

**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
2020-2021**



**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	TFL161	Textile Mathematics - I	B	3			3	3
2	TFL162	Applied Physics	B	3			3	3
3	TFL163	Engineering Graphics	C	2			2	2
4	TFL164	Textile Fibres	D	3			3	3
5	TFL165	Textile Manufacturing - I	D	3			3	3
6	TFP166	Engineering Graphics Lab	C			2	2	1
7	TFP167	Functional English - I Lab	A			2	2	1
8	TFP168	Fundamentals of Computer and Programming Lab	C			2	2	1
9	TFP169	Textile Manufacturing - I Lab	D			2	2	1
		Total		14	0	8	22	18

Group Details

A: Humanities, Social Science & Management

B: Basic Science

C: Engineering Science

D: Professional Core Courses

E: Professional Electives

F: Open Elective

G: Project / Seminar / Internship

H: Mandatory non-Credit Courses

First Year B. Tech. Semester – I
TFL161: TEXTILE MATHEMATICS- I

Teaching Scheme	
Lectures	3Hrs. / Week
Total Credits	3

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

Course Objectives	
1.	Introduce students with normal form, echelon form and rank of matrix. Prepare them to solve the problems of finding rank and solve system of equations.
2.	Introduce students with the theory of finding derivative numerically and fitting curve to given data. Prepare them to solve problems of numerical differentiation and curve fitting.
3.	Introduce students with basic concept of statistical data, collection and types of data, classification, graphical representation, frequency distribution with construction, central tendency and dispersion of data, 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 have understood	
1.	The theory of normal form, echelon form and rank of matrix. Also, they can solve problems of finding rank and solve system of equations.
2.	The theory finding derivative numerically and fitting curve to given data. Also, they are able to solve problems related to numerical differentiation and curve fitting.
3.	Basic concept of statistical data, collection and types of data, classification, graphical representation, frequency distribution with construction, central tendency and dispersion of data, measures of central tendency and dispersion. Also, they are able to analyse 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	Hrs.
Unit 1.	Matrix: Rank of matrix (Normal form of matrix, Echelon form of Matrix) Solution of simultaneous linear equations (Homogeneous & Non-Homogeneous) Characteristic equation, eigen values, eigen vectors. Caley Hamilton's theorem.	7
Unit 2.	Successive Differentiation & Partial Differentiation: Introduction, standard results, Leibnitz rule. Introduction of p. d., total differentiation, Euler's theorem on homogeneous function. Jacobean ($J.J'=1$) only, Errors & approximation.	7

Unit 3.	Numerical Differentiation & curve fitting: Newton's forward & backward formulae, Sterling's formula. Newton's divided difference formula. Fitting of curves: $y=a+bx$, $y=a+bx+cx^2$, $y=a.x^b$ by least square method	6
Unit 4.	Introduction of Statistics: 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	7
Unit 5.	Measures of dispersion: 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	7
Unit 6.	Measures of Skewness& kurtosis: Skewness, types, Karl Pearson's & Bow ley's coefficient of skewness& Computation. Kurtosis definition and types only. (No Examples of Kurtosis)	5

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. Semester – I
TFL162: APPLIED PHYSICS

Teaching Scheme	
Lectures	3 Hrs. / Week
Total Credits	03

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

Course Objectives

1.	To understand significance of basic concepts of physics involved in textiles
2.	To discuss the different factors from physics affecting yarn and fabric properties
3.	To explain the different principles from physics involved in textiles.
4.	To 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, Breaking stress, Working stress, Factor of safety, Resilience. Some peculiar traits and Factors affecting elasticity. Young's modulus, bulk Modulus and Modulus of rigidity. Relation between Y , η and K . Poission's ratio, relation between K , η and Poission's ratio. Twisting couple on a cylinder (for wire). Torsional rigidity.	7
Unit 2.	Viscosity: Newton's Law of viscosity. Streamline & Turbulent flow, Critical velocity, Significance of Reynold's number. Stokes law. Terminal velocity and its expression. Poiseuille's equation for flow of a liquid through a horizontal capillary tube. Experimental determination of η for a liquid by Poiseuille's method, Ostwald viscometer Applications of viscosity.	6
Unit 3.	Friction and Surface Tension: Types of friction, Laws of friction, Angle of friction, acceleration down an inclined plane. Rope brake, Proof of $T_2/T_1 = e^{\mu\theta}$. Molecular theory of surface tension. Surface energy, Angle of contact, capillary rise. Excess pressure inside a liquid drop, Soap bubble and inside a	6

	curved membrane of any shape. Applications of surface tension.	
Unit 4.	Optics: Laws of refraction, refractive index, total internal reflection. Magnifying Power and Resolving power. Construction & working of electron microscope. Polarization of light, Double refraction, Nicol prism, Quarter wave and Half wave plate. Production and detection of circularly and Elliptically polarized light.	7
Unit 5.	Crystalline solids and characterization by X-rays Production of x-rays by modern Coolidge tube, Properties and Applications of X-rays. X-ray spectrum. Seven crystal systems, miller Indices. Bragg's law and Bragg's x-ray spectrometer.	7
Unit 6.	Laser and Photoelectric effect: Laser, Characteristics and Applications of Laser. Spontaneous, Stimulated emission and Ruby Laser. Photoelectric effect, Einstein's equation of photoelectric equation. Factors affecting the photoelectric effect. Study of various photocells. Use of photo sensors.	6

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. Semester – I
TFL163: 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 conventions 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 conventions 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.	Introduction to Projection of Points, Lines, Planes, Solids and Section of Solids	4
Unit 3.	Orthographic Projections and Sectional Orthographic views: General principles, First angle method, Third angle method, Dimensioning, 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.	7

Unit 5.	Development of Surfaces: Introduction to solids (Types of solids only), Development of lateral surfaces of cubes, prisms, pyramids, cylinders & cones.	7
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. Semester – I
TFL164: 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 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.	Demonstrate the manufacturing processes of manmade fibres
4.	Enunciate properties of natural and manmade fibres

Unit	Course Contents	Hrs.
Unit 1.	Introduction	5
	a. Concepts of: Fibre, Yarn, Fabric, Staple fibre, Filament, Regenerated fibre, Degree of polymerization, Crystallinity, Orientation.	
	b. Classification of fibres.	
	c. Advantages and disadvantages of natural & manmade fibres.	
	d. Characteristics of fibre forming polymer.	
	e. The requirement of fibre formation.	
Unit 2.	f. Introduction to Textile Value Chain.	7
	Vegetable Fibres	
	a. Cotton Fibre: Cultivation and harvesting, Development of fibre in seed, Morphological structure, Properties and applications of Cotton fibre.	
	b. Bast Fibres: Retting and extraction process of Bast fibres, Properties and applications of Jute fibres.	
Unit 3.	c. Introduction to other vegetable fibres	7
	Animal Fibres	
	a. Wool: Types and grading of wool, Morphological structure, Properties and applications.	

	b. Silk: Types of silk, Production of silk, Morphological structure, Properties and applications.	
Unit 4.	Manmade Fibre Formation Technologies - Melt Spinning - Dry Spinning - Wet Spinning - Comparison between different man-made fibre formation technologies.	4
Unit 5.	Manmade Fibres Polyamide Fibres (Nylon 6 & Nylon 66): Manufacturing process, Properties and applications. Polyester (Polyethylene Terephthalate): Manufacturing process, Properties and applications. Polyolefin Fibres (Polypropylene): Manufacturing process, Properties and applications. Polyacrylonitrile Fibre: Manufacturing process, Properties and applications. Polyurethane Fibres: Extensibility and recovery mechanism, Manufacturing process, Properties and applications	12
Unit 6.	Regenerated Fibres Viscose Rayon: Manufacturing process, Properties and applications. Introduction to other regenerated fibres	4

Reference Books	
1	ACIMIT – Italy, Reference Book of Textile Technology - Man-made Fibres (2011).
2	J. Gordon Cook, Handbook of Textile Fibres. Volume 1 Natural Fibres, Woodhead Publishing Series in Textiles ISBN:978-1-85573-484-5 (1984).
3	J. Gordon Cook, Handbook of Textile Fibres. Volume 2 Man-Made Fibres, Woodhead Publishing Series in Textiles, ISBN: 978-1-85573-485-2 (1984).
4	Murthy, H. V. Sreenivasa, Introduction to Textile Fibres, Woodhead Publishing India in Textiles, ISBN:978-93-85059-57-5 (1984).
5	S.P. Mishra, A Textbook of Fibre Science and Technology, New Age International (P.) Limited, ISBN: 9788122412505 (2000).
6	R. W. Moncrieff, Man-made Fibres, Heywood Books, Open Library-OL5656433M (1966).
7	V. R. Gowariker, Polymer Science, New Age International Publishers; Third edition, ISBN: 9387788644, (1 January 2019).

First Year B. Tech. Semester – I
TFL165: TEXTILE MANUFACTURING- 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 understand textile terms and different yarn spinning processes.
2.	To understand yarn numbering systems.
3.	To understand the cotton cultivation, harvesting, ginning and baling process.
4.	To understand cotton and blended ring yarn spinning process.

Course Outcomes

At the end of the course students will be able to

1.	Explain textile terms and different yarn spinning processes.
2.	Explain yarn numbering systems.
3.	Explain the cotton cultivation, harvesting, ginning and baling process.
4.	Explain cotton and blended ring yarn spinning process.

	Course Contents	Hrs.
Unit 1.	Definition of terms – Textiles, Fibres, Staple fibre, Filament, Staple yarn, Filament yarn. Classification of yarns. Process flow chart for conversion of fibre in to yarn in Ring, Rotor and Air-jet yarn manufacturing.	04
Unit 2.	Yarn numbering systems: Introduction, Importance, Direct and Indirect yarn numbering systems. Related calculations. Resultant yarn count calculations.	06
Unit 3.	Ginning: Indian cotton cultivation, types of cotton harvesting, Process of Defoliation, Pre and post Ginning Process, working of different ginning machines, cotton baling and pressing.	06
Unit 4.	Fibre preparation – Blow room: Types and composition of trash in cotton. Objects of blow room. Elements of blow room machines. Working of machines used in blow room. Card: Objects, basic actions in card, construction and working of card.	07

Unit 5.	Spinning preparatory and spinning: Draw frame: Objects, Concepts of drafting & doubling, Working of draw frame. Comber preparatory and comber: Objects, Machine sequences and working of machines used for comber preparatory, Construction and working of comber. Speed Frame: Objects, construction and working of speed frame. Ring Frame: Objects, construction and working of ring frame. Calculations based on the spinning machines	13
Unit 6.	Blend spinning: Objects of blend spinning, stages of fibre blending, Properties and application of blended yarns.	03

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	Elements of Ring frame and doubling by A. R. Khare.
4	Essential Calculations of Practical Cotton Spinning by T.K. Pattabhiraman
5	Spun Yarn Technology by Eric Oxtoby.
6	Blend spinning by K. R. Salhotra

First Year B. Tech. Semester – I
TFP166: ENGINEERING GRAPHICS LAB

Teaching Scheme	
Practical	2 Hrs. /Week
Total Credits	1

Evaluation Scheme	
CIE	50
Total	50

List of Experiments	
1.	Lines, Letterings & Dimensioning.
2.	Conventions of section lines & I.S. conventions of machine parts.
3.	Projection of Points and Lines, Auxiliary Plane Method
4.	Projection of Planes, Auxiliary Plane Method
5.	Projection of Solids, Auxiliary Plane Method
6.	Projection of Section of Solids, Auxiliary Plane Method
7.	Conversion of pictorial view into orthographic views.
8.	Conversion of pictorial view into sectional orthographic views.
9.	Free hand sketches of textile machine parts & mechanisms.
10.	Isometric Projections.
11.	Development of Surfaces
12.	Autocad Commands

Submission – Completed Journal.

First Year B. Tech. Semester – I
TFP167: FUNCTIONAL ENGLISH- I LAB

Teaching Scheme	
Practical	2 Hrs. / Week
Total Credits	1

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.

	Course Contents	Hrs.
Unit 1.	Understanding Self or About myself , Grammatical activities	
Unit 2.	Simple application letter. Job application and resume writing	
Unit 3.	Extempore, Vocabulary building.	
Unit 4.	E mail writing, Dialogue writing.	
Unit 5.	Debate, Power point presentation on given topic	
Unit 6.	Paragraph writing. Effective Reading (news paper articles)	

Reference Books	
1	Soft Skills for Managers by Dr. T. KalyanaChakravarthi, Dr. T. LathaChakravarthi, Biztantra.
2	Soft Skills for every one by Jeff Butterfield, Cengage.
3	Communication skills for engineers by Sunita Mishra
4	Communication Techniques & Skills by R K Chaddha
5	Body Language by Allen Pease.
6	Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press New Delhi.

List of Experiments	
1.	Understanding Self or About myself
2.	Grammatical activities
3.	Simple application letter
4.	Job application and resume writing
5.	Extempore
6.	Vocabulary building
7.	E mail writing
8.	Dialogue writing
9.	Debate
10.	Power point presentation on given topic
11.	Paragraph writing.
12.	Effective Reading (news paper articles)

Submission – Completed Journal.**SCHEME OF ASSESSMENT:**

TUTORIAL BOOK	30 MARKS (Attendance, writing, performance)
ASSIGNMENT BOOK	10 MARKS.
ORAL	10 MARKS.

First Year B. Tech. Semester – I
TFP168: FUNDAMENTALS OF COMPUTER AND PROGRAMMING LAB

Teaching Scheme		Evaluation Scheme	
Practical	2 Hrs. / Week	CIE	50
Total Credits	1	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, discuss about online platform

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. Understand of online platform

	Course Contents	Hrs.
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 using number system.	6
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.	6
Unit 3. Dynamic Web Page	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	4

Design	formats including image formats. Introduction to VB script, 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.	6
Unit 5. Online Platform	Online Meeting, online Presentation, online exam, online webinars, online study platforms.	4

Reference Books

1	Fundamentals of Computers by V. Rajaram, PHI Publications.
2	Introduction to Information Technology, IITL 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 parts of Computer System
2.	Study of Linux Commands
3.	Create spreadsheet application to manipulate numbers, formula and graphs in Linux/MS Office
4.	Create a Power Point presentation application using Text, Image, Animation using Linux/MS Office
5.	Create a simple personal web page using HTML
6.	Create a simple web page using VB Script
7.	Program for Addition, subtraction, Multiplication, Division of two numbers using C Language in Linux Platform
8.	Program for different types of loops using C Language in Linux Platform
9.	Program for one-dimensional array using C Language in Linux Platform
10.	Program for two-dimensional array using C Language in Linux Platform
11.	Study of Online Platform-I
12.	Study of Online Platform-II

Submission – Completed Journal.

First Year B. Tech. Semester – I
TFP169: TEXTILE MANUFACTURING- I LAB

Teaching Scheme	
Practical	2 Hrs. / Week
Total Credits	2

Evaluation Scheme	
CIE	50
Total	50

List of Experiments	
1.	Process Flow chart for ring, rotor and air-jet yarn manufacturing.
2.	Testing of sliver, roving hank and yarn count.
3.	Study of ginning machine: Construction and working.
4.	Study of Blow-room line - Flow chart - Machine positioning in Blow-room.
5.	Study of card machine: Construction and working.
6.	Study of draw frame: Construction and working.
7.	Study of comber preparatory machines: Construction and working.
8.	Study of comber: Construction and working.
9.	Study of speed frame: Construction and working.
10.	Study of ring frame: Construction and working.
11.	Production of cotton and blended yarn on ring frame.
12.	Mill visit – spinning mill.

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	TFL171	Textile Mathematics - II	B	3			3	3
2	TFL172	Applied Mechanics	C	3			3	3
3	TFL173	Electrical Technology	C	3			3	3
4	TFL174	Textile Manufacturing - II	D	3			3	3
5	TFL175	Basics of Apparel Technology	D	3			3	3
6	TFL176	Fashion and Design Concepts	C	3			3	3
7	TFP177	Electrical Technology Lab	C			2	2	1
8	TFP178	Textile Manufacturing - II Lab	D			2	2	1
9	TFP179	Fashion and Design Concepts Lab	C			2	2	1
10		Democracy, Election and Good Governance	H					NP/NF
11	TFP180	Functional English - II Lab	A			2	2	1
		Total		18	0	8	26	22

Group Details

- A: Humanities, Social Science & Management
- B: Basic Science
- C: Engineering Science
- D: Professional Core Courses
- E: Professional Electives
- F: Open Elective
- G: Project / Seminar / Internship
- H: Mandatory non-Credit Courses

First Year B. Tech. Semester – II
TFL171: TEXTILE MATHEMATICS- II

Teaching Scheme	
Lectures	3Hrs. / Week
Total Credits	3

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

Course Objectives

1.	Prepare students so that they can understand mathematical rules used in tracing cartesian and polar curves.
2.	Prepare students with the definition, methods related to reduction formulae, special functions, multiple integrals and its applications
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 have understood

1.	Rules of tracing cartesian and polar curves. Also, they are able for trace curves.
2.	the theory, definition and properties of reduction formulae, special functions, multiple integrals and its applications. Also, they are able to use them to solve the problems of area, mass of lamina and volume.
3.	the bivariate data, definition of correlation and properties of correlation coefficients, concept of regression, types and regression equations. Also, they are able to find coefficient of correlation, equations of regression with interpretation.
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	Hrs.
Unit 1.	Curve Tracing: Rules & examples of curve tracing in Cartesian and Polar Equations only	5
Unit 2.	Integral Calculus: Reduction formulae of sine and cosine functions, Gamma function, Beta Function, Multiple integrals: Introduction, solution, change of order & Change of variables method.	8
Unit 3.	Applications of integration: Area, Mass of lamina using double integrals only. Volume using triple integral only	6

Unit 4.	Bivariate data: Correlation: Definition, types, coefficient of correlation, properties & interpretation. Rank correlation coefficient & computation and interpretation. Regression: Regression concept and types. Lines of regression X on Y & Y on X, regression coefficients with properties & computation.	7
Unit 5.	Probability distribution: Introduction of probability and its basic laws. Random variable: Definition, types. Introduction of probability distribution, types of probability distribution, pmf & pdf, expectation of random variable. MGF of random variable. Standard discrete probability distributions: Binomial probability distribution: Definition, properties, fitting & examples. Poisson probability distribution: Definition, properties, fitting & examples	7
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. Introduction of statistical table for Z, t, χ^2 , & F.	6

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. Semester – II
TFL172: 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

At the end of the course students will be able to

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

	Course Contents	Hrs.
Unit 1.	Fundamentals of statics 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 non-concurrent forces.	8
Unit 2.	Equilibrium Equilibrium of Coplanar forces, Conditions of equilibrium, free body diagram, Lami's theorem. Friction: Introduction to friction, types of friction, Laws of friction. Cone of Friction.	7

	Beams: Types of beams, Types of Loads, Types of supports, Analysis of Simply supported beams.	
Unit 3.	Moment of Inertia Centroid and Centre of gravity, Centroid of composite areas, Radius of gyration, parallel axis theorem, perpendicular axis theorem, Moment of inertia of composite sections.	7
Unit 4.	Lifting Machines 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.	6
Unit 5.	Kinematics and Kinetics 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.	8
Unit 6.	Transmission of motion and power 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)	6

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

First Year B. Tech. Semester – II
TFL173: 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 basic concepts involved in electrical & magnetic circuits.
2.	To understand concepts of elements & parameters in single phase and three phase AC circuits. Three phase Induction motor .
3.	To understand working and importance of electrical transformer.
4.	To study different types of electrical accessories, electric earthing & Lamps. Energy auditing and Power quality .

Course Outcomes	
At the end of the course students will be able to	
1.	Apply the fundamental laws and principles to solve the electrical & magnetic circuits.
2.	Analyse the behaviour of any element with respect to AC supply
3.	Analyse the characteristics behaviour of electrical transformer.
4.	Apply the knowledge of switchgear and lamps in electrical installation.

	Course Contents	Hrs.
Unit 1.	D. C. Circuit Basic electrical quantities, Concept of E.M.F, Potential Difference, current, Resistance, Ohm's Law, Kirchhoff's laws, mesh and node analysis, Energy Bill calculation. Numericals	8
Unit 2.	Magnetic Circuits Flux, flux density, Reluctance, field intensity, permeability, mmf, comparison of Electric and Magnetic circuit, leakage and fringing, B-H curve, series magnetic circuits. Numericals.	6
Unit 3.	Single Phase A.C. Circuits Faraday's Laws, Lenz's Law, types of emfs, generation of sinusoidal voltage, R.M.S. & Average value, form factor, peak factor, phasor representation of A.C. quantities, impedance, R-L, R-C, R-L-C series circuits, powers, power factor and its improvement by capacitor method. Numericals	8
Unit 4.	Three Phase A.C. Circuits Introduction to three phase supply and its advantages, Generation of three phase A.C. voltage, balanced system, relation between line and phase	8

	quantities in star and delta. Numericals. Three Phase Induction Motor Working Principle, Constructional Details, Types, Rotating Magnetic Field Theory. Speed Control Methods, Necessity of starters, Types of Starters, modern starter variable Frequency Drive (VFD), application in Textile Industry	
Unit 5.	Single Phase Transformer Construction, operating principle, Types, EMF equation, Concept of Ideal Transformer, Transformation Ratio, operation on no load and with load, losses, efficiency, voltage regulation, testing, applications. Numericals.	6
Unit 6.	Electrical Switchgear and Lamps , Power Quality , Energy Audit Necessity of Earthing, Earthing methods, Fuse (rewireble and HRC), MCB, Fluorescent tube, CFL, Mercury vapour lamp, LED lamp, single line diagram of electrical system. Introduction of energy audit, power quality, Harmonics concept of energy efficient lighting system & motors [EEM]	6

Reference Books	
1	Elements of electrical Engineering by U.A. Bakshi
2	Electrical Technology by U.A. Bakshi
3	Basic Electrical Engineering by B. H. Deshmukh.
4	A text book in electrical technology by B. L. Thareja
5	Fundamentals of Electrical Engineering by Ashfaq Husain
6	Elements of electrical Engineering by U.A. Bakshi

First Year B. Tech. Semester – II
TFL174: TEXTILE MANUFACTURING- 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.	To understand the weaving preparatory operations.
2.	To understand the weaving operation.
3.	To understand the weft patterning methods.
4.	To analyze the fabric for different parameters.

Course Outcomes

At the end of the course students will be able to

1.	Demonstrate the working of weaving preparatory operations.
2.	Demonstrate the weaving machine.
3.	Explain the weft patterning methods.
4.	Analyze the fabric to find different fabric parameters.

	Course Contents	Hrs.
Unit 1.	Introduction to weaving: Introduction to Textile Industry. Process flow chart for different woven, knitted fabric and non-woven fabrics.	3
Unit 2.	Weaving preparation: Objects and passage of yarn on winding, warping, sizing, drawing-in and pirn winding. Overview of these processes.	6
Unit 3.	Weaving: Classification of looms, Primary (Shedding, picking, beat-up), Secondary (let-off & take-up), and Auxiliary motions of plain loom. Principles of drop box, dobby, jacquard loom & their applications. Weaving calculations.	10
Unit 4.	Weft patterning: Purpose of the weft patterning, different systems of weft patterning available, types of box motions, introduction to Weft patterning on modern weaving machines.	4
Unit 5.	Basics of Fabric structures: Concept of design, draft, denting, lifting plan and cross section of woven fabric. Different types of drafts. Representation of design, draft and lifting plan & its importance. Study of basic weaves – plain, twill & satin (basics only). Fabric weight calculations.	8

Unit 6.	Derivatives of Basic weaves: To represent following weaves on graph paper with design, draft, per plan and denting order. Derivative of plain weave like warp and weft rib, matt (regular and irregular). Derivatives of Twill Derivatives of satin / sateen weave irregular satin, satin cheeks. Toweling structures, ordinary and Brighton Honeycomb, Huckaback, Mock-leno, Crape weave. Constructional details of various standard fabrics.	8
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Reference Books	
1	Weaving by Prof. D.B. Ajgaonkar, Prof. Sriramalu, Prof. M.K. Talukdar
2	Weaving by N.N. Banerjee.
3	Weaving Calculation by Sengupta.
4	Winding & Warping by M. K. Talukdar.
5	Textile Colour & Design by Watson.
6	Principles of Weaving by Marks ATC and Robinson.
7	Weaving Mechanism by K. T. Aswani.

First Year B. Tech. Semester – II
TFL175: 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 structure and classification of the apparel industry
2.	To describe various preproduction processes in the apparel industry
3.	To describe various post-production processes in the apparel industry
4.	To explain the production technology and warehousing for the garment industry.

Course Outcomes	
At the end of the course, students will be able to	
1.	Describe the structure and classification of apparel industries as per size, labour and product etc.
2.	Illustrate various pre-production processes with its importance, process flow, requirements and types of machinery.
3.	Illustrate various Post-production processes with its importance, process flow, requirements and types of machinery.
4.	Categorize the different types of Production technologies and the importance of warehousing

	Course Contents	Hrs.
Unit 1.	Introduction to the clothing industry: classification as per the size, labour etc., product types and organization, the Process flow of different departments.	6
Unit 2.	Spreading & Cutting: Importance of spreading, Types of spreading, spreading modes, Importance of cutting, requirements of cutting, production, processes in the cutting room, planning, spreading, cutting, preparation for sewing.	8
Unit 3.	Fusing: Purpose of fusing, Types of fusing, Process of fusing, a requirement of fusing as per fabric, fusing machinery for garment parts, methods of fusing and quality control of fusing.	3
Unit 4.	Sewing: Classification of stitches & seams, feed systems, sewing threads, sewing needles, Machinery required for different products.	10
Unit 5.	Pressing & finishing: object, classifications, means, components, machinery and equipment, garment finishing.	4
Unit 6.	Production technology: Manual systems make through systems, straight-	8

	line systems, modular production systems, unit production systems, quick response systems. Warehousing: Handling equipment, storage equipment, packing equipment.	
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Reference Books

1	The Technology of clothing manufactures, by Carr & Latham, Blackwell Publications.
2	Introduction to clothing manufacturing by Gerry Cooklin.
3	Garment manufacturing Technology, Rajkishore Nayak Rajiv Padhye, Woodhead publishing
4	Apparel Machinery and Equipments, By R. Rathinamoorthy and R. Surjit, Woodhead Publishing India in Textiles.
5	Apparel Handbook by Jacob sollinger
6	Clothing construction and wardrobe planning by Dora S. Lewin, Mabel Goode Bowers, Manetta Knttunen- The Macmillan Co New York

First Year B. Tech. Semester – II
TFL176: 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 various elements of design.
2.	To explain various principles of design.
3.	To explain illustration of fashion figures.
4.	To explain computer aided fashion design.

Course Outcomes	
At the end of the course students will be able to	
1.	Create designs using elements and principles of design.
2.	Create patterns using motif repetitions.
3.	Draw an 8-head figure.
4.	Select appropriate art materials, software, tools and techniques for fashion drawing.

	Course Contents	Hrs.
Unit 1.	Introduction to Fashion and Design Fashion Terminology - Fashion, Fad, Trend, Classic, High Fashion, Mass Fashion. Fashion Cycle. Fashion theories – Trickle up, Trickle down and Trickle across theory. Types of fashion dresses: Haute couture, Designer's collection and Mass Fashion. Definition and meaning of design, aspects of design: structural, functional & decorative. Optical illusion and its role in fashion designing.	6
Unit 2.	Elements of Design Characteristics and applications of various types of lines: Straight line, curvy line, vertical line, horizontal line, oblique line, solid line, dashed line, dotted line, etc.; Shapes: Natural, geometrical, stylized and abstract shapes. Silhouette: A-line, bell, balloon, V-line, etc.; Form, Space: two-dimensional and three-dimensional space. Texture - visual and tactile, Type.	6
Unit 3.	Colour Source of colour, additive theory of colour, subtractive colour theory, colour properties like hue, value and saturation, Munsell colour theory, Colour schemes like monochromatic, analogous, complementary, split-complementary, triad, etc., Colour psychology.	6

Unit 4.	Principles of design Balance: definition, aspects, types, role in designing. Rhythm: Definition, rhythm through repartition, Alteration, gradation, parallelism, radiation. Proportion: 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. Harmony and unity: healthy relationship between elements, sense of wholeness.	6
Unit 5.	Motif repetition and Patterns Design development using motif repetition: square base, diamond base, full drop base, half drop base, brick base, ogee base, etc., Different types of patterns like stripes, checks, floral, Animal, photo, typography, etc.	6
Unit 6.	Fashion drawing and CAD Art materials: features, advantages, limitations and applications. Pen and Ink Techniques. Wash Techniques. Figure drawing versus fashion illustration, 8-head figure drawing. Advantages of CAD, Vector versus bitmap software, basic tools used in Adobe Photoshop, Adobe Illustrator and CorelDraw.	6

Reference Books	
1	Fashion Sketchbook by Bina Abbing (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. Semester – II
TFP177: ELECTRICAL TECHNOLOGY LAB

Teaching Scheme	
Practical	2 Hrs. /Week
Total Credits	1

Evaluation Scheme	
CIE	50
Total	50

List of Experiments	
1.	General Introduction to Electrical Engineering laboratory.
2.	Verification of Ohm's Laws.
3.	Verification of Kirchhoff's Current Law.
4.	Verification of Kirchhoff's 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.

Submission – Completed Journal.

First Year B. Tech. Semester – II
TFP178: TEXTILE MANUFACTURING- II LAB

Teaching Scheme	
Practical	2 Hrs. / Week
Total Credits	1

Evaluation Scheme	
CIE	50
Total	50

List of Experiments	
1.	General Study of Weaving process.
2.	Study of Winding and Pirn winding machines.
3.	Study of warping and sizing machines.
4.	Study of Plain loom for the passage of yarn and primary motions.
5.	Study of secondary and auxiliary motions of plain loom.
6.	Study of drop box motion.
7.	To study the object & method of fabric analysis and calculate of various fabric parameters.
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.	Visit to Plain loom shed.

Submission – Completed Journal.

First Year B. Tech. Semester – II
TFP179: FASHION AND DESIGN CONCEPTS LAB

Teaching Scheme	
Practical	2 Hrs. / Week
Total Credits	1

Evaluation Scheme	
CIE	50
Total	50

List of Experiments	
1.	Development of a colour wheel.
2.	Develop value chart for colours.
3.	Design development using various colour schemes.
4.	Development of designs based on motif repetition.
5.	Design development based on different types of patterns.
6.	Analysis of fashion dresses w.r.t. design aspects and elements of design.
7.	Analysis of fashion dresses w.r.t. principles of design.
8.	Study of human figure proportions.
9.	Illustration of an eight head figure.
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. Semester – II
DEMOCRACY, ELECTIONS AND GOOD GOVERNANCE

Evaluation Scheme*	
CIE	50
Total	50

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

Course Outcomes	
At the end of the course students will be able to	
1.	Answer questions related to democracy, election to local self-government bodies and good governance.

	Course Contents*
Unit 1.	Democracy in India • Dimensions of Democracy: Social, Economic and Political • Decentralisation: Grassroots Level Democracy • Challenges before Democracy: women and marginalised sections of the society
Unit 2.	Election to Local Self Government Bodies • 73rd and 74th Constitutional Amendment Acts: Institutions at the local level and Role of State Election commission • Local Body Elections: Urban & Rural • Duties of an Individual towards electoral process
Unit 3.	Good Governance • Meaning and concept • Government and Governance • Good Governance initiatives in India

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

First Year B. Tech. Semester – II
TFP180: FUNCTIONAL ENGLISH- II LAB

Teaching Scheme	
Practical	2 Hrs. / Week
Total Credits	1

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.

	Course Contents	Hrs.
Unit 1.	Group discussion , Mock interview	
Unit 2.	Elocution, Case study (Grooming)	
Unit 3.	Exercises on Common errors in English, Creative writing	
Unit 4.	Book review, Short prepared composition on current affairs	
Unit 5.	Auto biography writing, Situational conversation	
Unit 6.	Listening Activities, Report writing	

Reference Books	
1	Soft Skills for Managers by Dr. T. KalyanaChakravarthi, Dr. T. LathaChakravarthi, Biztantra.
2	Soft Skills for every one by Jeff Butterfield, Cengage.
3	Communication skills for engineers by Sunita Mishra
4	Communication Techniques & Skills by R K Chaddha
5	Body Language by Allen Pease.
6	Speaking Effectively by Jeremy Comfort, Pamela Rogerson, Cambridge University Press New Delhi.

List of Experiments	
1.	Group discussion
2.	Mock interview
3.	Elocution
4.	Case study (Grooming)
5.	Exercises on Common errors in English
6.	Creative writing
7.	Book review
8.	Short prepared composition on current affairs
9.	Auto biography writing
10.	Situational conversation
11.	Listening Activities.
12.	Report writing

Submission – Completed Journal.

SCHEME OF ASSESSMENT:

TUTORIAL BOOK	30 MARKS (Attendance, writing, performance)
ASSIGNMENT BOOK	10 MARKS.
ORAL	10 MARKS.