industry
2. To describe pre-production and post-production processes of apparel industry.
3. To describe production processes of apparel industry.
4. To explain applications of CAD-CAM in apparel industry.

Course Outcomes

At the end of the course students will be able to

1. Describe the structure and classification of garment industries as per size, labor, product etc.
2. Illustrate various pre-production and post-production processes with its importance, process flow, requirements and machineries.
3. categorize various production technologies
4. To explain applications of CAD-CAM in apparel industry.

Course Contents

Unit 1.	Introduction to clothing industry, classification as per the size, labour etc. fabric inspection and grading system used in the industry	6 Hrs.
Unit 2.	Cutting: Importance of cutting, requirements of cutting, production processes in cutting room, planning, spreading, cutting, preparation for sewing.	6 Hrs.
Unit 3.	Fusing: purpose of fusing, the process of fusing, requirement of fusing as per fabric, fusing machinery for garment parts, methods of fusing and quality control in fusing.	4 Hrs.
Unit 4.	Sewing: Classification of stitches & seams, seam defects and stitching defects, feed systems, sewing threads, sewing needles, machinery and	10 Hrs.

equipments.

Unit 5. Pressing & finishing: object, classifications, means, components, machinery and equipments, garment finishing and inspection **5 Hrs.**

Unit 6. Production technology: Manual systems, make through systems, straight line systems, modular production systems, unit production systems, quick response systems. **8 Hrs.**

Ware housing: Handling equipments, storage equipments, packing equipments.

Application of CAD/CAM in garment manufacturing

Reference Books

1. Garment technology for fashion designers by Gerry Cooklin.
2. Introduction to clothing manufacturing by Gerry Cooklin.
3. Clothing construction and wardrobe planning by Dora S. Lewin, Mabel Goode Bowers, ManettaKnttunen- The Macmillan Co New York
4. Garment technology by Dr. V. Subramanian – winter school booklets1990 BIS publications 1989.
5. The Technology of clothing manufactures, by Carr & Latham, Blackwell Publications, 2000.
6. Apparel Handbook by Jacob sollinger

First Year B. Tech. Fashion Technology – Semester II
TFP147: FASHION AND DESIGN CONCEPTS LAB

Teaching Scheme	
Practical	3 Hrs. /Week
Total Credits	1.5

Evaluation Scheme	
CIE	50
Total	50

List of Experiments

1. To study elements of design.
2. Development of a color wheel.
3. To study psychological characteristics of colors.
4. To study tint, shade & tone of color.
5. Development of various textures.
6. To study principles of design.
7. Drawing of human body with the help of 8 head theory of body Measurements.
8. Drawing of human body with the help of 10 head theory of body Measurements.
9. Drawing of human body with the help of 12 head theory of body Measurements
10. Study tools, menus and workspace of Adobe Photoshop.
11. Study tools, menus and workspace of Adobe Illustrator.
12. Study tools, menus and workspace of CorelDraw.

Submission

Completed Journal

First Year B. Tech. Fashion Technology – Semester II
TFP148: ENGINEERING GRAPHICS LAB

Teaching Scheme		Evaluation Scheme	
Practical	3 Hrs. /Week	CIE	50
Total Credits	1.5	Total	50

List of Experiments

1. Lines, Letterings & Dimensioning.
2. Conventions of section lines & I.S. conventions of machine parts.
3. Conversion of pictorial view into orthographic views.
4. Conversion of pictorial view into sectional orthographic views.
5. Free hand sketches of textile machine parts & mechanisms.
6. Isometric Projections.
7. Development of Surfaces

Submission

Submission of 8 drawing sheets of half imperial size on the above topics.

First Year B. Tech. Fashion Technology – Semester II
TFP149: TEXTILE MANUFACTURING-II LAB

Teaching Scheme	
Practical	3 Hrs. /Week
Total Credits	1.5

Evaluation Scheme	
CIE	50
SEE	-
Total	50

List of Experiments

1. Study of Ring doubler – Passage and calculations.
2. Study of TFO – Passage and calculations.
3. Study of construction and passage of material on compact spinning.
4. Study of construction and passage of material on rotor spinning.
5. Study of construction and passage of material on airjet spinning.
6. Operating the plain and auto loom to weave the good fabric.
7. Study of weft patterning device.
8. Fabric Analysis (Derivatives of plain : Warp Rib, Welt Rib, Matt weave)
9. Fabric Analysis (Trill derivatives : Broken, Transposed, Herringbone)
10. Fabric Analysis (Mack leno, Honeycomb, Huckaback.
11. Study of important processing operations.
12. Study of various finishes used for textiles.

Submission

Completed Journal

First Year B. Tech. Fashion Technology – Semester II
TFP150: FUNCTIONAL ENGLISH-II LAB

Teaching Scheme	
Practical	3 Hrs. /Week
Total Credits	1.5

Evaluation Scheme	
CIE	50
Total	50

Course Objectives

1. To develop LSRW skills
2. To develop the presentation skills
3. To develop the career skills
4. To develop oratorical skills

Course Outcomes

At the end of the course students will be able to

1. Understand the importance of listening, speaking, reading and writing skills throughout life
2. Apply the knowledge of presentation skills
3. Understand the importance of career skills.
4. Apply the oratorical skills.

The term work will be based on the following topics

- I. Letter writing:** Formal and informal letters – elements of letter writing - the letter of enquiry – the letter of the order – the letter of complaint – the letter of invitation – solicited and unsolicited application letter – curriculum vitae
- II. Group discussion and Interview:** Importance and objectives of Group Discussion – Strategies – types of GD – Procedure of GD – evaluation criteria of GD , Techniques and skills of interview – types of interview – body language related to interview –
- III. Presentation skills:** Importance and techniques of presentation skill- presenting yourself professionally – public speaking - PowerPoint presentation – responding to situations and providing the solutions

- IV. Common errors in English:** Punctuation – spellings – subject, verb agreement – grammar
- V. Career skills:** psychometric analysis test – Newspaper reading – creative writing – short prepared composition on current affairs – Introducing others – telephonic conversation – talking about people and places – explaining ideas and visual information – book review – note making – picture perception-
- VI. Netiquettes:** Netiquettes for the E mail users – guidelines for users – E mail etiquettes

Term Work

- 1 Writing all types of letters
- 2 The letter of application and preparing C V
- 3 Group discussion
- 4 Mock interview
- 5 PowerPoint presentation
- 6 Case study
- 7 Email writing
- 8 Exercises on Common errors in English
- 9 Creative writing
- 10 Short prepared composition on current affairs
- 11 Telephonic conversation
- 12 Book review

Submission

Completed Journal and assignments