

Program name

**BACHELOR OF ENGINEERING
(TEXTILE ENGINEERING)**

Program code

619112



Department of Textile Engineering

Faculty of Technology and Engineering

The Maharaja Sayajirao University of Baroda

Vadodara

PSO for B.E. (Textile Engineering)

- PSO1 Graduates of the program will have the ability to apply knowledge of Basic science, engineering and Textile Engineering in identifying and providing appropriate solution to problems of textile engineering industry.
- PSO2 Graduates of the program will have the ability to design, optimize textile process and Textile machinery to develop quality and cost-effective products.
- PSO3 Graduates of the program will have successful career in machine design, erection, commissioning and maintenance of textile machines and technical sales segment of textile engineering industry.
- PSO4 Graduates of the program will have the continual learning ability and will be adapting to the constantly changing technology.
- PSO5 Graduates of the program will have necessary skills to take up Entrepreneurial Venture.
- PSO6 Graduates of the program will serve to the needs of Textile Industry and the Nation.
- PSO7 Graduates of the program will be able to enhance skill and other skill related issues for textile industry.
- PSO8 Graduates of the program (specially female) will get platform to design & create prototypes with changing demands of the textile market and fashion segment.

Bloom's Taxonomy Levels:

1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation

Titles of Courses and Detailed Syllabus

w.e.f. 2019-20

**(B.E. SEM-I [FSBE-I] & SEM-II [SSBE-I])
(B.E. SEM-I [FSBE-II] & SEM-II [SSBE-II])
(B.E. SEM-I [FSBE-III] & SEM-II [SSBE-III])
(B.E. SEM-I [FSBE-IV] & SEM-II [SSBE-IV])**

Sr. No	Subject Code	Subject Title	Page No.
F.S. B.E.-I	APH1101	Applied Physics-I	
	APH1101L	Applied Physics-I Lab	
	AMT1101	Applied Mathematics-I	
	MEC1101	Engineering Drawing-I	
	MEC1101L	Engineering Drawing-I Lab	
	MME1101	Material Science	
	CVL1101	Fundamentals of Civil and Environmental Engineering	
	CVL1101L	Fundamentals of Civil and Environmental Engineering Lab	
	MEC1102	Workshop Practice-I	
S.S. B.E.-I	APH1201/APH1205	Applied Physics-II	
	APH1201L/APH1205L	Applied Physics-II Lab	
	AMT1202	Mathematics & Statistical Methods	
	AMT1202L	Mathematics & Statistical Methods Lab	
	AMT1203	Introduction to Computer & Numerical Analysis	

	AMT1203L	Introduction to Computer & Numerical Analysis Lab	
	TXE1202	Textile Fibres	
	MEC1206	Machine Drawing	
	MEC1206L	Machine Drawing Lab	
	TXE1201	Introduction to Textiles	
	TXE1201L	Introduction to Textiles Lab	
F.S. B.E.-II	APM1302	Applied Mechanics	
	APM1302L	Applied Mechanics Lab	
	APH1301	Fibre Science and Textile Physics	
	MEC1307	Engineering Manufacturing Technology	
	ACH1303	Engineering Chemistry	
	ACH1303L	Engineering Chemistry Lab	
	MEC1305	Thermodynamics	
	TXE1304	Fabric Structure and Design Analysis	
	TXE1304L	Fabric Structure and Design Analysis Lab	
S.S. B.E.-II	CVL1404	Fluid Mechanics	
	CVL1404L	Fluid Mechanics Lab	
	APM1403	Stress Analysis	
	APM1403L	Stress Analysis Lab	
	APM1405	Strength of Materials	
	ELE1411	Fundamental of Electrical Engineering I	
	ELE1411L	Fundamental of Electrical Engineering I Lab	
	TXE1401	Fabric Manufacture-I	
	TXE1401L	Fabric Manufacture-I Lab	

F.S. B.E.-III	MEC1506	Theory of Machines	
	ELE1511	Fundamental of Electrical Engg-II	
	ELE1511L	Fundamental of Electrical Engg-II Lab	
	TXE1501	Fabric Manufacture -II	
	TXE1501L	Fabric Manufacture -II Lab	
	TXE1502	Yarn Manufacture- I	
	TXE1502L	Yarn Manufacture- I Lab	
	TXE1505	Textile Machine Control and Quality Management	
S.S. B.E.-III	ELE1610	Process Control and Instrumentation	
	ELE1610L	Process Control and Instrumentation Lab	
	MEC1607	Machine Design	
	MEC1607L	Machine Design Lab	
	MEC1608	Industrial Engineering and Operation Research	
	TXE1601	Yarn Manufacture - II	
	TXE1601L	Yarn Manufacture - II Lab	
	TXE1603	Textile Testing	
	TXE1603L	Textile Testing Lab	
F.S. B.E.-IV	TXE1701	Engineering of Textile Structure	
	TXE1702	Man Made Fibre Technology-I	
	TXE1707	Theory and Design of Textile Machines	
	TXE1707L	Theory and Design of Textile Machines Lab	
	TXE1704	Weaving-III	
	TXE1704L	Weaving-III Lab	
	TXE1705	Yarn Manufacture-III	

	TXE1705L	Yarn Manufacture-III Lab	
S.S. B.E.-IV	TXE1801	Advance Fabric Structure,	
	TXE1803	Garment Technology	
	TXE1804	Knitting	
	TXE1805	Man Made Fibre Technology-II	
	TXE1805L	Man Made Fibre Technology-II Lab	
	TXE1806	Technical Textiles	
	TXE1807	Textile Production Management and Costing	
	TXE1807L	Textile Production Management and Costing Lab	
	TXC 1801	Textile Chemistry Processing machine	
	TXC 1801L	Textile Chemistry Processing machine Lab	

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering					Academic Year 2019-20			
B.E. - Textile Engineering: Regular Programme										
Year	I	Core / Elective / Foundation APH1101: Applied Physics I					Credits / Hours per week 04			
Semester	I	Year of Introduction: 2007 Year of Syllabus Revision: 2012					Maximum Marks / Grade 100			
Mode of Transaction		Lectures and Tutorials								
Course Outcome (CO) APH1101 CO1 Understand the basics of laws governing physical world. CO2 Application of physical laws in various engineering applications										
Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional	

									Ethics (PE)
1	Interference: - Types of interference. Fresnel's biprism, White light fringes, Determination of the thickness of a thin sheet of transparent material. - Interference in thin films, Wedge-shaped film, Necessity of an extended source. - Newton's rings, Determination of wave-length of sodium light using Newton's rings, Determination of refractive index of a liquid, Newton's rings with white light. - Non-reflecting films, Michelson interferometer, Types of fringes, Uses of Michelson's interferometer, Standardization of the meter. - Fabry-Perot interferometer, Interference filters.	06	10	1,2	CO1 CO2	PSO2	EMP, ENT, SD	N,R,G	ES, PE
2	Diffraction:	06	10	1,2	CO1	PSO2			

	• Introduction, Two kinds of diffraction, Difference between interference and diffraction. • Fraunhofer diffraction at a circular aperture, Plane diffraction grating, Formation of multiple spectra with grating, Maximum number of orders available with a grating. • Absent spectra with a diffraction grating, Effect of increase in the width of ruled surface. • Determination of wavelength, dispersive power of grating.				CO2				
3	Resolving Power of Optical Instruments: • Meaning of resolving power, Rayleighs criterion of resolution. • Resolving power of grating, prism, telescope and microscope.	06	06	1,2	CO1 CO2	PSO6			
4	Polarization:	04	10	1,2	CO1	PSO2			

	• Geometry of calcite crystal, double refraction, Nicol's prism, Huygen's theory of double refraction. • Quarter-wave plate, polarization by selective absorption. Half-wave plate. • Elliptically and circularly polarized light, production of circularly and elliptically polarized light, conversion of elliptically polarized light into circularly polarized light, analysis of polarized light of different kinds. • Ken effect. Optical activity, specific rotation, Laurent's half shade polarimeter. Photo elasticity.				CO2				
5	LASER: • Lasers, spontaneous and stimulated emission, population inversion, pumping and active system.	05	10	1,2,3,4	CO1 CO2	PSO2			

	- The Ruby laser. Gas laser. Semiconductor laser. - CO₂ laser, design of CO₂ laser, mechanism of CO₂ laser. - Uses of lasers.								
6	Semiconductor Diode Applications and Solar Cells: - Rectifier, ripple factor, capacitor filter. - Types of Solar Cells, p-n junction Solar Cells Characteristics, Efficiency.	03	04	1,2,3,4	CO1 CO2	PSO2 PSO6 PSO7			
7	Ultrasonics: - Ultrasonic waves, production of ultrasonic waves. - Detection of ultrasonic, properties of ultrasonic, wavelength of ultrasonic waves. - Applications of ultrasonic waves.	08	10	2,3,4,5	CO1 CO2	PSO2 PSO6			
8	Maxwell's equations and electromagnetic waves: Vector field, Irrotational	08	10		CO1 CO2	PSO2			

	vector field, rotational vector fields (curl), source and sinks of vector fields -divergence theorem. • Basic laws of electricity and magnetism- different forms. • Lumped and distributed elements -oscillations, electromagnetic cavity oscillator. • Charge conservation law — continuity equation, displacement current. • Maxwell's equations, electromagnetic waves in free space.								
9	Waves and Particles: • Equation of motion of matter waves, physical interpretation of wave function • Operators. Eigen functions and Eigen values, momentum and energy operators, properties of wave functions • Solution of Schrodinger	08	10		CO1 CO2	PSO2			

	equation. Stationary state solutions. - The free particle, particle in a box, energy levels of a particle enclosed in one-dimensional potential box of infinite height. - The hydrogen atom (qualitative). Barrier Tunneling, STM, electron microscope.								
10	Temperature and its measurement: - Liquid thermometers, mercury thermometers, errors in mercury thermometers. - Bimetallic thermometers. Platinum resistance thermometers, thermoelectric thermometers, Pyrometers, Fery's total radiation pyrometer. Disappearing filament optical pyrometer. - Factors for the selection of a thermometer for a particular use, temperature range of	03	10		CO1 CO2	PSO2			

	various thermometers.								
11	Vacuum technology: • Introduction, exhaust pump and their characteristics, different types of pumps. • Rotary oil pumps. Diffusion pump. • Measurement of low pressure, Pirani gauge.	03	10		CO1 CO2	PSO2			
Reference Books									
1.	Engineering Physics: by R. K. Gaur and S. L. Gupta, Dhanpat Rai Publications (P) Ltd. 8 th Edition.								
2.	Fundamentals of Physics: by D. Halliday, R Resnick and J. Walker, Asian Books Pvt. Ltd. 6 th Edition								
3.	Modern Engineering Physics: by A. S. Vasudeva, S. Chand and Company Ltd.								
4.	A Textbook of Engineering Physics by MN Avadhanulu & PG Kshirsagar, S Chand Publishers								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year 2020-21				
B.E. Textile Engineering: Regular Programme									
Year	I	Core / Elective / Foundation APH1101L : Applied Physics Laboratory Practical				Credits / Hours per week 03			
Semester	I	Year of Introduction: 2007 Year of Syllabus Revision: 2016				Maximum Marks / Grade 50			
Mode of Transaction		Laboratory Experiments, discussion and viva							
Course Outcome (CO) APH1101L CO1 Understanding the optics CO2 Understanding the physical properties through experiments CO3 Methods to determine physical properties CO4 Understanding of advances in instrumentation CO5 Understanding the spectroscopy									
No.	Experiment		Hours	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Newton's Rings: To Study the interference patterns from single monochromatic source and find out the Radius of Curvature of given Plano-Convex lens from the obtain interference pattern.		06	1,2	CO1, CO2	PSO1, PSO2	SD	G	PE

2	Diffraction Grating: To study the diffraction pattern from sodium vapor lamp and find out the wavelength of this source by using diffraction pattern that obtain with the help of Transmission Grating.	06	2	CO1 CO2	PSO1, PSO2			
3	Frequency of AC Mains: To determine the frequency of A. C. Mains.	06	2,3	CO3 CO4	PSO1, PSO2			
4	Ultrasonic Waves: To determine the frequency of Ultrasonic waves and find out the velocity of Ultrasonic wave in air medium by using the interference theory of longitudinal wave.	06	3,4		PSO1, PSO3			
5	Resolving Power of Telescope:- Comparative study between resolving power of Travelling Microscope and Telescope.	06	2,3	CO1 CO2	PSO1, PSO4			
6	Solar Cell: Study of various parameters of solar cell	06	2,3		PSO1, PSO3			
7	Dispersion of Light: Calculate the refractive index of different wavelength associated with white light using the prism.	06	3,4		PSO1, PSO3			
8	Laser Parameters: (1) To determine the full angular divergence of the given gas laser. (2) To determine the wavelength of the given laser source using diffraction by grating.	06	3,4	CO5	PSO1, PSO3			
9	Polari meter: To determine the specific rotation of the given optically active substance.	06	2,3,4	CO1 CO2	PSO1, PSO3			
10	Rectifier Circuits: To study the process of rectification through half wave, full wave and bridge rectifiers.	06	2,3,4	CO3 CO4	PSO1, PSO4			

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year 2020-21	
B.E. Textile Engineering: Regular Programme					
Year	I	Core / Elective / Foundation AMT 1101: APPLIED MATHEMATICS-I		Credits / Hours per week 04	
Semester	I	Year of Introduction: 2010 Year of Syllabus Revision: 2016		Maximum Marks / Grade 100	
Mode of Transaction		Lecture			
Course Outcome (CO) (AMT1101)					
CO1	Evaluate successive differentiation of given function and solve identities involving higher order derivatives, evaluate radius of curvature, obtain Taylor & Maclaurin series expansion of function of single variable. Evaluate limits of indeterminate forms.				
CO2	Test for convergence sequences and positive term series using various tests like comparison test, ratio test. Also find the convergence, absolute and conditional convergence for alternating series.				
CO3	Understand the requirement of complex numbers their various representations, Demovier’s theorem and its applications. Logarithm of complex numbers. Evaluate and use circular functions, hyperbolic functions.				
CO4	Classify the differential equations with respect to their order and linearity, explain the meaning of different types of solutions of a differential equation.				
CO5	Identify and solve the 1 st order differential equations.				
CO6	Apply the method of undetermined coefficients to solve the non-homogeneous linear differential equations with constant coefficients.				
CO7	Apply the method "variations of parameters" to find to solution of higher-order linear differential equations with variable coefficients.				
CO8	Solve the Cauchy-Euler equations and systems of linear differential equations .				
CO9	Analyze real-world problems in field of Engineering like problems related to bending of beams, mixtures, growth and decay, heating and cooling, electric circuits, Spring-mass system etc.				
CO10	Find series solutions of Bessel differential equation and Legendre’s differential equations and make use of the properties of Bessel’s functions and Legendre polynomials to study and analyze the solution.				

Unit No.	Topic	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Calculus: Reorientation, Functions of one variable Application of derivatives, Curvature, Successive differentiation, Partial derivatives, Leibnitz rule for the nth order derivative of a function, Techniques of partial derivatives.	8	16.67	1,2,3,5	CO1		Emp, SD	G	PE
2	Infinite Series: Sequence and their convergence , convergence and divergence of infinite series, Geometric series, P – Series ,Necessary condition for convergence, Comparison test, ratio test Absolute convergence and conditional convergence of alternating series, Maclaurin's & Taylor's expansion with reminder form, Indeterminate forms L'Hospital's rule	8	16.67	1,2,3,4	CO2				
3	Complex Numbers: Complex numbers & their geometrical representation, Complex	8	16.67	1,2,3,4	CO3				

	numbers in polar form, Demoivre's theorem and its applications, Exponential, logarithmic, trigonometric & hyperbolic functions.								
4	Differential Equations Reorientation, Modeling of engineering systems pertaining to first order differential equations, Exact differential equations, integrating factors, Unified approach to first order ordinary differential equations, Equations of first order and higher degree.	8	16.67	1,2,3,5	CO4 CO5 CO9				
5	Linear differential equations of higher order with constant coefficients and with variable coefficients Models of higher order differential equations, Method of variation of parameters, Simultaneous linear differential equations Method of solution in series	10	20.83	1,2,3,5	CO6 CO7 CO8 CO9				
6	Bessel and Legendre's equations, Properties of Bessel functions Introduction to Legendre polynomials	6	12.5	1,4,5	CO10				

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year			2020-21				
B.E. Textile Engineering: Regular Programme											
Year	I	Core / Elective / Foundation MEC 1101: Engineering Drawing I		Credits / Hours per week			Lectures: 04 Practical:- 04				
Semester	I	Year of Introduction: 2016 Year of Syllabus Revision: ----		Maximum Marks / Grade			Theory: 100 PR/TW/VIVA: 50				
Mode of Transaction		Lectures									
Course Outcome (CO) MEC 1101											
CO 1 Use the drawing instruments effectively and how to use the dimensioning methods.											
CO 2 Observe, analyse and correlate two-dimensional (Orthographic view) and three dimensional (Isometric view)											
CO 3 Construct and application of various engineering curves in engineering practice											
CO 4 Apply the knowledge of Projection of points, Lines and Planes in engineering											
CO 5 Create freehand sketches of basic machine components											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurs hip (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1.	Introduction to Engineering Curves: Introduction to conic sections, types of conic sections, eccentricity, construction of conic sections(parabola, ellipse , hyperbola) by different methods. Construction of involutes.			08	20	1,2,6	CO3	PSO1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	construction of cycloid, epicycloid and hypocycloid, construction of spiral, construction of normal and tangent to all curves.								
2.	Free hand sketches: Parts of screw thread and its types, conventional representation of threads, screwed fastening-types of nuts, bolts, set screws, locking arrangement of nuts, foundation bolts, riveted and welded joints, forms and proportions of rivet heads, representation of welded joints, shaft keys and couplings- types of keys, cotter joint, knuckle joint, double cotter/sleeve joint, types of couplings.	08	10	1,2,6	CO5	PSO1,2,3			
3.	Projection of Point and Line Introduction to principal planes of projections, projections of points located with respect to reference planes (in different quadrants), Projection of Lines, Line parallel to reference planes, Line parallel to one reference plane and inclined to other reference plane, Line inclined to both the reference planes, Application of all variants	08	20	3,4,6	CO4	PSO1,2,3			
4.	Projection of Planes Projection of Planes (Polygons, circle, semi-circle, ellipse etc.). Plane parallel to one reference plane and inclined to other, Plane inclined to both the reference plane, Concept of auxiliary plane method for projection of plane.	08	10	1,2,4	CO4	PSO1,2,3			
5.	Orthographic projection Fundamental of projection along with classification, Projections from the pictorial view of the object on the principal planes for	10	20	2,3,5	CO2	PSO1,2,3			

	view from front, top and sides using first angle projection method and third angle projection method, full sectional view								
6	Isometric Projections and Isometric View or Drawing: Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing of objects	10	20	2,4,5	CO2	PSO1,2,3			

Reference book

1.	Bhatt, N.D., 'Engineering Drawing',
2.	Shah, P. J., 'Engineering Drawing',
3.	Bhatt, N.D., 'Machine Drawing',
4.	Dhawan, R.K., 'A Textbook of Engineering Drawing',
5.	Venugopal, K., 'Engineering Drawing and Graphics'
6.	M. Raja Roy, B.V.R. Gupta, 'Engineering Drawing with AutoCAD',

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20	
		B.E. (Textile Engineering): Regular Programme						
Year	I	Core / Elective / Foundation MEC1101L Engineering Drawing-I (Practical/TW/Viva)			Credits / Hours per week		02	
Semester	I	Year of Introduction:1954 Year of Syllabus Revision: NA			Maximum Marks / Grade		50	
Mode of Transaction		Term work, Practical and viva						
No.	Experiment			Contact hours	Weightage (%)	BT Level	CO	PSO
1	Different types of Engineering Curves:			08	20	1,2,6	CO3	PSO1,2,3
2	Free hand sketches:			08	10	1,2,6	CO5	PSO1,2,3
3	Projection of Point and Line			08	20	3,4,6	CO4	PSO1,2,3
4	Projection of Planes			08	10	1,2,4	CO4	PSO1,2,3
5	Orthographic projection			10	20	2,3,5	CO2	PSO1,2,3
6	Isometric Projections and Isometric View or Drawing:			10	20	2,4,5	CO2	PSO1,2,3

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Engineering			Academic Year			2020-2021			
B.E. (Textile Engineering): Regular Programme											
Year	I	Core / Elective / Foundation : Materials Science			Credits / Hours per Week			04 (Theory)			
Semester	I	Year of Introduction :			Maximum Marks / Grade			100 (Theory)			
Mode of Transactions				Lectures and Tutorials							
Course Outcome (CO) / MET 1101 CO-1: Understanding of materials and their classification CO-2: Study about crystals and lattices parameters CO-3: Understanding mechanical properties and behavior of these properties on engineering materials CO-4: Studies of phase important with their diagrams and materials defects CO-5: Learning about ceramics and glasses materials CO-6: Understanding briefly causes and types of corrossions and their protection methods CO-7: Study about electronics and electrical materials CO-8: Learn about some advanced materials and their uses											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	^[1] BT Level	CO	PSO	^[2] Elements of EMP/ENT/SD	^[3] Relevance to L/R/N/G	^[4] Relation to GN/ES/HV/PE
1	Introduction of Engineering Materials Metalica Materials, Ceramic Material, Polymers, Composite and Nano-materials.			02	10%	1/2/3/4	CO1	PSO1, PSO2	SD	G	ES
2	Crystal Structure Crystallography, Atomic structure and; Structure of crystalline solids; Lattices, unit cells; Crystal systems, Bravais lattices; Indexing of directions and			06	15%	1/2/3/5	CO2		SD	G	ES

	planes, notations, Inter-planar spacings and angles, co-ordination number, packing factors stacking sequence in BCC, FCC and HCP.								
3	Mechanical Properties of Materials Concepts of stress and strain, Stress-Strain diagrams; Properties obtained from the tensile test; Elastic deformation, Plastic deformation. Impact Testing & toughness behavior. Hardness of materials.	08	15%	1/2/3	CO3		SD	G	ES
4	Phase diagram Gibbs phase rule, Binary phase diagram its types, solid solution – Hume Rothery Rules. Imperfections: Point defects, Line defects and surface defects – grain boundary, tilt boundary and twin boundary, Grain, Grain size number. Burgers vector and its representation.	08	15%	1/2/3	CO4		SD	G	ES
5	Ceramic Materials Introduction, ceramic structures, silicate structures, Processing of ceramics; Properties, glasses; Composite Materials- Introduction, classification, metal-matrix, ceramic–matrix and polymer matrix composites.	05	10%	1/2	CO5		SD	G	ES
6	Corrosion Types of corrosion – Dry and Wet corrosion, Electro chemical and oxidation (Chemical) corrosion. Corrosion prevention – anodic and	06	15%	1/2/3	CO6		SD	G	ES

	cathodic protection & coatings								
7	Electrical & Electronic Materials Intrinsic and Extrinsic Semi conductivity, Dielectric material, Piezo-electric materials. Magnetic Materials: Introduction, classification of magnetic materials, soft & hard magnetic materials.	05	10%	1/2	CO7		SD	G	ES
8	Advanced Materials Nano Materials & its application, Metallic glasses, Super conducting material, optic fibers, smart materials.	05	10%	1/2	CO8		SD	G	ES
		45	100%						
Text Books or Reference Books:									
1.	Askeland D.R., & P. P. Fullay (2007), The Science and Engineering of Materials –4th Cengage Learning Publishers								
2.	William D. Callister, Jr (2008), Callister’s Materials Science and Engineering, (Adopted by R. Balasubramaniam) Wiley-Eastern								
3.	A.S. Edelstein and R.C. Cammarata Ed. (1998), Nano Materials: Synthesis, Properties and Applications, Inst. Of Physics Publishing, UK								
4.	Raghavan V (2007), Materials Science and Engineering - A First Course, Prentice Hall, India								
5.	James F. Shackelford (1996), Introduction to Materials Science for Engineers, Prentice Hall, India								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year				2019-20				
B.E. Textile Engineering: Regular Programme											
Year	I	Core / Elective / Foundation CVL 1104 : FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING (NEW COURSE)						Credits / Hours per week 04			
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision:		Maximum Marks / Grade				100			
Mode of Transaction		Lectures									
Course Outcome (CO) CVL CO1 To impart brief fundamental concept related to various materials and their use in building construction CO2 To study environmental pollution comprehensively and CO3 Students will know concept of linear and angular measurements CO4 Students will be aware of various constructional practices											
Unit No.	Topic			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and

									Professional Ethics (PE)
1	Building Material Stone - Introduction to stone – Uses of stone – Characteristics of good building stone – Availability, suitability and properties of different stone. Bricks - Comparison between stone work and brick work – Advantages of bricks – Characteristics of good brick – Standard test for brick along with field test for brick. Lime - Classification of Lime, Precautions in handling Lime. Cement - Basic ingredient of ordinary cement – Physical properties of cement – Field examinations of cement – Storing of cement and its uses. Timber - Introduction to timber – Importance of seasoning – Wood base product. Steel - Introduction – Use of different form of steel – Marketable forms of steel. Aggregates. Bitumen. FRP. Optical fiber. Plastic - Properties of plastics – Types and uses of plastic.	14 hrs	27	2,3	CO1	PSO3	(Emp), (Ent), (SD)	(L), (N), (R), (G)	(ES), (PE)
2	Environmental Science and Sustainable Development Introductory Environmental Engineering Terminology— Introduction to various types of pollution- Water and land pollution and remedial measures for control, water and wastewater quality criteria – Disposal of wastes – Air pollution and remedial for control – Ecology, Environmental Protection and legislation. Hydrologic cycle, Rain water harvesting, Green building, Solid waste management, Environment Impact Assessment, Basic environmental chemistry, Sustainable development – clean development mechanism, Global warming, Ozone layer depletion, Acid rain, and Climate change.	12 hrs	23	2,3	CO2	PSO2			

3	Surveying and Leveling Surveying - Introduction – Principle – Object of survey – Classification – Basic instruments of linear and angular measurements – chain, tape, Offsetting, Types of offsets, Ranging methods. Prismatic compass, Types of meridians, Types of bearings. Traverse survey: open and closed Examples based on compass. Leveling – Definitions – Computation of reduced levels– Introduction to contour, Methods of leveling and Examples on Level. Modern tools: Introduction to Theodolite, Total station – Introduction to GPS, GIS, Remote sensing.	14 hrs	27	2, 3, 4	CO3	PSO1 PSO2 PSO3			
4	Building Construction Building Construction & Infrastructures: Types of constructions – roads, pipelines, transmission lines – Typical details of load bearing and framed structures – Brief discussion and illustrational sketches of typical important building components – Foundation – Functions, Types of foundations such as Spread footing, Stepped footing, Isolated and Combined column footing, Raft, and Grillage foundation. Lintels – Function, Types of lintel. Flooring, Roofing. Mortar and concrete specifications – Ingredients for mortar and concrete – classification of mortar and concrete – selection of mortar and its uses – precaution in using mortar – Pre-stressed concrete – grades of concrete, Internet of things for buildings, Hydropower plants.	12 hrs	23	1, 2, 3	CO4	PSO1 PSO3			

Reference Books									
1	Arora S.P. and Bindra S.P. (2012), A text book of Building Construction, Dhanpatai and Sons, Publishers.								
2	Rangwala S.C. (2012), A text book of Building Construction, Charotar Publishing House, India.								
3	Gilbert M Masters, (2006), Introduction to Environmental Engineering & Science, Prentice Hall of India Pvt. Ltd. New Delhi								

4	Deshpande P.D., (2009) Basic Civil Engineering, Nirali Prakashan Pune.
5	G.S.Birdie, Water supply & Sanitary Engg., Dhanpatrai & Sons.
6	S.C.Rangwala, Engg. Materials, Charotar Books Staff, Anand.
7	Janardan Jha Building Material
8	Surendra Singh, Building Material, Vikas Pub. Pvt. New Delhi.
9	D.N.Ghose, Material of Construction, Tata McGraw Hill Pub. Co. Ltd. New Delhi
10	Surveying & Levelling – Kanetkar & Kulkarni Vol-I A.V.G. Prakashan, Puna.
11	Elementary Survey – B.C.Punmia Vol-I. Laxmi Pub. Dariya Gunj, New Delhi.
12	Surveying & Levelling – S.C.Rangwala, Charotar Pub. House, Anand.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20			
B.E. Textile Engineering: Regular Programme										
Year	I	Core / Elective / Foundation CVL 1104L : FUNDAMENTALS OF CIVIL AND ENVIRONMENTAL ENGINEERING (NEW COURSE) : Field Practical				Credits / Hours per week		02		
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision:				Maximum Marks / Grade		50		
Course Outcome (CO) CVL CO1 To impart brief fundamental concept related to various materials and their use in building construction CO2 To study environmental pollution comprehensively and CO3 Students will know concept of linear and angular measurements CO4 Students will be aware of various constructional practices										
Mode of Transaction		Practical's, discussion and viva				PSO1 is common for all experiments				
No.	Experiment					Contact Hours	Course Code	BT Level	CO	PSO
1	Conventional signs and symbols, scale, topographic-sheet					2	CVL1104L	1,2,3	CO3	PSO1
2	Linear measurements: tape, ranging, offsets					4	CVL1104L	2,3	CO3	PSO1
3	Compass: Introduction, Bearings					2	CVL1104L	2,3,4	CO3	PSO1
4	Auto level: Introduction, HI, Rise and fall					6	CVL1104L	2,3,4,5	CO3	PSO1

5	GPS : Introduction, and demonstration	2	CVL110 4L	2,3,4	CO 3	PSO1
6	Theodolite and Total Station demonstration	6	CVL110 4L	2,3,4, 5	CO 3	PSO1
7	Any other term-work based on syllabus	4	CVL110 4L	1,2	CO 1C O4	PSO1, PSO3

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year			2020-21			
B.E. Textile Engineering: Regular Programme											
Year	I MECH	Core MEC 1102: Workshop Practice-I			Credits / Hours per week			Lectures: 00 Practical:- 03			
Semester	I	Year of Introduction: Year of Syllabus Revision: 2018			Maximum Marks / Grade			Theory: NILL PR/TW/VIVA: 50			
Mode of Transaction: Lectures and Practical											
Course Outcome (CO) MEC 1102 CO1 Understand carpentry shop work ,different tools ,use of tools and hand on practices of subject. CO2 Understand Smithy workshop related tools and learning forging operation in workshop .											
Unit No.	Topic			Contact Hours	Weightage (%)	BT Level	CO	PO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Carpentry: Name, use and setting of hand tools, Construction of halved single mortise and tenon joints, dovetail joint, bridle joint, oblique mortise			20	50	1,2, 3,4, 5,6	Co1	Po 2,3,4	All	All	All

	and tenon joint and rafter joint.								
2	Smithy: Tools used for preparing simple jobs in hand forging.	19	50	1,2, 3,4, 5,6	Co2	Po 2,3,4,5			
		39	100						

Reference Books

1.	Workshop Technology-I. W.A. J. Chapman Taylor & Francis
2.	Comprehensive Workshop Technology (Manufacturing Processes). S.K. Garg Laxmi publications
3.	Workshop practice manual. K.Venkata Reddy B.S.Publications.
4.	Workshop Technology-I. Hazra and Chaudhary Media promoters & Publisher private limited

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2020-21					
B.E. (Textile Engineering): Regular Programme										
Year	I	Core / Elective / Foundation APH1201/APH 1205: Applied Physics-II	Credits / Hours per week				04			
Semester	II	Year of Introduction: 2003 Year of Syllabus Revision: 2012	Maximum Marks / Grade				100			
Mode of Transaction		Lectures, Tutorials and Practical/TW/Viva								
Course Outcome (CO) APH1201 TX CO1 Understanding the fibres CO2 Understanding the physical properties of fibres CO3 Methods to determine physical properties CO4 Understanding of instrumentation CO5 Analysis of color CO6 Applications of fibres										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Element s of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to Fibres Classification of fibers, Natural and Manmade fibers and their general properties, Growth of fiber, Effect of external parameters i.e. Radiation, Temperature, Pressure and other on fiber		04	06	1	CO1	PSO1	SD	L, N	PE
2	Humidity, Regain and Moisture Content Humidity and relative Humidity, Hygrometers, Regain and Moisture		07	11	1,2	CO2 CO3	PSO1			

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6.	Fibre Science & Technology by P. Ghosh
7.	A Text Book of Fibre Science by S.P.Mishra (TS 1540 M4T3)

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2020-21		
B.E. (Textile Engineering): Regular Programme										
Year	I	Core / Elective / Foundation APH1201L/APH 1205L Applied Physics-II (Practical/TW/Viva)				Credits / Hours per week		03		
Semester	II	Year of Introduction: 2003 Year of Syllabus Revision: 2012				Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, TW/Viva								
No.	Experiment					Contact hrs	Course Code	BT Level	CO	PSO
1	Determine the Planck's constant (h) using different LEDs. Use at least 4 LEDs.						APH1201TX	3,4	CO4	PSO1 PSO5
2	Determine the diameter of the given textile yarn using diffraction of light. Wavelength of the laser $\lambda = 632.9 \text{ nm}$						APH1201TX	3,5	CO3	PSO1
3	Demonstrate the exponential decay law using the given statistical board set up. Plot the necessary graphs and determine the decay constant.						APH1201TX	3,4,6	CO3	PSO1, PSO7
4	Obtain the V-I characteristic of the given Zener diode in forward and reverse bias conditions. Plot the necessary graphs.						APH1201TX	3,4	CO4	PSO1, PSO5
5	Determine the energy band-gap of a given semiconductor using the Four-probe method. Plot the necessary graph. Distance between two neighbouring probes = 2.0 mm, Thickness of the semiconductor crystal = 0.5 mm						APH1201TX	3,6	CO4	PSO1, PSO5
6	Determine the friction coefficient for the given system of wood cart and the glass floor.						APH1201TX	3,4,5	CO3	PSO1, PSO7
7	Determine the Young's modulus of the given material (wood) using the method of bending of a beam. Plot the necessary graphs.						APH1201TX	3,4,6	CO3	PSO1, PSO7

8	Determine the molar extinction coefficient (ϵ) for the given KMnO_4 (0.05N) solution. Plot the necessary graph using at least 8 points and obtain ϵ .		APH120 1TX	3,5	CO 4	PSO1, PSO7
9	Obtain the load-elongation curve for the given yarn. Determine the following from the load-elongation curve: (1) work of rupture (2) work factor (3) Initial modulus (4) yield point, Length of the yarn = 40 cm; Linear density of the yarn(pink) = 26.88 g/km		APH120 1TX	3,6	CO 3	PSO1, PSO5
10	Study the moisture content (M) and regain (R) of the given cotton specimen at constant temperature. Determine the equilibrium state. Plot the necessary graphs.		APH120 1TX	3,4,5	CO 3	PSO1, PSO5

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2020-21	
B.E.(Textile Engineering): Regular Programme				
Year	I	Core / Elective / Foundation AMT1202: Mathematics and Statistical Methods	Credits / Hours per week	04
Semester	II	Year of Introduction: Year of Syllabus Revision:	Maximum Marks / Grade	100
Mode of Transaction		Lectures and Tutorials		
Course Outcome (CO) CO1 Understand and Evaluate the domain, range, limit, continuity, differentiability of multivariable functions, and apply it to various applications like estimating the Taylor series expansion, maxima and minima of functions of several variables, Tangent plane and Normal line to the given surface. CO2 Understanding and evaluating gradient, curl, divergence of scalar and vector functions, and to determine the directional derivatives for scalar point function. CO3 Understands the concept of different types of line integrals with evaluation techniques. CO4 Understands the Double, Triple integrations and can apply it appropriately, to evaluate Volume, Mass, Area, C.G. and M.I. CO5 Understands the relation between double and line integrals as a Green's Theorem and can apply the concept of line integral to find out Work done, Mass, Length of curve, Area etc. CO6 Able to analysis, classify and interpret data to answer questions about the real world problem, and able to demonstrate the ability to analyze data by appropriately fitting, assessing, and interpreting a variety of statistical models. CO7 Understands the basic probability theories well, and be familiar with discrete and continuous random variables and implement it to translate uncertainty problems into probability models with application to the areas related to Textile sector. CO8 Understands data description, statistical inference, hypothesis testing, analysis of association and variance. CO9 Implement a proficiency in collection, organization, design, and drawing inferences from data using appropriate statistical methodology				

and problem solving skill.

CO10 Able to analysis, classify and interpret data to answer questions about the real world problem.

Unit No.	Topic	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Partial Differentiation: Function of two variables, limit, continuity and partial derivatives, Chain rule, Euler's theorem, implicit function differentiation. Applications of partial derivatives, tangent planes and normal lines to above surfaces (by calculus method).	09	19	1,2,3	CO1	PSO1	Emp / Ent	N / G	PE
2	Vector Calculus: Scalar and vector fields, gradient of a scalar function,	07	14.5	1,2,3	CO2 CO3	PSO1			

	directional derivatives, divergence and curl of a vector field and their applications. Line integrals and its Applications, Green's Theorem.				CO5				
3	Multiple Integration: Double integral, Change of order of integration, Triple integration, Change of variables in double and triple integrals, Applications of double and triple integration	07	14.5	2, 3, 4,5	CO4	PSO1 PSO4			
4	Statistics: <u>Reorientation of basic concepts:</u> by taking examples related to Textile Engineering. Curve fitting (least square approximation), Correlation analysis, Regression analysis.	07	14.5	1, 2, 3,5	CO6	PSO1 PSO2			
5	Probability: Reorientation and problems pertaining to Textile Engineering, Random Variables and Probability Distributions (Discrete and Continuous), Binomial probability distribution, Poisson distribution, Normal probability distribution. General idea of sampling, methods to draw a random sample, Confidence interval for mean for large and small samples.	10	21	1,2,3,4,5	CO7 CO9	PSO1 PSO2			
6	Testing of Data: General idea for testing of hypothesis, One-tailed and Two-tailed tests, Large and small sample tests, Test using p-values, Control charts for variables and attributes , chi-square test of goodness of fit, contingency tables. Analysis of Variance (ANOVA).	08	16.5	2,3,4,6	CO8 CO9 CO10	PSO1 PSO2 PSO3			
Reference Books									
1.	Erwin Kreyszig: Advanced Engineering Mathematics, (6th edition) John-Wiley & Sons.								
2.	Wilfrad Kaplan: Advanced Calculus, Addison-Wesley Publ. Company, Inc								

3.	C.R.Wylie: Advanced Engineering Mathematics, Mc. Graw– Hill, Inc.
4.	A.Richard: Probability and Statistics for Engineers, Johanson, PHI, 1996
5.	S.P.Gordon & F.S.Gordon: Contemporary Statistics, Mc – Graw Hill Inc, 1994.
6.	J.E.Booth: Textile Mathematics (Vol.I, II, III), The Textile Institute, Manchester, 1975.
7.	J.E.Booth: Principles of Textile Testing, CBS Publishers & Distributors, 1996.
8.	E.B.Grover & D. S. Hamby: Handbook of Textile Testing & Quality Control, Wiley India Pvt. Ltd.
9	B.V.Ramana: Higher Engineering Mathematics, Tata Mc. Graw-Hill. (Core Engineering Series).

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20		
B.E.(Textile Engineering): Regular Programme									
Year	I	Core / Elective / Foundation AMT 1202L : Mathematics & Statistical Methods-TW/Practical			Credits / Hours per week		02		
Semester	II	Year of Introduction: Year of Syllabus Revision:			Maximum Marks / Grade		50		
Mode of Transaction		Term Work, Practical and Viva							
Course Outcome (CO) CO1 Understands and be able to apply Mathematical software towards the problem solving. CO2 Able to analysis, classify and interpret data using computer algorithms. CO3 Able to demonstrate the ability to analyze data by appropriately fitting, assessing, and interpreting a variety of statistical tools. CO4 Able to apply the appropriate software programs towards the basic probability theories with application to the areas related to Textile sector. CO5 Understands and implement the appropriate software programs related to data description, statistical inference, and control charts.									
No.	Experiment					Course Code	BT Level	CO	PSO
1	Introduction to Mathematical Software.					AMT1202 L	1,2	CO1	PSO1 PSO4
2	Basic inbuilt commands and functions of vectors in Mathematical Software.						1,2,3,4	CO1 CO2	PSO1 PSO4
3	Basic inbuilt commands and functions of matrices in Mathematical Software.						1, 2, 3, 4	CO1 CO2	PSO1 PSO4
4	a. Basic command for 2D – plotting using Mathematical Software. b. Presentation of frequency distribution into graphs using Mathematical Software. (Histogram, bar, pie, etc.)						1, 2, 3,4,5	CO2 CO3	PSO1 PSO4

5	Measure of central Tendency (1) Mean (2) Median (3) Mode			1,2,3, 4,5	CO2 CO3	PSO1 PSO2 PSO4
6	(a) Measure of Dispersion: Standard Deviation and Variance (b) Relative Measure: Coefficient of variation (c) Skewness			1, 2, 3,4,5	CO2 CO3	PSO1 PSO2 PSO4
7	Correlation Analysis			1, 2, 3,4,5	CO2 CO3	PSO1 PSO2 PSO4 PSO5
8	Regression Analysis (1) Regression line y on x (2) Regression line x on y			1, 2, 3,4,5	CO1	PSO1 PSO2 PSO4 PSO5
9	Curve fitting (1) Straight line($y = a + bx$ or $y = ax + b$) (2) Parabola (3) Exponential ($y = ae^{bx}$) (4) Power function($y = ab^x$ and $y = ax^b$)			1, 2, 3,4,5	CO1 CO2	PSO1 PSO2 PSO4
10	Probability Distribution (1) Binomial Distribution (2) Poisson Distribution Normal Distribution			1, 2, 3,4,5	CO1 CO2	PSO1 PSO2 PSO4 PSO5
11	Hypothesis Testing			1, 2, 3,4,5	CO2 CO3	PSO1 PSO2 PSO4 PSO5
12	Control Charts			1, 2, 3,4,5	CO2 CO3	PSO1 PSO2

						PSO4 PSO5
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	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year	2019-20
B.E (Textile Engineering)				
Year	I	Core / Elective / Foundation AMT1203 Introduction to Computer and Numerical Analysis	Credits / Hours per week	04
Semester	II	Year of Introduction: Year of Syllabus Revision:	Maximum Marks / Grade	100
Mode of Transaction		Lectures		
Course Outcome (CO)				
CO1 Learn about the flowchart and design an algorithm for a given problem and to develop simple C – programs using operators.				
CO2 Study about Conditional and Iterative statements which are available in C – language.				
CO3 Learned about the importance and use of Arrays and Functions in C – language.				
CO4 Learned about Strings, Pointers, Structures, Unions and Command Line Arguments.				
CO5 Understand the concepts like File Handling in C-language.				
CO6 Understanding of common numerical methods and how they are used to obtain an approximate solution the given problem.				
CO7 To understand the concepts of interpolation with equal and unequal intervals.				
CO8 To understand the concepts of numerical integral by various methods.				
CO9 To solve algebraic, transcendental and system of linear equations by using various techniques.				

CO10 To solve the ordinary differential equations with initial condition by numerical techniques.									
CO11 Analyze and evaluate the accuracy of common numerical method.									
CO12 Implementation of numerical schemes into C-Program.									
Unit No.	Topic	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Programming tools and C preliminaries Introduction, Algorithms, effective procedures in problem solving, flowcharts, pseudo-code, Data types, constants,	06	12%	1,2,5	CO1	PSO1, PSO4, PSO7	SD	G	PE

	variables, type specification statements, operators and expressions, library functions, simple C programs								
2	Control Structures in ‘C’ Importance and types of control structures, structured programming, if – else, switch structure, go to, while, do – while, for continue and break statement.	09	19%	1,2,3,5	CO2	PSO1, PSO4, PSO7			
3	Advance Concepts in ‘C’ Arrays, Functions, Structure and pointers.	09	19%	1,2,3,5	CO3, CO4, CO5	PSO1, PSO4, PSO7			
4	Interpolation and Numerical Integration Finite differences: Backward, Forward, Central Differences Newton’s Forward and Backward Interpolation formulae Lagrange’s formula, Newton Divided difference Interpolation formula. Numerical Integration: Trapezoidal rule, Simpson’s 1/3 rd rule, Simpson’s 3/8 th rule.	09	19%	1,2,3,4,5	CO6, CO7, CO8, CO11, CO12	PSO1, PSO4, PSO7			
5	Solution of Algebraic and Transcendental Equations Solution of equations of one variable: Bisection method.	09	19%	1,2,3,4,5	CO6, CO9, CO11	PSO1, PSO4, PSO7			

	Regula – falsi, Newton – Raphson method Introduction to matrix algebra: Rank of matrix, Consistency of system of equations, Solution of system of linear equations, Gauss – elimination methods Gauss – Seidel, Jacobi, LU Factorization method				, CO12				
6	Numerical solution of Ordinary Differential Equations Euler’s method, Modified Euler method, Runge – Kutta method, Finite difference methods for ordinary differential equations. Applications oriented examples related to Textile engineering / Textile. Technology	06	12%	1,2,3,4,5	CO6, CO10 , CO11 , CO12	PSO1, PSO4, PSO7			

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year	2019-20	
B.E (Textile Engineering)						
Year	I	Core / Elective / Foundation AMT1203L- Introduction to Computer and Numerical Analysis		Credits / Hours per week	02	
Semester	II	Year of Introduction: Year of Syllabus Revision:		Maximum Marks / Grade	50	
Mode of Transaction		Term Work, Practical and Viva				
Course Outcome (CO) CO1 Learn about the flowchart and design an algorithm for a given problem and to develop simple C – programs using operators. CO2 Study about Conditional and Iterative statements which are available in C – language. CO3 Learned about the importance and use of Arrays and Functions in C – language. CO4 Learned about Strings, Pointers, Structures, Unions and Command Line Arguments. CO5 Understand the concepts like File Handling in C-language. CO6 Able to write C- program to find integration numerically. CO7 Able to write C-program to find solution of algebraic, transcendental and system of linear equations. CO8 Able to write C- program to solve ordinary differential equations with initial condition by numerical techniques.						
No.	Experiment		Course Code	BT Level	CO PSO	
1	Programs on printf(),		AMT1203L	1,2,3, 5,6	CO1	PSO1, PSO4, PSO7
2	Programs on and scanf()				CO1	
3	Programs on Conditional Statements like if, if- else, nested if-else.				CO2	
4	Programs on Conditional Statements like switch-case, continue, break, go-to.				CO2	
5	Programs on Looping Statements like for-loop, while-loop and do-while loop.				CO3	
6	Programs related to Arrays.				CO3	
7	Programs related to Functions.				CO4	
8	Programs on Character and Strings				CO4	
9	Programs on Pointers and Structures				CO5	
10	Programs on File Handling and Macros					

11	Program to find Numerical Integration.			CO6	
12	Programming on Solution of Algebraic and Transcendental functions.			CO7	
13	Program to find the solution of system of linear equations.			CO7	
14	Programming on Solution of Ordinary differential equations.			CO8	

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering						Academic Year 2019-20	
B.E. (Textile Engineering): Regular Programme									
Year	I	Core / Elective / Foundation Textile Fibre TXE 1202						Credits / Hours per week 04	
Semester	I I	Year of Introduction:1954 Year of Syllabus Revision:						Maximum Marks / Grade 100	
Mode of Transaction		Lectures							
Course Outcome (CO) TXE 1202 CO 1 Learning the basic concept of the textile fibres. CO 2 Understanding the properties of the textile fibres. CO 3 Learning the manufacturing process of natural cellulosic fibres. CO 4 Learning the manufacturing process of natural protein fibres. CO 5 Understanding the morphology of the various natural fibres. CO 6 Learning the manufacturing process of regenerated cellulosic fibres. CO 7 Understanding the structure of regenerated cellulosic fibres CO 8 Learning the manufacturing process of mam-made fibres. CO 9 Learning the various spinning techniques. CO10 Understanding the structures of the man-made fibre.									
Unit No.	Topic/Unit	Contact Hours	Weight age	BT Level	CO	PSO	Elements of Employability (Emp)/	Relevance to Local (L)/	Relation to Gender (G), Environmen

			(%)				Entrepreneurship (Ent)/ Skill Development (SD)	National (N)/ Regional(R)/ Global (G) development al needs	t and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Introduction of the Textile Fibres: • Definition of Textile Fibres & various terms of textiles. • Classification of the Textile Fibres. • Essential & Desirable properties of Textile Fibres. • General properties of textile fibres. • Structure, growth,	08	13.34	1,2,3	CO1, CO2	PSO1,2,3,4,5,6,7,8	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	geographical distribution, cultivation and grading of various natural fibres								
2.	Natural Fibres: • Introduction of the various Natural Fibres. • Manufacturing, morphology, constitution, physical properties, chemical properties and uses of cotton fibre. • Manufacturing, morphology, constitution, physical properties, chemical properties and uses of various	20	33.33	1,2,3,4,5	CO2, CO3, CO4, CO5	PSO1,2,3,4,5,6,7,8			

	Bast fibres. • Manufacturing, morphology, constitution, physical properties, chemical properties and uses of natural Protein fibres such as wool & Silk. • Introduction and basic manufacturing process and properties of other minor natural fibres.								
3.	Regenerated Cellulosic Fibres: • Introduction of the regenerated cellulosic fibres. • Manufacturing process of Viscose rayon	12	20	1,2,3,4,5	CO2, CO6 CO7	PSO1,2,3,4,5,6,7,8			

	fibre. • Manufacturing process of Polynosic fibres. • Manufacturing process of Crupraammonium rayon fibre. • Manufacturing process of Acetate rayon fibre.								
4.	Man-made Fibres: • Introduction & Classification of Man-made Fibres. • Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses of	20	33.33	1,2,3,4,5	CO2, CO8, CO9 CO10	PSO1,2,3,4,5,6,7,8			

	Polyester Fibre. • Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Nylon – 6 & Nylon – 6,6 Fibres. • Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Acrylic Fibres. • Synthesis of raw material, Manufacturing Process, Structure, Physical &								
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	Chemical properties and End uses Polypropylene Fibres. • Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Polyethylene Fibres. • Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses of various vinyl fibres.								
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Reference Books	
1.	Textile Fibres, Vol. I – Prof. V.A. Shenai
2.	Handbook of Text. Fibres. Vol.I, II & III – J. Gordon Cook
3.	Textile Fibres. Vol.II – Editor: Dr. V.K. Kothari
4.	Textile Fibres – H.V. Shreenivasamurthy
5.	Chemical Tech. of Fibrous materials – F. Sadov
6.	Man-made fibres – By R.W. Moncrieff

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year			2020-21			
B. E. (Textile Engineering): Regular Programme										
Year	I MECH	Core MEC 1206 : MACHINE DRAWING		Credits / Hours per week				Lectures: 04 Practical:- 03		
Semester	II	Year of Introduction: Year of Syllabus Revision: 2018		Maximum Marks / Grade				Theory: 100 PR/TW/VIVA: 50		
Mode of Transaction: Lectures and Practical										
Course Outcome (CO) MEC 1206										
CO 1 Use the drawing instruments effectively and how to use the dimensioning methods.										
CO 2 Observe, analyze and correlate two-dimensional (Orthographic view) and three dimensional (Isometric view)										
CO 3 Construct and application of various engineering curves in engineering practice										
CO 4 Apply the knowledge of Projection of points, Lines and Planes in engineering										
CO 5 understand different assembly drawing of welding and fasteners with limits, fits and tolerance, machine symbols,										
Unit No.	Topic		Cont act Hour s	Weighta ge (%)	BT Lev el	CO	PO	Elements of Employa bility (Emp)/ Entrepren eurship (Ent)/ Skill Develop ment (SD)	Relevan ce to Local (L)/ National (N)/ Regiona l(R)/Glo bal (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Line convention and dimensioning methods (IS 3/4 code 696), Line and block schematics	13	25	1,2,3	Co 1,2	Po1,2,3	All	All	All
2	Flow diagrams, circuit diagrams, fasteners and welding, sectioning methods and conventions	13	25	1,2	Co 1,2,3	Po2			
3	Assembly of parts, exploded assembly and shading.	13	25	2,3,4	Co 3	Po2,3,4			
4	Building drawing, perspective drawing, architectural drawing, conventions of limits, fits and tolerance, machine symbols.	13	25	2,4,5	Co4	Po 4,3,1			
		52	100						

Reference Books

1.	N. D. Bhatt	: Machine Drawing
2.	R. S. Khurmi	: Machine Drawing
3.	S. B. Jurnarkar	: Machine Drawing
4.		

 THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20	
		B.E. (Textile Engineering): Regular Programme						
Year	I	Core / Elective / Foundation MEC1206L Machine Drawing (Practical/TW/Viva)			Credits / Hours per week		02	
Semester	II	Year of Introduction:1954 Year of Syllabus Revision: NA			Maximum Marks / Grade		50	
Mode of Transaction		Term work, Practical and viva						
No.	Experiment			Contact hours	Weightage (%)	BT Level	CO	PSO
1.	Sectional orthographic projections			8	20	1,2,3	CO1	Po 2
2.	Detail and assembly drawing			8	20	1,2	CO1,2	Po1,2,3
3.	Representation of geometric tolerance in drawing			8	20	2,3,4	CO3	Po2,3,4
4.	Symbols of surface roughness			8	20	2,4,5	CO4	Po 4
5.	Numerical of limit ,fit and tolerance of production drawing			7	20	1,2,3	CO5	Po 5

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year						2019-20		
B.E (Textile Engineering): Regular Programme												
Year	I	Core / Elective / Foundation Subject code: Introduction to Textiles (TXE1201)			Credits / Hours per week						04 hours/week	
Semester	II	Year of Introduction: 2002 Year of Syllabus Revision: --			Maximum Marks / Grade						100	
Mode of Transaction		Lectures and Tutorials										
Course Outcome (CO) (TXE1201) CO 1 Summarize the yarn manufacturing processes, parameters and terms CO 2 Paraphrase the fabric manufacturing processes, parameters and terms CO 3 Explain the preparatory processes to fabric manufacture and chemical processing of fabrics CO 4 Grasp fibre types and classification and the basics of yarn spinning and weaving preparatory CO 5 Summarize the fabric production and chemical processing CO 6 Paraphrase the garment construction and testing												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Spinning Basics and Fundamental Spinning				10.5	17.5	1, 2,	1	1, 2	EMP, SD	R, N, G	PE

	Operations: Introduction of spinning by visiting spinning laboratory to make familiar with different machines involved in cotton yarn spinning. Definitions related to fibre, yarn and spinning. Yarn classification. Fundamental Spinning Operations: Essential and Optional; Essential: i) Opening cleaning and mixing, ii) Sliver formation, iii) Attenuation, iv) Twisting and v) Package formation, Optional: i) Doubling and ii) Combing			3					
2	Flow Chart of different machines used in short staple spinning: Types of beaters and openers used in opening of cotton lumps and flow chart of Blow room, Card engine, Draw frame, Speed frame, Ring frame, Sliver lap machine, Ribbon lap machine and Comber. Flow chart of different types of spinning techniques like Rotor, Air jet and Friction spinning machines. Brief study of different types of spinning techniques like Ring, Rotor, Air jet and Friction spinning machines. Combing process. Understand material flow through individual machines, different spinning techniques.	9	15.0	1, 2, 3, 4	1	1, 2			
3	Concept of Fineness, Attenuation, Impurities and cleaning of other natural fibres and testing: Yarn numbering system: Direct and Indirect, its understanding and calculations. Draft like mechanical draft and actual draft concept and their calculation, with examples of different hank of materials of different intermediate products like sliver, roving, etc. and their calculation. Impurities and its cleaning process of Wool, Jute and Silk fibers. Testing of fibres, yarn and fabric, Fibre properties.	10.5	17.5	1, 2, 3, 4	1	1, 2			
4	Introduction to fabric, garment manufacturing and	10.5	17.5	1, 2,	2	1, 2			

	Weaving process: Types of textile material outline of all textile process. Garment manufacturing process flow chart. Weaving: Definition of fabric, classification of fabric, Types of fabric manufacturing process, Structure of woven fabric, Different weaves, Different types of weaves, Passage of warp on plain power loom, Mechanisms of weaving machine, Fabric properties. Drawing-in & Denting.			3					
5	Concept of Knitting, Nonwoven and braiding techniques: Knitting: Principle of loop formation, types of needle, Warp & weft knitting. Nonwoven: Different methods of web forming, Different methods of web bonding. Braiding technique.	9	15.0	1, 2, 3	2	1, 2			
6	Yarn preparation and chemical processing: Objective, Different types of yarn faults & packages, Weaving preparation. Winding & pirn winding: Objective, Types of winding, Removal of yarn faults. Warping: objective, Types of warping, Sizing: Objective, size paste. Chemical processing.	10.5	17.5	1, 2, 3	3	1, 2			

Reference Books

1.	Fibre to Fabric by Bernard P. Corbman, published by McGraw-Hill, 1983.
2.	Weaving: Conversion of Yarn to Fabric by Peter Reeves Lord, Mansour H. Mohamed, published by Woodhead Publishing, 1982.
3.	Introduction to Textile Fibres by H V Sreenivasa Murthy, published by The textile association India, 1987
4.	Textile Yarns by B. C. Goswami, published by Wiley, 1977.
5.	Spun yarn technology by Eric Oxtoby, published by Elsevier Science, 2013.
6.	Motivation series Textiles by Andrea Wynne, published by Macmillan Education, 1997.
7.	Principles of textile testing by J. E. Booth, published by CBS publishers and distributors, 1996
8.	General Technology of cotton manufacturing by P. T. Bukayev, published by MIR Publishers, 1984.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
B.E. (Textile Engineering) Regular Programme									
Year	I	Core / Elective / Foundation TXE1201L: Introduction to Textiles (Practical/TW/Viva)			Credits / Hours per week		02		
Semester	II	Year of Introduction: 2002 Year of Revision: ---			Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, drawing, term work and viva							
No.	Experiment				Contact hrs.	%Weight age	BT Level	CO	PSO
1	Classification of fibre, Study of various properties cotton fibre and its importance in spinning process in brief.				2	8.33	1,2	4	1,2,6
2	Spinning Process: Introduction of Spinning Process, Objectives of Spinning Process, Types of yarn, different lay out (Block diagram for spinning machine different types of yarn production)				2	8.33	1,2,3,4	4	
3	Yarn numbering system in details				2	8.33	1,2,3,4	4	
4	Introduction various section of spinning process, Layout of Blow room, study each machine of blow room in brief, study each machine of carding, draw frame, Flyer frame and ring frame in brief (only block diagram of various spinning machine)				4	8.33	1,2,3,4	4	
5	Modern methods of yarn production like open end spinning, air jet spinning, friction spinning in brief. Collection of various samples of fibre and yarn				4	8.33	1,2,3,4	4	
6	Yarn Preparatory Process for woven fabric: Objectives of Yarn Preparatory process, Flow chart of warp and weft Preparatory Process, Objectives of Winding. Process Flow Chart with function of each part. Objectives of Warping Process, Flow Chart with functions of each part. Objective of Sizing. Process Flow Chart with function of each part. Objective of Pirn winding, Flow Chart along with function of each part.				2	8.33	1,2,3,4	4	
7	Fabric manufacturing process: Characterization of fabric, Classification of loom, Flow chart of loom. Primary and Secondary motion of loom. Basic Weave: construction of Plain and Twill weave. Comparison of woven fabric with knitted fabric, Classification				2	8.33	1,2,3,4	5	

	of knitting process, knitted fabric structure Detail of Needle, Weft knitted process, Knitting Cycle Comparison of Warp and weft knitting process.					
8	Non-woven fabric manufacturing process: Classification of different type of process, Basics of Web forming and bonding method Technical Textile: Definition of Technical Textile, Classification of technical textile according to end use.	2	8.33	1,2,3,4	5	
9	Fabric Finishing Process: Finishing of cotton fabric. Different type of Printing process and Concept of Dying. Special finishes name and function.	2	8.33	1,2,3,4	5	
10	Garment manufacturing Process: The design and quality consideration for Selection of fabric from market for individual garment manufacturing process and Large-scale manufacturing of Garment. Garment manufacturing Process for Large scale manufacturing of Garment, Flow Chart and function of each process and pattern making.	2	8.33	1,2,3,4	6	
11	Collection of various samples of fabrics	4	8.33	1,2,3,4	6	
12	Introduction to testing, Brief introduction to Testing, Name and principle of various testing instrument and unit for measurement of various properties	2	8.33	1,2,3,4	6	

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2019-20					
B.E. (Textile Engineering) : Regular Programme										
Year	II	Core / Elective / Foundation APM1302: Applied Mechanics	Credits / Hours per week			04				
Semester	I	Year of Introduction: 2010 Year of Syllabus Revision: ----	Maximum Marks / Grade			100				
Mode of Transaction		Lectures								
Course Outcome (CO) APM1302 CO1 Comprehensive theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. CO2 In-depth understanding of specialist bodies of knowledge within the engineering discipline. CO3 To apply the concept of equilibrium to systems which can be modeled as particles in 2D, and to rigid bodies in 2D. CO4 To simplify and clarify mechanics problems using free body diagrams. CO5 To calculate different types of stresses like normal stress, shear stress etc. and corresponding stresses for various loading conditions both for static and dynamic parts of structures or machines. CO6 To study the various types of lifting devices. CO7 To study the power transmitted by various devices										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/	Relevance to Local (L)/ National (N)/ Regional(R)/ Global	Relation to Gender (G), Environment and Sustainability

							Skill Development (SD)	(G) developmental needs	(ES), Human Values (HV) and Professional Ethics (PE)
1	Forces and force system : Coplanar forces acting at a point, Force polygon. Resultant of a force and couple, Equilibrium of coplanar forces, Funicular polygon, Parallel forces, Reaction of beams.	12	20	1,2,4	CO1 CO3 CO4	PSO1	SD,Emp	G,N,R. L	--
2	Properties of lines areas and solids Centre of gravity and centroid of the plane sections, Moment of Inertia of the plane sections.	15	25	2,4	CO2	PSO1			
3	Friction and Transmission of power Friction: Equilibrium on a rough inclined plane, Angle of friction, The wedge, The screw, The screw jack. Lifting machines: Basic machines, The differential principles, Pulley blocks, Crab winches, Worm gearing, Linear law, Compound efficiency. Rope and belt drive: Simple and Compound belt drive, Velocity ratio, Length of the belt, Transmission of power, Centrifugal tension, Rope drive, Toothed gearing, Simple and Compound wheels of trains, Design of wheel train, Gear box of motor car, Epicyclic gearing, Reverted trains, Humpage's speed reduction gear, Differential gear.	18	30	2, 3, 4,5	CO3 CO4 CO6 CO7	PSO1, 2,3			
4	Strength and Elasticity of Materials and strain	15	25	1,2,4	CO4	PSO1,			

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20		
B.E. (Textile Engineering): Regular Programme									
Year	II	Core / Elective / Foundation APM1302L: Applied Mechanics (Practical/TW/Viva)			Credits / Hours per week		04		
Semester	I	Year of Introduction: 2010 Year of Syllabus Revision: 2010			Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, Graphics, discussion and viva			is common for all experiments				
No.	EXPERIMENT				Contact hrs.	%Weightage	BT Level	CO	PSO
1	LAW OF PARALLELOGRAM OF FORCES				3	5	2,3	CO1	PSO1
2	LAW OF POLYGON				3	5	2,3	CO1	PSO1
3	SIMPLE BEAM				3	5	2,3	CO3	PSO1
4	JIB CRANE				3	5	2,3	CO3	PSO1
5	THEORY OF LIFTING MACHINE				4	6.6	2,3	CO6	PSO1,2,3
6	COPMLETE TENSILE TEST ON MS BAR				4	6.6	2,3	CO5	PSO1,2,3
7	MODULUS OF ELSTICITY				4	6.6	2,3	CO5	PSO1,2,3
8	DIRECT SHEAR TEST ON MS				4	6.6	2,3	CO5	PSO1,2,3
9	COMPRESSION TEST ON MS AND CI				4	6.6	2,3	CO5	PSO1,2,3
10	IZOD IMACT TEST				4	6.6	2,3	CO5	PSO1,2,3
GRAPHICS									
11	COPLANAR CONCURRENT FORCE SYSTEM-1				3	5	2,6	CO1,2	PSO1
12	COPLANAR CONCURRENT FORCE SYSTEM-2				3	5	2,6	CO1,2	PSO1
13	COPLANAR NON-CONCURRENT FORCE SYSTEM-1				3	5	2,6	CO1,2	PSO1
14	COPLANAR NON-CONCURRENT FORCE SYSTEM-2				3	5	2,6	CO1,2	PSO1
15	REACTION OF BEAMS-1				3	5	2,6	CO3	PSO1
16	REACTION OF BEAMS-2				3	5	2,6	CO3	PSO1
17	WEDGE BLOCK FRICTION				3	5	2,6	CO4	PSO1,2,3

18	CENTROID OF PLANE LAMINA	3	5	2,6	CO4	PSO1
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	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year				2020-21			
B.E. (Textile Engineering) : Regular Programme										
Year	II	Core / Elective / Foundation APH1301: Fibre Science and Textile Physics	Credits / Hours per week				04			
Semester	I	Year of Introduction: 2003 Year of Syllabus Revision: 2012	Maximum Marks / Grade				100			
Mode of Transaction		Lectures, Tutorials								
Course Outcome (CO) APH1201 CO1 Understanding the fibres CO2 Understanding the physical properties of fibres CO3 Methods to determine physical properties CO4 Understanding of instrumentation CO5 Understanding of electrical and optical properties of fibre CO6 Applications of fibres										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) development needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values

									(HV) and Professional Ethics (PE)
1	FIBER Fundamentals Basic Requirements for fibre formation, Long Chain Molecules, Crystal structures, Crystal Binding.	06	12	1	CO1	PSO1	SD	G	ES
2	Characterization: XRD technique and IR Spectroscopy Investigation of Fibre Structure using infrared absorption method. Study of X-ray diffraction patterns of fibre, Study of crystallinity (amorphous and crystalline regions).	09	19	1,2	CO2 CO3	PSO1			
3	Swelling and Thermal Properties Fibre expansion due to water absorption, expansion coefficients, relation between them and their experimental determination. Thermal parameters, structure changes in fibre on heating.	09	19	1,2, 3, 6	CO5 CO4	PSO1 PSO5 PSO7			
4	Fibre Density Measurement Displacement of Liquid method, specific gravity bottle method, flotation method, Abbott –Gooding method and density gradient tube method.	06	12	2, 3,4	CO4 CO6	PSO1 PSO5			
5	Electrical Properties Dielectric properties, Electrical resistance of fibres and its measurement, static electricity, measurement and explanation of static phenomena.	12	25	2, 3,4	CO4 CO6 CO5	PSO1 PSO5			
6	Optical Properties Refraction, absorption and dichroism, reflection and luster.	06	13	2,3,4	CO5	PSO1 PSO5			

Reference Books	
1.	Physical properties of Textile fibers by W.E. Morton and J.W.S. Hearle, Woodhead Publishers, UK
2.	Fibre Structure by Hearle and Peters
3.	Introduction to Polymer Physics by Petepechko
4.	Fibre Science & Technology by P. Ghosh (TS 1540 G4F4)
5.	A Text Book of Fibre Science by S.P.Mishra (TS 1540 M4T3)
6.	Fundamentals of Molecular Spectroscopy, C.N. Banwell&E.M.McCash, TMG Hill Publishing Co.
7.	Spectroscopy by Rajkumar

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year				2020-21		
B. E. (Textile Engineering): Regular Programme											
Year	II MECH	Core MEC 1307-ENGINEERING MANUFACTURING TECHNOLOGY			Credits / Hours per week				Lectures: 04 Practical:- NILL		
Semester	I	Year of Introduction: Year of Syllabus Revision: 2018			Maximum Marks / Grade				Theory: 100 PR/TW/VIVA: NILL		
Mode of Transaction: Lectures and Practical											
Course Outcome (CO) MEC 1307 CO1. Acquire the basic basic manufacturing process knowledge of all manufacturing processes used on shop floor of any industry. CO2. Decide the appropriate production process and selection of machine tools for any product upon the number of options available to optimize production process. CO3. Apply quality checks and assess the better product using the concept of measuring and Gauging for advanced machining process. CO4. Design and analyze measuring instrument a work / tool holding device to satisfy the requirement of motion control and mechanical deformation.											
Unit No.	Topic			Cont act Hours	Weighta ge (%)	BT Lev el	CO	PO	Elements of Employa bility (Emp)/ Entrepren eurship (Ent)/ Skill	Relevan ce to Local (L)/ National (N)/ Regiona l(R)/Glo bal (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional

							Develop ment (SD)		Ethics (PE)
1	BASIC MANUFACTURING PROCESS: Cold Working And Hot Working Processes e.g Rolling, Forging, Sheet Metal Work Etc. Casting-Processes, casting terminology, advantages, disadvantages, application of each process, Sand casting, Die Casting, Centrifugal Casting, Shell Moulding. Welding Processes-Gas Welding, Arc Welding, Resistance Welding, Soldering & Brazing. Finishing Operations-Honing, Lapping, Buffing, Super Finishing, Surface Treatment, Plating Etc. Metal Cutting- Principles, Merchant's Circle diagram, Tool Geometry, Tool Signature.	13	25	1,2, 3	Co 1,2	Po1,2,3	All	All	All
2	MACHINE TOOLS: Construction, working principle, types, specifications, functions of major components, possible operations, tools used.Lathe machine, Drilling machine, Shaping machine, Milling machine, Slotting machine, Planning machine, Grinding machine, and Broaching machine.	13	25	1,2	Co 1,2,3	Po2			
3	INTTODUCTION TO ADVANCED MACHINING PROCESS: Working principle, construction, tool materials, work piece materials, advantages, disadvantages, application, MRR, tool erosion/wear, surface finish. Abrasive jet machining, Ultrasonic machining, Electro Discharge machining, Electro Chemical machining, Laser Beam machining.	13	25	2,3, 4	Co 3	Po2,3,4			
4	MEASURING INSTRUMENTS: Micrometer, vernier caliper, height gauge, depth gauge, dial gauge, plug gauge,snap gauge, sine bar, slip gauges,	13	25	2,4, 5	Co4, CO3	Po 4,3,1			

	comparators. LIMITS FITS AND TOLERANCES: JIGS AND FIXTURES.: MACHINE SHOP ESTIMATION AND COSTING.:								
		52	100						
Experiments									
	NILL								
Reference Books									
1.	Manufacturing Technology - Foundry, Forming & Welding P N Rao Tata Mc Graw Hill								
2.	Welding Processes & Technology Parmar R S Khanna Publishers								
3.	Principles of Engineering Production, Lissaman and Martin, ELBS								
4.	Principle of Metal Casting Addison Wesley Flinn R A								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year				2020-21			
BE-II (Textile Engineering): Regular Programme											
Year	I	Core / Elective / Foundation ACH1303: Engineering Chemistry		Credits / Hours per week				04			
Semester	I	Year of Syllabus Revision: 2009		Maximum Marks / Grade				100			
Mode of Transaction		Lectures and Tutorials									
Course Outcome (CO) ACH1303											
CO1 To study about hardness in water, boiler feed water and various methods employed to remove hardness.											
CO2 To understand basic principles of salt hydrolysis and adsorption and to learn about various adsorption isotherms.											
CO3 To learn about various synthetic and natural fibres.											
CO4 Introduction to Fuels and their types with respect to their calorific values.											
CO5 To learn about the chemistry of various aliphatic/aromatic and heterocyclic compounds with respect to their preparation, properties and uses.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/	Relevance to Local (L)/ National	Relation to Gender (G), Enviro

							Entrepreneurship (Ent)/ Skill Development (SD)	1 (N)/ Regional (R)/ Global (G) developmental needs	Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Water: Introduction and hardness in water, softening of hard water, boiler feed water and boiler problems, methods of boiler water treatment	06	13	1,2,3,4	CO1	PSO1	Emp	G	ES, HV
2.	Salt hydrolysis and adsorption: Hydrolysis of salts, degree of hydrolysis, pH of hydrolysed salt Introduction to adsorption chemical and physical adsorption, factors affecting adsorption, adsorption isotherms, Freundlich and Langmuir adsorption isotherm, applications of adsorption.	07	14	1,2	CO2	PSO1			
3.	Synthetic & natural fibres: Types, properties, bleaching of textiles, bleaching agents.	05	11	1,2,3	CO3	PSO1			
4.	Fuels: Introduction & classification, characteristics of a good fuel, advantages and disadvantages of solid, liquid and gaseous fuels. Coal: Definition, selection, analysis-proximate and ultimate. Petroleum: Introduction, refining of petroleum, Gaseous	06	13	2,3,4	CO4	PSO1			

	Fuels: Producer gas and Water gas								
5.	Chemistry of aliphatic compounds: Alkanes, alkenes, alkynes-preparation, properties and uses	06	12	1,2,3	CO5	PSO1			
6.	Chemistry of aromatic compounds I: Benzene and its homologous: preparation, properties and uses	05	11	1,2,3	CO5	PSO1			
7.	Chemistry of aromatic compounds II: Phenols: preparation, properties and uses; Aromatic nitro compounds: preparation, properties and uses	07	14	2,3	CO5	PSO1			
8.	Heterocyclic compounds I: Furan, thiophene and pyrrole: preparation, properties and uses	06	12	2,3	CO5	PSO1			
Reference Books:									
1.	Engineering Chemistry: Jain and Jain, Dhanpatrai Publishing House								
2.	Industrial Chemistry: B. K. Sharma, Goel Publishing House								
3.	Essentials of Physical Chemistry: B. S. Bahl, A. Bahl and G. D. Tuli; S Chand & Co.								
4.	Organic Chemistry: Morrison and Boyd, Prentice-Hall of India Ltd. New Delhi.								
5.	Text book of Organic Chemistry for B.Sc. Students: P. L. Soni.								

							pment (SD)	develop mental needs	Values (HV)an d Profess ional Ethics (PE)
1.	To determine the strengths and normalities of KMnO_4 and $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ solutions using a standard solution of Oxalic acid.	02	10	1,2,4	CO1	PSO1	Emp	G	HV
2.	To determine the strengths and normalities of KMnO_4 and $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot 6\text{H}_2\text{O}$ solutions using a standard solution of Oxalic acid.	02	10	1,2,4	CO1	PSO1			
3.	To determine the strengths and normalities of KMnO_4 and H_2O_2 solutions using a standard solution of Oxalic acid.	02	10	1,2,4	CO1	PSO1			
4.	To determine the strengths and normalities of KMnO_4 and NaNO_2 solutions using a standard solution of Oxalic acid.	02	10	1,2,4	CO1	PSO1			
5.	Elementary qualitative analysis of a salt involving detection of one cationic and one anionic species from the following groups: Cations: Pb^{2+} , Cu^{2+} , Fe^{+2} , Al^{+3} , Cr^{+2} , Co^{+2} , Ni^{2+} , Zn^{2+} , Mn^{2+} , Ca^{2+} , Sr^{2+} , Ba^{2+} , Mg^{+2} , NH_4^+ Anions: CO_3^{2-} , Cl^- , Br^- , NO_3^- , SO_4^{2-} , PO_4^{3-}	16	60	2,3,4	CO2	PSO1			
Reference Books:									
1.	Vogel's Textbook of Quantitative Chemical Analysis -J. Mendham, R. C. Denney, J. D. Barnes and M. J. K. Thomas, (6 th edition, Prentice Hall) 2000.								

2.	Vogel's- Textbook of Macro and Semi-micro Qualitative Inorganic Analysis, 5 th Edition, Longman, London
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	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year				2020-21		
B. E. (Mechanical Engineering): Regular Programme											
Year	II Text Engg	Core Thermodynamics MEC :1305			Credits / Hours per week				Lectures: 04 Practical:- nill		
Semester	I	Year of Introduction: Year of Syllabus Revision: 2018			Maximum Marks / Grade				Theory: 100 PR/TW/VIVA:		
Mode of Transaction: Lectures											
Course Outcome (CO) MEC 1305											
CO1 Understand basic laws of thermodynamics.											
CO2 Understand basic of p v diagram system.											
CO3 Understand basic of Combustion process.											
CO4 Understand working and application of steam engine.											
CO5 Understand basic of rankine cycle.											
CO6 Understand basic of second law of thermodynamic and it's working analysis.											
CO7 Understand basic of Reciprocating air compressor and it's analysis.											
CO8 Understand basic of Internal combustion engine and it's analysis.											
CO9 Understand basic of Gas producers.											
Unit No.	Topic			Contact Hours	Weightage (%)	BT Level	CO	PO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/	Relevance to Local (L)/ National (N)/ Regional (R)/Glo	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and

							Skill Develop ment (SD)	bal (G)	Professional Ethics (PE)
1	BASIC CONCEPTS AND DEFINITIONS: Classical (Equilibrium) and Statistical thermodynamics -macroscopic and microscopic points of view, thermodynamic system, surroundings, system boundary, control mass and control volume thermodynamic properties, processes and cycles, thermal equilibrium, quasi-static process- pure substance, continuum concept.	8	20	1	Co1	Po2	All	All	All
2	ENERGY INTERACTIONS: Thermodynamic definitions of work and heat -displacement of P-dV work and other types of work interactions -net work done by a system, free expansion with zero work done, work interaction: a path function. Zeroth law of thermodynamics, concept of ideal gas thermometer.	8	20	1,3	Co1,c o2	Po2,3			
3	FIRST LAW ANALYSIS: Statements of first law of thermodynamics for a closed system undergoing a cycle and a change of state -consequence of the first law -heat as a path function, energy as a thermodynamic property, perpetual motion machine of first kind, different forms of energy -enthalpy – specific heat at constant pressure and constant volume, First law analysis of elementary processes such as isochoric, isobaric, isothermal, adiabatic and polytropic undergone by an ideal gas. First law applied to flow processes -mass and energy balance in simple steady flow process- application of steady flow energy equation to systems like nozzle,	8	20	3,5	Co6	Po 3,5			

Reference Books	
1.	Engineering Thermodynamics;P.K.Nag
2.	Thermal Engineering ;Domkundwar
3.	A course in Heat & Mass Transfer ;Domkundwar

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year				2019-20			
B.E. (Textile Engineering): Regular Programme										
Year	II	Core / Elective / Foundation TXE1304: Fabric Structure & Design Analysis	Credits / Hours per week				04			
Semester	I	Year of Introduction: 2003 Year of Syllabus Revision: ---	Maximum Marks / Grade				100			
Mode of Transaction		Lectures and Tutorials								
Course Outcome (CO) TXE1304										
CO1 Learn about Fabric Classification and Characteristics of Different Fabric.										
CO2 Learn about the Concept of Weave, Representation of Design, Draft, Peg Plan (Lifting Plan), and Drawing-in and Denting Order and their inter relation.										
CO3 Understand the Plain, Twill, Satin and Sateen Weaves, Ornamentation and Derivatives of Plain, Twill, Satin and sateen Weaves.										
CO4 Understand the Diamond and Diaper weave, and its characteristics.										
CO5 Understand basics of Honey Comb, Huck-a-back, and Mock Leno Weaves.										
CO6 Understand basics of Distorted Thread Effect, Crepe, Bed ford Cords, and Welts and Pique Weaves.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R) /Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values

									(HV)and Professio nal Ethics (PE)
1	Introduction of Fabric Structure: Types and Classification of Fabric, Characteristics of Different Plain, Twill, and Satin and Sateen fabrics like, Plain Fabrics- Cambric, Poplin, Sheeting, Duck, Voile, Twill Fabrics- Jean, Denim, Gabardine, Satin and Sateen Fabrics- Cotton lining Sateen, Crepe Satin, Satin Drill, Satin Whipcord, etc.	08	13	1,2	CO1	PSO1 PSO2	EMP, SD	L, N, R, G	PE
2	Conception of Basic Weaves, Representation of Design, Draft, Peg Plan (Lifting Plan), and Drawing-in and Denting Order and their inter relation.	06	10	1,2	CO2	PSO1 PSO1			
3	Study of the Plain weave, Characteristics of the Plain Weave, Ornamentation and Derivatives of Plain weave like Warp rib, Weft rib, and Hopsack/Basket/Matt Weaves.	08	14	1,2,4	CO3	PSO2 PSO3 PSO6 PSO8			
4	Study of the Twill weave, Characteristics of the Twill Weave, Derivatives of Twill weave like, Wavy Twill, Herringbone Twill, Broken Twill, Transposed or Re-arranged Twill, Elongated Twill, Combined twill, etc.	08	14	1,2,4	CO3	PSO2 PSO3 PSO6 PSO8			
5	Study of the Satin and Sateen Weaves, Characteristics of the Satin and Sateen Weaves, Derivatives in Satin and sateen Weaves like, Venetian and Buckskin, Swans down, Imperial Sateen, Reversible Sateen or Lambskin, Extension of Sateen weave, etc.	06	10	1,2,4	CO3	PSO2 PSO3 PSO6 PSO8			
6	Study of the Diamond and Diaper weave, and its	08	13	1,2,4	CO4,	PSO2			

	characteristics, Difference between Diamond and Diaper Weaves. Study of the Bed Ford Cord weave, Different types of Producing Bed Ford Cord Weave. Like, Plain Faced, Twill Faced, Wadded Bed Ford Cord, Alternate Pick Bed ford Cord.				CO6	PSO3 PSO6 PSO8			
7	Study the basics of Honey Comb Weave, Honey Comb with Square and Equal Cell, Brighton Honey Comb, Larger Honey Comb, Construction of Huck-a-back Weave, Devon's Huck, Grecian Huck-a-back and Construction of Mock Leno Weave.	08	13	1,2,4	CO5, CO6	PSO2 PSO3 PSO6 PSO8			
8	Study the Crepe Weave, Methods of the Construction of the Crepe weave. Construction of Distorted Thread Effect, Spot Effect, and Welts and Pique Weaves	08	13	1,2,4	CO5, CO6	PSO2 PSO3 PSO6 PSO8			
Reference Books									
1.	Textile Design and Colour, Z. Groseicki.								
2.	Woven cloth construction, Marks and Robinson.								



The Maharaja Sayajirao University of Baroda
Faculty Technology and Engineering
Department of Textile Engineering

Academic Year

2020-21

B.E. (Textile Engineering): Regular Programme

Year	II	Core / Elective / Foundation TXE1304L: Fabric Structure & Design Analysis (Practical/TW/Viva)	Credits / Hours per week			02	
Semester	I	Year of Introduction: 2003 Year of Syllabus Revision: ---	Maximum Marks / Grade			50	
Mode of Transaction		Laboratory Experiments, discussion and viva	PSO7 is common for all experiments				
No.	Experiment		Contact hrs.	%Weightage	BT Level	CO	PSO
1	Introduction: Parameters for Fabric Analysis		02	6.66%	1,2	CO1 CO2	PSO2 PSO7
2	Analysis of Sample-1		02	6.66%	2,4	CO3	PSO7 PSO8
3	Analysis of Sample-2		02	6.66%	2,4	CO3	PSO7 PSO8
4	Analysis of Sample-3		02	6.66%	2,4	CO3	PSO7 PSO8
5	Analysis of Sample-4		02	6.66%	2,4	CO3	PSO7 PSO8
6	Analysis of Sample-5		02	6.66%	2,4	CO3	PSO7 PSO8
7	Analysis of Sample-6		02	6.66%	2,4	CO4	PSO7 PSO8

8	Analysis of Sample-7	02	6.66%	2,4	CO4	PSO7 PSO8
9	Analysis of Sample-8	02	6.66%	2,4	CO5	PSO7 PSO8
10	Analysis of Sample-9	02	6.66%	2,4	CO5	PSO7 PSO8
11	Analysis of Sample-10	02	6.66%	2,4	CO6	PSO7 PSO8
12	Making of Sample on Handloom	02	6.66%	1,2,3,6	CO3	PSO2 PSO3
13	Making of Sample on Handloom	02	6.66%	1,2,3,6	CO3	PSO2, PSO3
14	Making of Sample on Handloom	02	6.66%	1,2,3,6	CO4	PSO2, PSO3
15	Making of Sample on Handloom	02	6.66%	1,2,3,6	CO5	PSO2, PSO3

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering					Academic Year		2020-21	
B E Civil & IWM: Regular Programme										
Year	II	Core / Elective / Foundation CVL 1404: FLUID MECHANICS					Credits / Hours per week		5/ 3L+ 1T+ 2P	
Semester	I						Maximum Marks / Grade		100+50=150	
Mode of Transaction		Lectures, Tutorials and Practical's								
Course Outcome (CO) CVL 1404 FLUID MECHANICS CO1 Students become aware about properties and behavior of fluids in static as well as moving conditions. CO2 Students are able to do measurement of rate of flow and pressure. CO3 Students are acknowledged to applications of fundamental laws of mechanics. CO4 Students become able to derive new concept with special reference to incompressible fluids.										
Unit No.	Topic	Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurs hip (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/G lobal (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)	
1	Introduction to Fluid Mechanics and its role in Engineering Fluids – definition and types. Fluid properties and types, inter-relations and unit of measurements. Viscosity, Newton’s law, classification of fluids	04	10%	1,2,	1	1	SD	G	ES	
2	Fluid pressure – hydrostatic pressure and distribution. Measurement of pressure – different types of manometers.	05	15%	1,2,3	1,3	1	SD	G	ES	

3	Relative equilibrium – motion with linear uniform acceleration.	03	10%	1,2,3	1,3	1	SD	G	ES
4	Fluid flow - Continuum concept. Types and classes of flow. Kinematics of flow – flow velocity. Description of flow field-streamlines, path line, streamline; streakline, flow pattern-stream function. Flow acceleration. Translation, rotation and deformation of fluid element. Circulation. Vorticity. Ir-rotational flow – velocity potential function, flow net. Equation of continuity.	10	20%	1,2,4	1,3	1	SD	G	ES
5	Dynamics of flow : Fluid forces stress and strain. Equations of motion. Euler's equation. Bernoulli's theorem, its assumptions, applications limitations.	07	15%	1,2,3	1,3	1	SD	G	ES
6	Pipe flow : flow (incompressible) through closed conduits : Laminar & turbulent flow – Reynold's Experiment, Resistance to flow Laminar flow through pipes and between parallel plates, velocity distribution and loss of head. Turbulent flow through pipes. Friction factor for smooth and rough pipes.	04	7.5%	2,3,4	4	2	SD	G	ES
7	Major and Minor losses: Frictional losses, Minor loss of head in flow through pipe at expansion, etc. energy gradient and Hydraulic gradient – flow through uniform pipe between two – reservoirs. Composite pipe-equivalent length. Pipes in parallel.	03	7.5%	2,3,4	4	2	SD	G	ES

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		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2020-21		
B E Civil & IWM: Regular Program									
Year	II	Core / Elective / Foundation CVL 1404L Fluid Mechanics Practical / Termwork including Viva			Credits / Hours per week		02P		
Semester	II	Year of Introduction: Year of Syllabus Revision:			Maximum Marks / Grade		50		
Course Outcome (CO) CVL 1404L CO1 Students become aware about properties and behavior of fluids in static as well as moving conditions. CO2 Students are able to do measurement of rate of flow and pressure. CO3 Students are acknowledged to applications of fundamental laws of mechanics. CO4 Students become able to derive new concept with special reference to incompressible fluids.									
Mode of Transaction		Field Practical's, discussion and viva			PSO1 is common for all experiments				
No.	Term-work / Field Practical shall be based on above syllabus				Contact Hours	Course Code	BT Level	CO	PSO
1	VERIFICATION OF LAW OF HYDROSTATIC PRESSURE				02	CVL	2,3,4,5	CO2 , CO3	PSO1
2	DETERMINATION OF THE COIFFICIENT FOR A CIRCULAR ORIFICE				04	CVL	2,3,4,5	CO2 , CO3	PSO1
3	CALIBRATION OF A "V" NOTCH				04	CVL	2,3,4,5	CO2 , CO3	PSO1
4	EXPERIMENTAL PROOF OF BRMOULLI's THEOREM				04	CVL	2,3,4,5	CO2 , CO3	PSO1
5	CALIBRATION OF VENTURIMETER				04	CVL	2,3,4,5	CO2 , CO3	PSO1
6	VERIFICATION OF REYNOLD'S NUMBER FOR LAMINAR-TURBULANT FLOW				04	CVL	2,3,4,5	CO2 , CO3	PSO1

7	VERIFICATION OF RELATIONSHIP BETWEEN ENERGY LOSS & VELOCITY AND DETERMINATION OF FRICTION FACTOR FOR A PIPE	04	CVL	2,3,4,5	CO2 , CO3	PSO1
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	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2019-20							
B.E.(Textile Engineering) : Regular Programme										
Year	II	Core / Elective / Foundation APM1403: Stress Analysis	Credits / Hours per week					04		
Semester	II	Year of Introduction: 2007 Year of Syllabus Revision: 2012	Maximum Marks / Grade					100		
Mode of Transaction		Lectures and Tutorials								
Course Outcome (CO) APM1403 CO1 To understand the relation between the mechanics theory and experimental stress analysis CO2 To establish the fundamental concepts and newly experimental techniques. CO3 To understand the effect of vibrations.										
Unit No.	Topic		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction of stress analysis: Introduction to elementary theory of elasticity, Generalized Hooke’s law, Equilibrium, Compatibility, Introduction of two dimensional		12	20	1,2	CO1	PSO1.P SO4	SD	N	PE

	photo elasticity.								
2	Plane stress & plane strain problems and Theories of failure: Plane stress and plane strain problems, stresses on arbitrary plane, Airy's Stress function, use of polynomials, St. Venant's principle, Theories of failure, Torsional Distortion.	15	25	1	CO2	PSO1.P SO4			
3	Two or three dimensional problems of Stress & Strain at a Point Stress & Strain at a point in two or three dimensional problems, Analytical and graphical problems, Visco-elastic models Maxwell, Erving – 4 elements models.	12	20	2, 3, 4	CO2	PSO1.P SO4			
4	Model Analysis: Standard method of model stress analysis, Dimensional Buckingham theorem, Analysis and design of models for machine parts, Mechanical, optical and electrical strain gauges. Transmission of strain gauges data into desired results, Static and dynamic strain measurement, Vibration of shafts, Whirling of shafts.	21	35	1, 2, 3	CO2,CO 3	PSO1.P SO4			
Reference Books									
1.	Elementary Strength of Materials by S. Timoshenko								
2.	Experimental Stress Analysis by J.W. Dally and W.P. Riley.								
3.	Experimental Stress Analysis by R.C.Dove and P.H.Adams.								
4.	The Analysis of Engineering Structures by A. J. S. Pippard and J.F.Baker.								
5.	Theory of Elasticity by S. Timoshenko and J. N. Goodier.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20			
B.E.(Textile Engineering) : Regular Programme										
Year		II	Core / Elective / Foundation APM1403L: Laboratory Practical			Credits / Hours per week		02		
Semester		II	Year of Introduction: 2007 Year of Syllabus Revision: 2016			Maximum Marks / Grade		50		
Mode of Transaction			Laboratory Experiments, discussion and viva							
No.	Experiment					Contact hrs.	%Weightage	BT Level	CO	PSO
1	Compression Test on timber					4	13.3	2,3	CO2	PSO1.PSO4
2	Modulus of rupture of Timber					4	13.3	2,3	CO2	PSO1.PSO4
3	Hardness Test					4	13.3	2,3	CO2	PSO1.PSO4
4	Torsion test					4	13.3	2,3	CO2	PSO1.PSO4
5	Modulus of Elasticity of Timber					4	13.3	2,3	CO2	PSO1.PSO4
6	Bonding and wiring of Strain Gauges					5	16.6	2,3	CO1	PSO1.PSO4
7	“E “ using electrical resistance strain Gauge					5	16.6	2,3	CO1	PSO1.PSO4

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year			2019-20				
B.E. (Textile Engg.) : Regular Programme												
Year	IV	Core / Elective / Foundation APM 1405:STRENGTH OF MATERIALS			Credits / Hours per week			03				
Semester	I	Year of Introduction: Year of Syllabus Revision: -----			Maximum Marks / Grade			100				
Mode of Transaction		Lectures										
Course Outcome (CO) APM 1405 CO1 Learning the basic knowledge of shear force and bending moment in a beam and draw the diagrams for the same CO2 Understanding the calculation of shear stress, bending stress, direct and bending stress and its application in design of machine parts. CO3 Students will be able to find of load carrying capacity of axially loaded column and apply in the design of textile machine. CO4 Understanding the calculation of deflection in beam by using Macauly’s method and apply in the real field. CO5 Learning of principal stresses and Mohr circle method to enable them to understand the stress analysis. CO6 Learning of stress calculation in shells and cylinders and shafts subjected to torsion and its application. CO7 Learning of Resilience of sudden, impact and shock loading and apply it in the field of textile machinery. CO8 Learning of strength of joint by welded and riveted connections and its application.												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values

									(HV)and Profession al Ethics (PE)
1	Shear Force and Bending Moment diagrams Shear Force and Bending Moment diagrams for cantilevers and simply supported beams under static loads analytically.	13	28.9	4	CO1 CO2	PSO 2	SD, Emp, Ent	N	--
2	Stresses in beams and deflection of beams Theory of bending of straight beams. Distribution of normal stresses due to bending, Moment of resistance, Moment of inertia of section, Beam of uniform strength. Distribution of shear stresses. Curvature, slope and deflection of cantilever and simply supported beams, Flitched beams.	14	31.1	4	CO2 CO3 CO4 CO7	PSO 2 PSO 3			
3	Columns and struts, Thin and thick cylinders Simple strut theory, Rankine's and other formula. Stresses in thin cylinders subjected to internal pressure.	9	20	4	CO5 CO6	PSO 2 PSO 3			
4	Torsion Moment of resistance, Distribution of stresses, Angle of Twist, Strength and stiffness of shafts, Types of springs in general, Carriage springs and closed coiled helical springs.	9	20	4	CO8	PSO 2 PSO 3			
Reference Books									
1.	Mechanics of Structures Vol. I by S.B. Junnarkar and H. J. Shah.								
2.	Elementary Strength of Materials by S. Timonshenko.								
3.	Strength of Materials by Ramamrutham.								
4.	Strength of Materials by R.C. Patel , T.D. Bhagia, & B.M. Patel.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
Degree (Textile Engineering) : Regular Programme										
Year	II	Core / Elective / Foundation ELE1411: Fundamental of Electrical Engg – I			Credits / Hours per week			04 (theory)		
Semester	II	Year of Introduction: 2007 Year of Revision: --			Maximum Marks / Grade			100 (theory)		
Mode of Transaction		Lectures & Tutorials – 3+1								
Course Outcome (CO) CO1 Determine the parameters of simple DC and AC circuits. (BT 5) CO2 Evaluate the performance of AC circuits. (BT 5) CO3 Explain fundamental concept of DC Rotating Machines and Transformers. (BT 5) CO4 Determine the parameters of Transformer. (BT 5)										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Review of Ohm’s law. Kirchoff’s laws. Series and parallel circuits.		16	35%	5	CO1	PSO1,	SD	G	PE

	Star –Delta transformation. Their application in solution of simple d.c.circuits.					PSO4, PSO5, PSO7			
2	Sinusodial e.m.f.'s and currents. R.M.S. and average value. Phaser representation. Voltage- current relation in purely resistive and capacitive circuits and their series combination. Power and power factor. Polyphase system. Relation between phase and line voltage and currents of star and delta connections. Power balances 3 phase circuits. Measurement of power.	13	30%	5	CO1, CO2				
3	D. C. GENERATORS: Principle of working. Types of generators. Their characteristics and applications	7	15%	2	CO3				
4	SINGLE PHASE AND THREE PHASE TRANSFORMER: Review of Faraday's law and Lenz's law. Self and mutual induction. Types of transformers. E.M.F. equation. Transformation ratio. Transformer on no load and on load conditions. Vector diagram. Equivalent circuit. Losses and efficiency: All day efficiency O.C. and S.C. and test on transformer. Auto transformer, 3-phase transformer connections. Applications.	10	20%	5	CO3, CO4				
Reference Books:									

1.	Basic Electrical Engineering	by V.N. Mittle
2.	Electrical technology	by B.L. Theraja
3.	Problems in Electrical Engineering	by Parker Smith

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
Degree (Textile Engineering) : Regular Programme									
Year	II	Core / Elective / Foundation ELE1411L: Fundamental of Electrical Engg – I (Practical/TW/Viva)			Credits / Hours per week		04/week		
Semester	II	Year of Introduction: 2007			Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, drawing, term work and viva							
Course Outcome (CO) ELE 1411L									
CO1 <u>Utilize</u> measuring devices, apparatus and equipment effectively.									
CO2 <u>Demonstrate</u> various network theorems and 3-phase power measurement by two wattmeter method.									
CO3 <u>Analyse</u> various circuit configurations.									
CO4 <u>Develop</u> a technical report with related observations, calculations, results and inferences effectively.									
CO5 <u>Verify</u> various performance characteristics of d.c machines									
CO6 <u>Evaluate</u> performance parameters of 1-phase transformer									
No.	Experiment				Contact hrs.	%Weightage	BT Level	CO	PSO
1	Study of Laboratory apparatus.				2	8.33%	3	CO1	PSO1
2	Study of D.C machine				2	8.33%	3	CO1	
3	Verification of Kirchhoff's laws.				2	8.33%	2, 3	CO1, CO2, CO4	
4	R – L Series circuit.				2	8.33%	3,4	CO1, CO3, CO4	
5	R – L – C Series circuit				2	8.33%	3,4	CO1, CO3, CO4	
6	Power measurement in a 1 – Ø circuit by 3 voltmeter method.				2	8.33%	3,4	CO1, CO3, CO4	

7	Power measurement in a 1 – Ø circuit by 3 Ammeter method.	2	8.33%	3,4	CO1, CO3, CO4	
8	AC parallel circuit.	2	8.33%	3,4	CO1, CO3, CO4	
9	Open circuit and short circuit test on 1-phase transformer	2	8.33%	3,5	CO4, CO6	
10	To plot the characteristics of D.C series generator	2	8.33%	3,4	CO4,CO5	
11	To plot the characteristics of D.C shunt generator	2	8.33%	3,4	CO4,CO5	
12	To plot the characteristics of D.C compound generator	2	8.33%	3,4	CO4,CO5	
13	Speed control of d.c shunt motor	2	8.33%	3,4	CO4,CO5	
14	Power measurement in a 3-phase circuit by two wattmeter method	2	8.33%	2,3	CO2, CO4	

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year				2019-20			
B.E. (Textile Engineering): Regular Programme										
Year	II	Core / Elective / Foundation TXE 1401 Fabric manufacture - I	Credits / Hours per week				04(theory)			
Semester	II	Year of Introduction: 2003 Year of Syllabus Revision: ---	Maximum Marks / Grade				100(theory)			
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE1401 Fabric manufacture - I CO1 To impart knowledge about warp and weft preparation CO2 To give understanding about the winding process in detail CO3 To give understand warping and pirn winding details CO4 To Understand the fabric manufacturing process in detail.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) development	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics

								needs	(PE)
1	Introduction to yarn preparation, Different types of packages, passage of yarn on non-automatic winding machines, concept of surface drive, important terms and concept of pattern formation	04	6.67%	1,2	CO1	PSO1, PSO4, SO8	EMP, SD	N, G	G,HV,PE
2	Different winding modes namely Random, Precision and Step-precision and package characteristics with related numerals. Various winding variables and their choice as per end-use.	07	10%	2,3,4, 5	CO2				
3	Methods to traverse yarn, tensioners, mechanical and electronic clearers with yarn fault classification system and package faults	06	10%	2, 3,	CO3	PSO1, PSO4, PSO8			
4	Introduction to direct and indirect warping machines with details of various parts and draw backs of conventional direct warping machines. Uniform build-up on sectional warping machines	07	11.67%	1,2,3, 4,5	CO3				
5	Introduction to pirn winding, terms, forms of weft supply to loom, traverse methods and shapes of bare pirns.	06	10%	1,2,3, 4	CO3	PSO1, PSO4, PSO8			
6	An overview of various fabric manufacturing process and fabric parameters. Passage of warp yarns through a plain power loom and functions of various parts, in brief, in the passage. Drive to the loom. Types of drives, their advantages and disadvantages. Various drive calculations. Concept of loom timing with the inter relations of various motions.	04	6.67%	1,2	CO4	PSO1, PSO4, SO8			
7	Shedding Mechanism: Function of shedding mechanism. Shedding mechanism on plain power loom. Basic of construction of shedding cam for plain power loom. Shedding cams for simple weaves. Reversing motions. Positive cam shedding. Shedding principles – open, semi-open, bottom and centre	06	10%	2,3,4	CO4	PSO1, PSO4, SO8			

	closed shed. Timing of shedding motions. Early and late shedding concept.								
8	Picking Mechanism: Concept of picking and its classification. Construction and working of Cone over pick mechanism in details. Why picking cam made up of three parts? Timing diagram of picking and its correlation with shedding diagram. Why dwell of shedding and picking timing doesn't match? etc. Calculations for Shuttle speed and Power required for picking. LH & RH loom and shuttle, running time of a pirn, weft insertion rate (WIR). Shuttle checking, hinge swell, floating swell, check strap. Rest position of shuttle. Shuttle displacement by picker, causes of shuttle fly, etc. Basic understanding of under pick mechanism. Details of side lever under pick mechanism. Under pick and over-pick comparison. Early picking and late picking concept.	08	13.33%	2,3,4,6	CO4	PSO1, PSO4, SO8			
9	Beat Up Motion: Details of beat up mechanism on shuttle looms. Sley eccentricity and the factors affecting sley eccentricity. Criteria of deciding cranks radius and connecting arm lengths for loom construction.	06	10%	2,3,4	CO4	PSO1, PSO4, SO8			
10	Secondary and Auxiliary Motions of Loom: Take-up mechanism: Introduction and concept of take-up; direct & indirect take up; classification of take-up – negative and positive take up motion. 5 & 7-wheel take-up mechanism details, dividend calculations, etc. and their comparison. Anti-crack motion, its importance, working and settings. Let-off Mechanism: Objects of let-off, types of let-off – Negative and positive let-off motions and their	06	10%	2,3,4,6	CO4	PSO1, PSO4, SO8			

	advantages and disadvantages. Construction and working of negative let-off motion. Temple: Importance of temple, various types of temples, mounting and settings of temples on loom. Brakes: Importance of brake motion on loom, types of brakes, adjustment of brakes on loom. Weft Stop Motion: Introduction to weft stop motions, side weft fork motion construction and working. Timing and setting of side weft fork motion. Warp protector motions: Fast and Loose reed warp protector motion, construction and working. Loom Efficiency: Understanding loom efficiency, various methods of finding loom/loom shed efficiency, norms for loom efficiency, etc. Various fabric defects, their cause and remedies of the same.								
Reference Books									
1.	Textile Mathematics- Part III by J.E. Booth. Published by: Textile institute.1977								
2.	D. B. Ajgaonker et al : Sizing: materials, methods, machines								
3.	M.V. Koranne Winding fundamentals								
4.	Marks and Robinson : Principles of Weaving.								
5.	K. T. Aswani : Fancy weaving.								
6.	M.K. Talukdar .et al : Weaving: Machines, Mechanism, Methods P. R. Lord and M. H. Mohmad : Conversion of yarn to fabric.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2020-21		
B.E. (Textile Engineering): Regular Programme									
Year	II	Core / Elective / Foundation TXE1401L: Fabric Manufacture I (Practical/TW/Viva)			Credits / Hours per week		04 hours/week		
Semester	II	Year of Introduction: 2003 Year of Syllabus Revision: ---			Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion and viva			PSO7 is common for all experiments				
No.	Experiment				Contact hrs.	%Weightage	BT Level	CO	PSO
1	Introduction to Yarn Preparatory Process, Objectives of winding, Different types of winding packages made in yarn preparation, calculation of slope of cone package				02	3.33%	1	CO1	
2	Non-Automatic Random Winding Machine: Introduction, Passage of yarn through the machine. Function of each part like Creel, unwinding accelerator, yarn tensioners, clearer, thread stop motion, waxing arrangement, drums and package cradle, Construction and working and settings. Drive to conveyor belt, grooved drum and traversing guide, rocking shaft, Winding Speed Adjustment & Thread Stop Motion, Anti-patterning mechanism: Speed variation of grooved drum, to and fro motion of package holder, Blower and its function				08	13.33%	2,3,4	CO2	
3	Ordinary Beam Warping Machine: Objectives, Passage of material on beam warping machine and function of each part. Drive to winding drum, clutch arrangement for ON & OFF of winding drum, drive to measuring roller & thread stop motion. Yarn length measuring device: measuring roller and train of gears attached to measuring dial, Warping related calculations: Production calculation.				04	6.66%	2,3,4	CO3	
4	Sectional Warping Machine: Objectives, Passage of yarn on machine, Creel arrangement, Drive to sectional drum. Variable drive to sectional drum, Lateral movement of drum. Drive to V-reed and Brake Mechanism. Settings of machine reduction gear box, Speed measuring device and yarn length measuring device.				10	16.67%	2,3,4	CO3	

	Drive to warper's beam and Production calculation					PSO3 PSO6 PSO7
5	Pirn Winding: Objectives of Pirn winding, types of winding, passage of yarn on pirn winding machine. Drive to pirn holder, traversing mechanism and how to set different traverse, Advancement mechanism and how to set different rate of advancement. Traverse within traverse, Bunching, Full pirn stop motion & Production Calculation	06	10%	2,3,4	CO3	
6	Fabric Manufacturing: a. Various fabric manufacturing processes b. Passage of warp yarns through a plain power loom and functions of various parts c. Drive to the plain powerloom d. Types of drives, their advantages and disadvantages e. Various drive calculations f. Loom timing with the inter relations of various motions. g. Primary, Secondary and auxiliary motions h. Calculation of Loom Efficiency	06	10%	2,3,4	CO4	
7	Shedding Mechanism: a. Shedding mechanism on plain power loom b. construction of shedding cam for plain power loom c. Reversing motions d. Shedding principles – open, semi-open, bottom and center closed shed e. Timing of shedding motions, Early and late shedding concept.	06	10%	2,3,4	CO4	
8	Picking Mechanism: a. Classification and Concept of picking mechanism b. Construction and working of different picking mechanisms c. Construction of picking cam d. Construction of shuttle box e. Timing diagram of picking and its correlation with shedding f. Different calculations related to picking g. Comparison of different picking mechanism h. Early picking and late picking concept	06	10%	2,3,4	CO4	
9	Beat Up Motion:	04	6.66%	2,3,4	CO4	

	a. Construction and working of beat up mechanism on shuttle looms b. Factors affecting Sley eccentricity and its Calculation					
10	Secondary and Auxiliary Motions: a. Take-up mechanism: Introduction and concept b. Construction of 5 & 7-wheel take-up mechanism, and its dividend calculations c. Let-off Mechanism: Introduction and concept d. Construction and working of negative let-off motion. e. Temple: Construction and working of temple, various types of temples, mounting and settings of temples on loom. f. Brakes: Construction and working of brake on loom, different types of brakes g. Weft Stop Motion: Construction and working of weft stop motions, Timing and setting of side weft fork motion. h. Warp protector motions: Construction and working of Fast and Loose reed warp protector motion	08	13.33%	2,3,4	CO4	

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year			2020-21			
B. E. Textile Engineering: Regular Programme											
Year	III	MEC1506 Theory of Machines		Credits / Hours per week			Lectures: 04				
Semester	I	Year of Introduction: 2003-2004 Year of Syllabus Revision: 2003-2004		Maximum Marks / Grade			Theory: 100				
Mode of Transaction: Lectures											
Course Outcome (CO) CO1 Ability to apply the principles of balancing of masses to various links, mechanisms and engines CO2 Ability to apply the principles of gyroscopic effects and stabilization on various transport vehicles and applications of various governors CO3 Ability to analyze the force analysis and power calculations of brakes and dynamometer CO4 Ability to conduct static and dynamic force analysis and equilibrium of forces for mechanical systems CO5 Ability to study the various principles of vibrations of different systems											
Unit No.	Topic			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Basic of Machine, Kinematics of Machines, link or element,			08	10	1, 2, 3	CO1	PSO1	SD	G	-

	Kinematics pair, kinematic Chain, Mechanism, Inversions of Mechanism, Four bar chain, Quadratic Cycle chain, Degree of freedom, Type of joint.								
2	Velocity and Acceleration of Mechanism: Relative velocity between two points, Relative velocity equation, slider crank mechanism, Instantaneous center of rotation, Application of Instantaneous center method to determine velocities & acceleration, Klein's construction for velocity and acceleration of Piston, Coriolis acceleration, static & dynamic force analysis of Mechanism.	08	14	2, 3, 4	CO2	PSO1			
3	Force Analysis : Equation of equilibrium, force convention, Equilibrium of a body under parallel forces compound Pendulum, Inertia force and inertia couple, inertia force analysis in a Reciprocating Engine	08	13	2,3, 4,5	CO3 CO4	PSO1			
4	Cams : Introduction, Types of Cams, Types of followers, Terminology, Motion of follower, Cam profile, Cam dynamics.	08	23	1, 2,3	CO2 CO3	PSO1, PSO2			
5	Flywheel : Introduction, types, turning moment diag. Fluctuation of energy and speed, Co-efficient of fluctuation of energy, coefficient of fluctuation of speed, energy stored in a fly wheel, estimation of fly wheel weight, calculation of flywheel dimensions.	08	10	1, 2, 3,	CO2 CO4	PSO1, PSO2			
6	Balancing : Balancing of single revolving Mass, Balancing of several Masses revolving in the same place, static and dynamic balancing, Balancing of reciprocating Mass.	08	10	2,3,4	CO3 CO5	PSO1, PSO2			
7	Gear Trains : Introduction, Types of gear trains, velocity ratio, simple gear trains, compound gear trains, reverted Gear trains, Epicyclic gear trains, Torque in Epicyclic gear trains, Kinematics of spur gears.	08	10	4,5,	CO1 CO3	PSO1, PSO2, PSO3			
8	Mechanical Vibration : Introduction, Basic concepts of vibration, Definitions, Parts of a vibrating system, Types of vibration. Methods of Vibration analysis, Damped vibration, undamped force vibration. Forced vibration.	08	10	3,4	CO4 CO5	PSO1, PSO2, PSO3			

BOOKS:										
1.	R. S. Khurmi : Theory of machines									
2.	J. M. Shah : Theory of machines									
3.	Ballaney : Theory of machines									
4.	J. Shigley : Kinematics of machinery									
5.	J. S. Rao : Theory of machines and mechanism									
6.	Ratan : Theory of machines.									
7.	V.P.Singh : Theory of machines. Vol. I & II.									

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year				2019-20			
B.E (Textile Engineering): Regular Programme											
Year	III	Core / Elective / Foundation ELE1511: Fundamentals of Electrical Engineering- II		Credits / Hours per week				04+02			
Semester	I	Year of Introduction: 2007 Year of Syllabus Revision: 2012		Maximum Marks / Grade				100+50			
Mode of Transaction		Lecture and Laboratory									
Course Outcome (CO) ELE1511											
CO1 Explain the operating principles of electronic devices and electrical AC machines.											
CO2 Explain the physical interpretation of semiconductor diodes,transistors, SCR,oscilloscope, Three phase induction motor, Alternator.											
CO3 Determine the EMF equation for alternator, voltage regulation, Rectifier efficiency and Torque equation for three phase induction motor.											
CO4 Explain the General formation and analysis of various diodes and configuration of transistors.											
CO5 Evaluate of problems based on three phase induction motors,alternators, diodes and rectifiers.											
CO6 Apply the ideas of electrical and electronics to textile industry.											
Unit No.	Topic			Contact Hours	Weightage (%)	BT Level	CO	PSO	Element s of Em ployabilit y (Emp)/ Entrepre neurship (Ent)/ Skill Develop ment (SD)	Relevan ce to Local (L)/ National (N)/ Regional (R)/Glob al (G)	Relation to Gender (G), Environ ment and Sustaina bility (ES), Human Values (HV)and Professio nal Ethics (PE)
1	Induction Motor:			06	10	1	CO1	PSO1	SD	G	PE

Reference Books	
1.	H. Cotton : Advance Electrical Technology
2.	Electrical technology by. B.L.Theraja vol- II
3.	Problems in Electrical Engg. By Parker smith
4.	H. Cotton : Applied Electricity
5.	Millman and Halkias : Integrated electronics
6.	Cooper : Electronic instrumentation
7.	Bagde and Singh : Electronics
8.	P. S. Bhimbra : Power electronics
9.	Barde : Power electronics
10.	V.K.Mehta : Electronics
11.	A.P.Malvino : Semiconductor Circuit Approximations

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20		
B.E (Textile Engineering): Regular Programme									
Year	III	Core / Elective / Foundation ELE1511L: Fundamental of Electrical Engg – II (Practical/TW/Viva)			Credits / Hours per week		04/week		
Semester	I	Year of Introduction: 2007			Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, drawing, term work and viva							
	Course Outcome (CO) ELE 1511L CO1 <u>Analyze</u> performance characteristics of 3-phase induction machines and synchronous machines. CO2 <u>Evaluate</u> various performance parameters of 3-phase alternator. CO3 <u>Develop</u> a technical report with related observations, calculations, results and inferences effectively. CO4 <u>Analyze</u> the characteristics of various diodes, rectifiers,transistors and amplifiers. CO5 <u>Demonstrate</u> the applications of CRO and diodes in clipper clamper circuits.								
No.	Experiment				Contact hrs.	%Weightage	BT Level	CO	PSO
1	Load test on three phase Induction motor				3	100%	3, 4	CO1, CO3	PSO6
2	Effect of voltage variation on three phase Induction motor				3	100%	3, 4	CO1, CO3	
3	O. C & S.C. test on three phase Alternator. Synchronous impedance method				3	100%	3, 5	CO2, CO3	
4	V curves of Synchronous motor				3	100%	3, 4	CO1, CO3	
5	VI characteristics of pn junction diode, Zener diode and LED				3	100%		CO4	

				2,4		
6	Study of half wave, full wave and bridge rectifier	3	100%	2,4	CO4	
7	Plot the transistor characteristics	3	100%	2,4	CO4	
8	Study of clippers and clampers	3	100%	2,3	CO5	
9	Study of Common Emitter amplifier	3	100%	2,5	CO4	
10	Study of Common Collector amplifier	3	100%	2,5	CO5	
11	Cathode ray oscilloscope	3	100%	2,3	CO5	

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year					2019-20		
B.E. (Textile Engineering): Regular Programme										
Year	III	Core / Elective / Foundation TXE 1501: Fabric manufacture - II	Credits / Hours per week					04(theory)		
Semester	I	Year of Introduction: 2004 Year of Syllabus Revision: ---	Maximum Marks / Grade					100(theory)		
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE1701 Fabric manufacture - II CO1 To understand the Sizing process (conventional as well as important features of modern sizing machines CO2 To understand the techniques of sizing, its practical aspects and calculations CO3 To understand the automatic winding machines and their important features CO4 To understand the Dobby and jacquard shedding mechanism, CO5 To understand the Multiple box motion on loom and formation of Terry pile fabrics.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and

									Profess ional Ethics (PE)
1	Introduction sizing and types, leasing and splitting. 2-cylinder slasher sizing machine, creels, conventional size box and various size variables and controls on size box.	07	11.67%	1,2	CO1, CO2	PSO1, PSO4, SO8	EMP,S D	N,G	HV,PE
2	Introduction to various size adhesives, starch, natural adhesives other than starch, starch derivatives and synthetic adhesives along with their properties. Other ingredients like softener lubricants, preservatives, anti-static agents, plasticizers	08	13.33%	2,3	CO1, CO2				
3	Drying, drive, trends in sizing, numerical. Introduction to automatic winding and their features.	07	11.67%	2, 3, 4,5	CO1, CO2	PSO1, PSO4, PSO8			
4	Features of Autoconer X5 with important screens to obtain desired output and features of other automatic winding machines like Murata	08	13.33%	2, 3, 4,5	CO3				
5	Why dobby shedding is required? Classification of dobby, etc. Climax dobby: Basic construction and working. Climax dobby: Pattern chain preparation. Climax dobby: Timing and settings. Limitations of lever dobby and working of cam dobby.	09	15%	2, 3, 4,5	CO4	PSO1, PSO4, SO8			
6	Why jacquard shedding? Various types of jacquards. Single lift single cylinder jacquards, its construction, working, timing and settings. Double lift single cylinder and double lift double cylinder jacquards. Methods of harness ties in jacquards. Various calculations of jacquard shedding, viz. casting out, lift loss. Principles of electronic jacquards.	09	15%	2, 3, 4,5	CO4	PSO1, PSO4, SO8			
7	Multiple box motion, their requirements and classifications. Eccle’s drop box motion:	09	15%	2, 3, 4,5	CO5	PSO1, PSO4,			

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2020-21	
B.E.(Textile Engineering) Regular Programme								
Year	III	Core / Elective / Foundation TXE 1501L: Fabric manufacture – II Pract /TW/viva		Credits / Hours per week			04	
Semester	I	Year of Introduction: 2004 Year of Syllabus Revision: ---		Maximum Marks / Grade			50	
Mode of Transaction		Laboratory Experiments, discussion, term work and viva						
No.	Experiment			Contact hrs.	%Weightage	BT Level	CO	PSO
1	Introduction and layout of laboratory			08	28.571%	2,3,4,5	CO1 CO2	PSO1 PSO2 PSO6, PSO7, PSO8
	Two-cylinder slasher sizing machine							
2.	Introduction to sizing process, passage of warp on the machine, creel settings. Leasing at creel and splitting							
3.	Conventional size box, its features, steam supply, settings, handy instruments and its use							
4.	Drying system, steam trap, various valves, gauge and safety valves							
5.	Headstock, drive to the weaver’s beam and beam pressing device							
6.	Drive to the machine and its speed calculations							
	Hacoba pirn winding machine							
7.	Passage, drive to the spindle, traversing and thread stop motion			06	257%	2,3,4,5	CO1	
8,	advancing and traverse within traverse mechanisms							
9.	Automatic pirn change mechanism and bunching mechanism							
	Autoconer X5			16	41.67%	2,3,4,5	CO3	
10.	Introduction to automatic winding machines. Comparing non-automatic and automatic winding machines and passage of yarn on							

	X5					
11.	How does spindle stop and what if yarn is not present at lower yarn sensor?					
12.	Different winding drum and package holders present, stop motions, and symbols on winding head and control panel					
13.	Important features of autoconer like auto tense, auto speed, propack and AVC					
14.	Important screens and settings on machine					
15	Climax dobby: Basic construction and working. Drive to the dobby Pattern chain preparation. Timing and settings.	06	10%	2,3,4,5	CO4	
16	Cam Dobby: Basic construction and working. Drive to the dobby Pattern chain preparation. Timing and settings.	06	10%	2,3,4,5	CO4	
17	Jacquard Shedding: Various types of jacquards, Single lift single cylinder jacquards, its construction, working, timing and settings. Double lift single cylinder jacquards its construction, working, timing and settings. Double lift double cylinder jacquards. its construction, working, timing and settings. Methods of harness ties in jacquards.	08	13.33	2,3,4,5	CO4	
18	Multiple Box Motion: Eccle's drop box motion: Construction and working. Double crank mechanism	06	10%	2,3,4,5	CO5	

	Pattern chain preparation Safety mechanism Card saving mechanism					
19	Terry Pile Mechanism: Principles of pile formations 3 pick terry mechanism in details	04	6.67%	2,3,4,5	CO5	

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year							2019-20	
B.E (Textile Engineering): Regular Programme											
Year	III	Core / Elective / Foundation Subject code: Yarn Manufacture-I (TXE-1502)	Credits / Hours per week							04	
Semester	I	Year of Introduction: 2004 Year of Syllabus Revision: --	Maximum Marks / Grade							100	
Mode of Transaction		Lectures and Tutorials									
Course Outcome (CO) (TXE-1502) and (TXE-1502L) CO 1 Grasp basic concepts of blow room process sequence, governing parameters and performance aspects. CO 2 Learn the principles of carding operations, process, parameters and performance.											
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)	
1	Introduction. Blow – Room Installations, Selection of Blow room machinery on the basis of trash in bale and trash in mix. Various bale opening machines like H.B. O., Bale Blenders, Bale Pluckers or automatic bale opener. Weighing pan type bale openers. bale lay down area and numbers of bales that can be mixed, hence homogeneity of		12	20	1, 2, 3	1	1, 2, 3	EMP,SD	R,N,G	PE	

	mixing and blending.								
2	Types of pre – openers/ beaters in blow rooms machine sequences, their construction, working, machine setting, drive and production calculation. Automatic feed control device/ mechanisms on respective machine, their working and setting. (conventional and modern photo electrically and electro pneumatically controlled type). Material flow and level control within a machine and between machines: their effect on product quality (Scutcher lap) in terms of cleanliness and evenness and nep count. Fibre mixing machine involved in various blow room installations.	12	20	1, 2, 3, 4	1	1,2			
3	Lap quality control off line and online, Processing of rejected la, soft waste reuse. Mechanisms involved in making even laps on scutchers. Maintenance schedule for machines, routine and break down maintenance and its effect on poor performance of product quality.	06	10	1, 2, 3, 4	1	1,2, 4,6			
4	Object of card and definition of ‘carding’. Explanation of functions of cards	06	10	1, 2, 3	2	1,2			
5	Explanation of functions of cards. Card parts dimensions and speed. Feed section – Lap feed / Chute feed. Feed section – Feeding roll, Arrangement – Counter/ con-current feed.	06	10	1, 2, 3	2	1,2			
6	Pre-carding arrangement (maintenance), Carding zone of i) Pre carding ii) Carding and iii) Equalizing zones Study of ‘FLAT” section. Doffer, web doffing systems and its significance (process control)	09	15	1, 2, 3	2	1,2			
7	Calendar, trumpet, coiling zone. Production	09	15	1, 2, 3,	2	1,2,3			

	calculations. Draft calculations. Process control on ‘CARD’ and maintenance.			4		,4,6			
Reference Books									
1.	A Practical Guide to Opening and Carding. Vol.2-W. Klein								
2.	Cotton Spinning- William Scott Taggart- Vol.II								
3.	Carding-Vol. II- Merrill.								
4.	Process Control in Spinning-ATIRA-A.R. Garde								
5.	Spinning Tablet-II “CARDING” TAI (S.R. Nerurkar)								
6.	Brochures and CD.								

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
B.E. (Textile Engineering) Regular Programme									
Year	III	Core / Elective / Foundation TXE-1502L: Yarn Manufacture I (Practical/TW/Viva)			Credits / Hours per week			04 hrs/week	
Semester	I	Year of Introduction: 2004 Year of Syllabus Revision: ---			Maximum Marks / Grade			50	
Mode of Transaction		Laboratory Experiments, discussion, drawing, term work and viva							
No.	Experiment				Contact hrs.	%Weightage	BT Level	CO	PSO
1	Classification of fibre, Study of various properties cotton fibre and its importance in spinning process in brief. Spinning Process: Introduction of Spinning Process, Objectives of Spinning Process,				5	8.33	1,2	1	1,2,6
2	Introduction various section of spinning process, Basic function of blow room and its importance Layout of Blow room, Study of control panel and material delivery system with bypass arrangement, Various combination of machine for different cleaning point Study each machine of blow room in detail, Principle of beating, different feeding system,				5	8.33	1,2,3,4	1	
3	Hopper Bale Opener: Passage of material, Construction detail of each part, Tracing of gearing plan and speed calculation				5	8.33	1,2,3,4	1	
4	Vertical Opener: Passage of material, Construction detail of each part, Tracing of gearing plan and speed calculation				5	8.33	1,2,3,4	1	
5	Striker Cleaner and condenser: Passage of material, Construction detail of each part, Tracing of gearing plan and speed				5	8.33	1,2,3,4	1	
6	Study of reserve filling trunk and Hopper feeder of Porcupine Opener and Porcupine Opener, Passage of material, Construction detail of each part, Tracing of gearing plan and speed calculation.				5	8.33	1,2,3,4	1	

7	Study of reserve filling trunk and Hopper feeder of Scutcher and Scutcher machine: Passage of material, Construction detail of each part, Tracing of gearing plan and speed calculation, difference between hopper feeder of Porcupine Opener and hopper feeder of Scutcher, Piano feed regulating mechanism and various setting points, measurement pressure on calendar roller, Measuring mechanism and automatic lap doffing	5	8.33	1,2,3,4	1	
8	Process control in Blow room, Maintenance of blow room machine, Study of chute feed system, Production calculation. Engineering aspects of Blow room machine	5	8.33	1,2,3,4	1	
9	Carding: Passage of material, Construction detail of each part, Study of Feed zone, Cylinder zone, Licker zone, Various web doffing device, Study of delivery zone, coiling arrangement	5	8.33	1,2,3,4	2	
10	Tracing of gearing plan Zone wise draft calculation, draft constant calculation and its application and speed calculation, Various change wheel. Study cultch arrangement, study of different handle provided on machine,	5	8.33	1,2,3,4	2	
11	Wire mounting method, Grinding and stripping	5	8.33	1,2,3,4	2	
12	Process control on Carding, Maintenance Carding, Production calculation. Engineering aspects of Carding machine	5	8.33	1,2,3,4	2	

 सत्यं विदुं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year	2019-20
B.E. (Textile Technology): Regular Programme				
Year	III	Core / Elective / Foundation TXE 1505 Textile Machine Control and Quality Management	Credits / Hours per week	04(theory)
Semest er	I	Year of Introduction: 2004 Year of Syllabus Revision: ---	Maximum Marks / Grade	100(theory)
Mode of Transaction		Lectures & Tutorials	TXE 1505 Textile Machine Control and Quality Management	
Course Outcome (CO) TXE 1505				
CO1 Understanding of fundamentals of Machine and Quality Control in Textile				
CO2 Importance and role of Textile Machine controls on quality products & application				
CO3 Importance and Role of Quality control system on total quality of Textile industry				
CO4 Designs and tools for of control system and quality system				
CO5 Understanding the methods & requirement to adopting system in application				
CO6 Learn new developments in machine and Quality concept in Industry4.0				
CO7 Solving typical problem related to system requirements & Learn New design system.				
CO8 Quality and its importance. Quality management development process				
CO9 Various standards and documentation procedure. Trouble shooting				
CO10 Various standards of ISO9000 and TQM in details				
CO11 Various regulations and its role in QM				

Unit No.	Topic/Unit	Contact Hours	Weight age (%)	BT Level	CO	PSO	Element s of Employabilit y (Emp)/ Entrepreneur ship (Ent)/ Skill Develop ment (SD)	Relevan ce to Local (L)/ National (N)/ Regional (R)/Glob al (G) develop mental needs	Relation to Gender (G), Environme nt and Sustainabil ity (ES), Human Values (HV)and Profession al Ethics (PE)
1	Development in Textile Machine, Automation and Textile Machinery 4.0 concept, System Engineering Concepts, Different types of Controls, Introduction to Machine Controls	6	10	1,2,3	CO1	PSO1			
2	Open and Close loop Control Systems, Sensor in Textile Machine, Functional element its Principles and Objectives and application	6	10	1,2,3	CO2	PSO1, PSO2			
3	Construction and Working of different	9	15	1,2,3,5	CO2,C O4	PSO1, PSO2,			

	element of Close loop System : Signal conditioning unit, A/D and D/A Converter, Controllers: PLC and Logical controls Amplifier, Final control Element					PSO3	Emp,SD	N, G	ES
4	Understand concepts of digitization, change in machine control concept and practical application in total control of industry.	4	6.67	2,3	CO5, CO6	PSO4, PSO6, PSO 7			
5	Application of controls system in Textile machinery in different process	5	8.33	2,3,5	CO4, CO6	PSO 4, PSO 5			
6	Introduction to quality management concepts and various systems. Need of quality management, their relevance and tools of quality management. Industrial revolutions and the development of quality management.	9	15	1,2,3,5	CO8	PSO1, PSO4, PSO5, PSO6, PSO7			
7	Documentation and standardization. International trade, trade barriers. GATT, WTO, etc.. Various standards for management systems. Six sigma concept and its role in quality management. Flexibility and change in management systems and documentation procedures. Ishikawa Pareto analysis, cause and effect/fishbone analysis, etc	6	10	2,3,5	CO9	PSO4, PSO5, PSO6, PSO7, PSO8			
8	ISO 9000 concept and its importance. Documentation and implementation procedures of ISO 9000. Total Quality Management (TQM) and its importance. Implementation procedures of TQM.	9	15	2,3,5	CO10	PSO4, PSO5, PSO6, PSO7, PSO8			

9	Environmental protection act and its relevance of various. SA8000 and its role in quality management. OSHAS and its role in quality management. JIT system and its role in quality management.	6	10	2,3,5	CO1 1	PSO4, PSO5, PSO6, PSO7, PSO8			
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Reference Books:

1.	NCUTE Publication Hiren Joshi and Gauri Joshi, Electronic Controls for Textile Machines.
2.	Brochures/ Manuals of machine Manufacturers and other related publications
3.	Andrew Par , Industrial Control Hand Book
4.	Quality Planning and Analysis by J.M.Juran
5.	Quality Control and TQM by P.L.Jain
6.	G. Shanmmugam, T. Sivasantaran, D. Sarvanan NCUTE publications on Quality Control Technique.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year			2019-20					
B.E (Textile Engineering): Regular Programme												
Year	III	Core / Elective/ Foundation ELE1610: Process Control & Instrumentation			Credits / Hours per week			04				
Semester	VI	Year of Introduction: 2007 Year of Syllabus Revision: 2017			Maximum Marks / Grade			100				
Mode of Transaction		Lectures and Tutorials										
Course Outcome (CO) ELE1610												
CO1 Analyze the working of a real-life feedback control system in terms of its constituent parts.												
CO2 Obtain the mathematical model of control system components based on operational principles and correlate required and actual performance to model feedback control system.												
CO3 Explain basic concept of robotics and its applications in industries.												
CO4 Analyze the basic concept of transducers and its application in the field of measurement and instrumentation.												
CO5 Explain the basic concepts of PLC and its applications.												
Unit No.	Topic				Contact Hours	Weightage (%)	BT Level	CO	PSO	Element s of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relev ance to Local (L)/ National (N)/ Regional (R)/Global (G) develop mental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Introduction to control system engineering, Systems, Control Systems and their classifications, Open-loop and closed-loop control systems, Examples of open loop and closed loop system. Mathematical modelling of systems, transfer function models. Control system components like servomotors, Synchros, gyroscope, valves, gears and their modelling, servomechanism.	08	15	1,2,	CO1, CO2	PSO1	SD	G	-
2	Introduction to Time response analysis, transient and steady state response. Response and analysis of first order system, standard test signals. Examples of first order system. Response of second order system, its time domain specifications, Examples of second order system and time domain specifications. Concept of stability and R-H criterion and its examples. Examples of Automatic control application for textile machinery.	10	21	2,4,5	CO5, CO2	PSO1			
3	Introduction to Robotics, Basic concepts related to industrial robots, Flexible automation versus hard automation. Classification of Robotic systems based on geometry and applications. Basic concepts of kinematics, dynamic and trajectory planning.	12	25	2,3	CO3	PSO1 PSO2 PSO3 PSO6			
4	Instrumentation: Transducers, sensors, classification of transducer, characteristics of transducer. Transducers for measuring humidity, and force. Transducers for measuring pressure. Transducers for measuring flow. Transducers for measuring temperature. Transducers for measuring displacement. Basic digital logic circuits like gates, flip-flop, registers, counters etc.	14	25	2,3	CO2, CO4	PSO1, PSO2, PSO3, PSO6			
5	Introduction to modern microprocessor based data acquisition systems. Fundamentals of PLC based instrumentation. Distributed control systems.	06	14	1,2,3	CO5	PSO1 PSO2 PSO6 PSO8			

Reference Books

1.	Instrumentation By: Rangan, Sharma and Mani
2.	Control Systems-Principles and Design By: M Gopal
3.	Process Control in spinning By: A R Garde
4.	Robotics for Engineers By: Yoramkoren
5.	Industrial Robotics By: Groover, Weiss, Nagel odery

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year			2019-20	
B.E. (Textile Engineering): Regular Programme							
Year	III	ELE1610L: Process Control & Instrumentation laboratory practical	Credits / Hours per week			02	
Semester	II	Year of Introduction: 2007 Year of Syllabus Revision: 2017	Maximum Marks / Grade			50	
Mode of Transaction		Laboratory Experiments, Term-work and viva					
Course Outcome (CO) ELE1610L CO1: Select proper instruments for measuring specified electronic parameter CO2: Make use of various measurement techniques for measuring temperature and/or voltage. CO3: Apply the mathematical concept to calculate the transfer function of D.C. shunt motor, two phase servomotor CO4: Prepare a technical report on the performed experiments							
Unit No.	List of Experiment		Contact Hours	Weightage (%)	BT Level	CO	PSO
1.	To plot the characteristics of Thermocouple <i>-Students will able to measure characteristics, temperature v/s voltage for Thermocouple</i>		2	100	2,3	CO1 CO4	PSO1 PSO3
2.	To plot the characteristics of Thermistor <i>-Students will able to plot the characteristics, temperature v/s voltage for Thermistor</i>		2	100	2,3	CO1 CO2 CO4	PSO1 PSO3
3.	To plot the characteristics of resistance temperature detector (RTD) <i>-Students will able to plot the characteristics, temperature v/s resistance for RTD.</i>		2	100	2,3	CO1 CO2 CO4	PSO1 PSO3
4.	To obtain the transfer function of two phase AC Servomotor. <i>-Students will able to plot the characteristics, speed v/s time and get the</i>		2	100	2,3,5	CO1 CO3 CO4	PSO1 PSO3

	<i>transfer function through mathematical analysis.</i>					
5.	To plot the characteristics of LVDT	2	100	2,3	CO1 CO2 CO4	PSO1 PSO3
6.	To Study the characteristics of capacitance transducer for level measurement	2	100	2,3	CO1 CO2 CO4	PSO1 PSO3
7.	To get the transfer function of D.C. Shunt motor <i>-Students will able to plot the characteristics, Armature voltage v/s speed and field current v/s speed and get the transfer function through mathematical analysis.</i>	2	100	2,3,5	CO1 CO3 CO4	PSO1 PSO3
8.	To study the operation of stepper motor <i>-Students will able to understand the manual control and automatic control operation of stepper motor.</i>	2	100	2,3	CO1 CO3 CO4	PSO1 PSO3

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2020-21					
B. E. Textile Engineering: Regular Programme										
Year	III	MEC1607 Machine Design	Credits / Hours per week			Lectures: 04 Practicals: 02				
Semester	II	Year of Introduction: 2003-2004 Year of Syllabus Revision: 2003-2004	Maximum Marks / Grade			Theory: 100 PR/TW/VIVA: 50				
Mode of Transaction: Lectures and Practicals										
Course Outcome (CO)										
CO1 Identify and understand different materials used in production. CO2 Understand the different machine components CO3 Finding out design parameters for different machine components CO4 Understand how to present design in the form of drawing CO5 understanding the detail and assembly drawing of components										
Unit No.	Topic		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Mechanical engineering design : General design process, Design considerations in textile machinery, Functions and specifications, Force and stress analysis, Static and dynamic loads, Material, its selections criteria, Is designation of materials, Strength rigidity, Stresses, static and dynamic failure theories, safety factor, stress concentration. Preferred sizes and standardization. Manufacturing and assembly, Fits and Tolerances. Documents and communications of design.	08	25	1, 2, 3	CO1	PSO1, PSO2	SD	G	-
2	Design of Textile Machinery elements	04	08	2, 3, 4	CO2				
3	Drives and components : Belts drives, spur and helical gear pair, Shafts, Spindles, Keys and couplings, Levers and Cams.	15	25	1,2,3, 4,5	CO3 CO4				
4	Springs : Helical compression, tension and torsion spring.	06	15	1, 2,3	CO2 CO3				
5	Fasteners : Threaded fasteners, rivets, welding and its applications	08	15	1, 2, 3, 5	CO2 CO3 CO4				
6	Bearing : Rolling elements bearings, sliding contact bearings and lubrication.	08	12	2,3,4	CO3 CO4				
Reference Books									
1.	Pandya N.C. & shah N.C. : Machine design								
2.	Norton Robert L : Machine Design, an Integrated Approach (2 nd Edition) Pearson Education Asia.								
3.	R.C.Patel, SS Sikh, A D Pandya : Machine design vol I and vol 2								
4.	VB Bhandari : : Machine design								

 THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20	
		B.E. (Textile Engineering): Regular Programme						
Year	III	Core / Elective / Foundation MEC1607L Machine Design (Practical/TW/Viva)			Credits / Hours per week		02	
Semester	II	Year of Introduction:1954 Year of Syllabus Revision: NA			Maximum Marks / Grade		50	
Mode of Transaction		Term work, Practical and viva						
No.	Experiment			Contact hours	Weightage (%)	BT Level	CO	PSO
1.	Detail and assembly drawing of a stuffing box / lathe toolpost			06	25	2,3,4	CO4, CO3	1.
2.	Design, detail and assembly drawing of a coupling			06	25	2,3,4,5	CO2,CO3 CO4,CO5	2.
3.	Design, detail and assembly drawing of spigot and socket type cotter joint			06	25	2,3,4,5	CO3,CO4 CO5	3.
4.	Design, detail and assembly drawing of knuckle joint			06	25	2,3,4,5	CO2,CO3 CO4,CO5	4.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2020-21					
B. E. (Textile Engineering): Regular Programme										
Year	III MECH	Core MEC 1608 INDUSTRIAL ENGINEERING AND OPERATION REASERCH	Credits / Hours per week			Lectures: 04 Practical:- NILL				
Semester	II	Year of Introduction: Year of Syllabus Revision: 2018	Maximum Marks / Grade			Theory: 100 PR/TW/VIVA: NILL				
Mode of Transaction: Lectures and Practical										
Course Outcome (CO) MEC 1608 CO1. Students will be able to describe characteristics and scope of OR. CO2. Students will be able to define and formulate mathematical problems. CO3. Students will be able to select optimal problems solving techniques for a given problem using LP. CO4. Students will be able to formulate and solve transportation, travelling sales man and transshipment problems. CO5. Students will be able to formulate and solve optimization problems related to job/ work assignments. CO6. Students will be able to demonstrate and solve simple models of Game theory. CO7. Students will be able to evaluate optimum solution using dynamic programming for different applications. CO8. Students will be able to choose / devise appropriate queuing model for practical application. CO9. Students will be able to solve different problems related to Network.										
Unit No.	Topic		Contact Hours	Weightage (%)	BT Level	CO	PO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)

1	Linear programming techniques: Operation research and decision making, types of mathematical models and constructing the model, roll of computers in operations research, formulation of linear programming problem, applications and limitations, simplex method (analytical & graphical)	8	15	1,2,3	Co 1,2	Po1,2,3	All	All	All
2	Distribution Methods: Vogel's approximation methods, modified distribution method, optimization models, unbalance and degeneracy in transportation model.	8	15	1,2	Co 1,2,3	Po2			
3	Assignment Models: Hungerian algorithm, traveling sales man problem, routing problems, processing 'n' jobs through two machines and three machines, processing two jobs through 'm' machines.	8	15	2,3,4	Co 3,6	Po2,3,4			
4	Network Analysis: PERT and CPM. Total slack, free slack, probability of achieving completion date, cost analysis, updating resource smoothing – roll of computer in network analysis.	8	15	2,4,5	Co4,C O3 CO8	Po 4,3,1			
5	Inventory Method: Variable in inventory problem, inventory problem, inventory models with panelty, stoarage and quantity discount, safety stock, inventory models with probability, demand, multi item deterministic model.	8	10	1,2,3	CO5,C O3	PO2			
6	Queuing Theory: Poisson arrivals and exponential service times, waiting time and idle time cost, single channel multi channel problem, Monte Carlo technique applied to queuing problems, Poisson arrivals and service time.	3	10	3,5	CO5,C O5	PO3,5			
7	Decision Theory Game: Examples of the application of theory of games 2 x M and M x	3	10	4,2	C07	PO6			

	2 problems, graphic dominance and linear programming method for different problems, decision trees.								
8	Replacement Model: Replacement of item that deteriorate, gradually, fail suddenly. Group replacement policy. Concept of system reliability.	3	10	1,6	C06,7, 8	PO4,3,1			
		52	100						
Experiments									
	NILL								
Reference Books									
1.	Taha, H.A., “Operation Research”, Mc Millan Publicaiton Co. Inc, New York.								
2.	Hiller, F.S., Liberman, G.J., “Introduction to Operation Research 2 nd Edition”, Holden-Day Inc, San Francisco, 1974.								
3.	Rao S. S., “Optimization – Theory and applications”, Wiley Eastern, New Delhi, 1978.								
4.	Sesieni, M.A., Yaspan, A. and Friedman, L., “Operation Research: Methods and Problems”, John Wiley and Sons, New York 1959.								
5.	Wagner, N.B., “Principles of Operation Research”, NJ Prentice hall, 1975.								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2019-20
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B.E (Textile Engineering): Regular Programme

Year	III	Core / Elective / Foundation Subject code: Yarn Manufacture-II (TXE1601)	Credits / Hours per week	04
Semester	II	Year of Introduction: 2004 Year of Syllabus Revision: --	Maximum Marks / Grade	100
Mode of Transaction		Lectures and Tutorials		

Course Outcome (CO) (TXE1601)

CO 1 Paraphrase the principles of drawing process, parameters and performance in the yarn spinning line

CO 2 Summarize the principles of combing process, parameters and performance and explain its importance as a value addition process

CO3 Implement the principles of speed frame process, parameters and performance in the yarn spinning line

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Objects of drawing. Constructional details of draw frame. Principles of Perfect Drafting, Irregularity due to drafting and remedies.	7.5	12.5	1, 2	1	1, 2, 3	EMP,SD	R,N,G	PE
2	Recent development. Processing of man-made	7.5	12.5	1, 2	1	1,2, 6			

	fibres and blends on Draw Frame. Assessment of performance of draw frame.								
3	Introduction: Spinning process flow for yarn. Importance of Combing in Spinning Process, Objectives of Combing. Preparatory Processes for Combing.	6	10	1, 2	2	1,2			
4	Sequence of operations in Combing Process. Parameters influencing combing operation. Technology of Combing, Theory of noil.	6	10	1, 2	2	1,2			
5	Construction of Comber, Combing Cycle-timing diagram. Factors influencing the Comber waste (Noil). Types of Combing Application.	9	15	1, 2, 3	2	1,2			
6	Developments in Comber, Performance assessment in combing.	9	15	1, 2, 3	2	1,2,6			
7	Objects, construction and working of speed frames. Twisting, winding and building mechanisms. Twists speeds and settings to suit different materials, Drafting systems on speed frame.	6	10	1, 2, 3	3	1,2			
8	Recent developments, Assessment of performance of speed frames. Processing of man-made fibres and blends on speed frame. Manufacturing and engineering aspects of the components of above machines.	5.5	9	1, 2, 3	3	1,2,4			
9	Theory of epicyclic gear trains PLC, microprocessors and their applications, calculations of differential gears in textile machines, timer, relays etc.	3.5	6	1, 2, 3	3	1,2,3,6			

Reference Books

1. Gilbert R. Merrill: Cotton combing
2. Gilbert R. Merrill: Cotton drawing and roving

3.	Textile Institute manual of textile technology: a practical guide to Combing and Drawing: W. Klein, Vol -3 &4
4.	NCUTE Extension programme on “Drawing and combing & flyer frame”

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
B.E. (Textile Engineering) Regular Programme										
Year	III	Core / Elective / Foundation TXE 1601L: Yarn Manufacture II (Practical/TW/Viva)				Credits / Hours per week		04		
Semester	II	Year of Introduction: 2004 Year of Syllabus Revision: ---				Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, term work and viva								
No.	Experiment					Contact hrs.	%Weightage	BT Level	CO	PSO
1	Conventional comber: Introduction to combing process, importance of preparatory machines, flow chart of the machine sequence for carded, combed and rotor yarn.					02	3	1,2	CO1	PSO1, PSO2
2	The passage of material on the machine. Understanding and tracing the combing cycle in detail. The features and functions of parts involved in combing cycle in detail.					02	3	1,2	CO1, CO2	
3	Tracing the gearing of combing machine. Calculation of speeds and delivery speeds of different parts of comber. Calculation of draft between different zones and overall combing machine viz. draft, total draft, draft constant, draft range, tension drafts etc. Calculation of production of the machine.					06	10	1,2,5	CO1, CO2, CO4	
4	Tracing and understand in detail the motion of nipper assembly (forward-backward and rocking)along with its associated parts, motion of detaching rollers (forward-backward and clockwise-anticlockwise-rocking) and motion of top-comb assembly (forward-backward and rocking) to understand the concept of net gain and calculate the net gain of material after one combing cycle.					06	10	1,2,5	CO1, CO2, CO4	
5	Lap former: Need of modernization in comber. The passage of material through lap former. The features and functions of parts at different zones along the passage. Salient features of modern lap former as compared to conventional lap preparatory machine. Study of different sensors: Importance of sensors and various setting points					06	10	1,2,3,5	CO1, CO2, CO3, CO5	PSO1, PSO2, PSO4
6	Understanding the features and sequence of lap winding apparatus and automatic lap					02	4	1,2,3	CO1,	

	doffing system. Highlighting the lap transport system available in the lab (SERVOtrolley system)				CO2, CO5	
7	Modern comber: Comparison between modern and conventional comber machine through highlighting and understanding the various changes and development along its passage of the material through machine, technological and metallurgical changes in various parts in details and improvement in process phases for high speed comber.	06	10	1,2,3	CO1, CO2, CO5	
8	Conventional Draw frame: Passage of the material through machine and study of various parts in details. Study of creel zone, various types can arrangement system. Study of drafting zone, various types of top rollers, Various loading arrangement of top synthetic rollers.	02	3	1,2,3	CO1, CO2	PSO1, PSO2
9	Tracing of gearing plan of the drafting system and zone wise draft calculation, draft constant calculation and its practical application. Study of delivery zone, coiling arrangement, Tracing of gearing plan of the twisting mechanism and twist per inch calculation, twist constant calculation	04	7	1,2,3		
10	Tracing of gearing plan of the Conventional Draw frame and speed calculation of all rotating parts, Production calculation, Study of stop motions: Importance of stop motion and various setting points	02	3	1,2,3		
11	Modern Draw frame: Comparison between modern machine and conventional machine, Study of creel zone, Comparison between modern creel with conventional creel	02	4	1,2,4,6	CO1, CO2, CO5	PSO1, PSO2, PSO4
12	Study of drafting zone, Importance of pressure bar, Comparison between modern drafting system with conventional drafting system. Tracing of gearing plan of the drafting system and zone wise draft calculation, draft constant calculation and its practical application.	04	7	1,2,4		
13	Study of delivery zone, Comparison between modern coiling arrangement with conventional coiling arrangement, Comparison of modern machine drive on modern machine and conventional machine. Tracing of gearing plan of the Modern Draw frame and speed calculation of all rotating parts, Production calculation	04	7	1,2,3		PSO1, PSO2,
14	Study of control panel, various limit switch, piston and solenoid valve and indicating bulb, Their location on machine and their function, study Automatic doffing system	02	3	1,2,5,6		PSO1, PSO2. PSO4
15	Conventional Flyer frame: Passage of the material through machine and study of	02	3	1,2		

	various parts in details. Study of creel zone. Tracing of gearing plan of the drafting system and zone wise draft calculation, draft constant calculation and its practical application. Tracing of gearing plan of the twisting mechanism and twist per inch calculation, twist constant calculation and its practical application.					
16	Concept of types of wind, Study of builder mechanism on machine, Concept of flyer lead and bobbin lead machine, coils per inch calculation, Lay constant calculation and its practical application, Tracing of gearing plan of the flyer frame and speed calculation of all rotating parts, Production calculation. Study of stop motions: Importance of stop motion and various setting points	04	7	1,2,3	CO1, CO2	PSO1, PSO2
17	Modern Flyer frame: Comparison between modern machine and conventional machine, Passage of the material through machine and study of various parts in details.	02	3	1,2,4,6	CO1, CO2, CO5	PSO1, PSO2. PSO4
18	Comparison between modern flyer and conventional flyer, Comparison between modern drafting system (TA drafting system) and drafting system. Various change point on machine. Maintenance of draw frame and flyer frame like draft roller setting etc.	02	3	1,2,5,6	CO1	

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2020-21							
B.E. (Textile Engineering): Regular Programme										
Year	III	Core / Elective / Foundation TXE 1603: Textile Testing	Credits / Hours per week					04(theory)		
Semester	II	Year of Introduction: 2004 Year of Syllabus Revision: ---	Maximum Marks / Grade					100(theory)		
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE 1603 CO1 Understand Need and various test methods developed for evaluating quality of textile materials; fiber, yarn, fabric etc. used as input or output material in production house. CO2 Learning Statistical techniques used for the analysis and interpretation of Test data. CO3 Analyze impact of various factors on the accuracy of test results. CO4 Understanding correlation between outcomes of tests operating on different principles										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional

									Ethics (PE)
1	Introduction: - a) Importance of textile testing in manufacturing process, b) Various aspects of fiber testing yarn testing & fabric testing, c) Need of statistical techniques & types of evaluation methods used for test data	02	2%	1, 2	CO1				
2	Statistical Techniques: a) Methods for presentation of data b) Analysis of data for average & dispersion behavior, c) Concept of probability & its implementation in the evaluation of data following normal distribution. d) Significance testing, its importance in data interpretation, Difference in t-test techniques used for sample/s belonging to small size & large size data; comparison of single sample mean with nominal & comparison of means for two samples, e) Significance testing for dispersion & its importance in data interpretation, Difference in F-test techniques used for sample/s belonging to small size & large size data: comparison of sample dispersion with nominal & comparison between dispersion values of two samples. f) Confidence interval for population mean and dispersion, Prediction error in the	08	18%	2, 3, 4, 5	CO1 CO2	PSO1, PSO4, PSO7 PSO8	EMP,S D	N,G	G, ES

	numbering system: definitions for direct & indirect system along with their merits & demerits, Types of yarn numbering system & their mathematical form for computation. b) General formula for direct numbering & indirect yarn numbering system, derivation of specific general formulas for different form of materials used during yarn manufacturing. Conversion formula, Derivation of Different conversion formulae for direct –direct, indirect-indirect & direct- indirect systems. c) Concept of Universal yarn numbering system & significance of tex system established as a Universal system, d) Need for yarn fineness measurement, e) Test method used for yarn count measurement from short length of yarn or yarns availed from fabric piece. f) Test method used for yarn count measurement from longer length of yarn, Structural features of wrap reel, Constrains of wrap reel based yarn length measurement, Limitations of Non automatic wrap reel, Constrains for accurate weight measurement. Structure & Operating details of different balances used for weight measurement of yarn lea or skein prepared by wrap reel; Analytical				CO4	PSO8			
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	balance, Quadrant balance, Knowle's balance. g) Need for measuring yarn count from too short yarn lengths, Structure & Operating details of Yarn Assorting balance, Associated advantages & disadvantages of the system									
7	Yarn Twist:- a) Definition: Twist, Amount of twist, Twist direction (type of twist), Twist contraction, b) Derivation of mathematical expression for TM & TF based on yarn geometry, Significance of TM/TF in prediction about yarn twist value, Role of twist in determining yarn & fabric performance . c) Need for twist measurement, different methods and related instruments used in twist measurement: d) Methods: Straighten fiber method, Fiber parallelization method, Twist contraction method, Twist to break method e) Instruments: Rock bank twist tester, Take up twist tester, Hand operated twist tester, Semi automatic twist tester etc. f) Problems faced while twist measurement of unconventional spun yarn, Details of twist to break method in resolving this problem, Test method for Optical twist measurement along with its merits &	06	10%	2,3,4,5	CO1 CO2 CO3, CO4					

	demerits.								
8	Fabric Testing: a) Measurement of Physical characteristics of fabric: epi*ppi, GSM, Fabric width, Fabric length, Width shrinkage, Thickness. b) Definition of Air permeability, Porosity, Air resistance, Measurement of comfort associated properties: Air permeability. c) Importance of fabric Stiffness, Details of different stiffness measurement: Shirley stiffness tester, Heart loop test, computation of bending modulus. d) Importance of crease recovery measure, definitions: crease recovery, crease resistance, Test method for crease recovery. e) Definition & importance of Drape, details of drape meter, Definition of Pilling, Significance of pilling in defining fabric performance, ICC Pilling tester. f) Definition: Wear, Abrasion, Serviceability, Wear & Abrasion tester, test set up used for flat abrasion, flex abrasion & edge abrasion.	06	10%	1, 2,, 3, 4	CO2, CO3, CO4	PSO1, PSO2, PSO3, PSO5			
9	Tensile testing of fiber, yarn and fabric. Different principles to apply load and elongation to textiles, factors affecting tensile test results, instruments working on constant rate of loading, constant rate of extension and constant rate of traverse are discussed. Other principles like	07	10%	1,2,4,5	CO1, CO3, CO4	PSO1, PSO2, PSO3, PSO6, PSO7, PSO8			

	ballistic strength testing is also covered								
10	Evenness testing and its importance, various types of yarn irregularities like random, periodic and quasi-periodic. Visual grading and modern instruments, comparing imperfections and yarn faults, mechanical evenness instrument and precautions to be taken for capacitance based instruments, popular evenness tester and its working, understanding diagram, spectrogram and LV curves	07	12%	1,2,4,5	CO1, CO3, CO4	PSO1, PSO2, PSO3, PSO6, PSO7, PSO8			

Reference Books

1.	J. E. Booth, Principle of textile testing, Chemical Publishing Corporation; 3 rd edition (1968), ISBN-10: 0592063259
2.	Handbook of Textile Testing and Quality Control. Elliot B. Grover and D. S. Hamby. Textile Book Publishers (Interscience), New York, 1960.
3.	Angpappan, R. Gopal Krishna, B.K. Keshwan, Physical testing vol. I & II
4.	W.S. Morton and Hearle, Physical properties textile fibres, Woodhead Publishing, 10th October 2008, ISBN: 9781845692209
5.	Physical Testing of Textiles, B P Saville, Woodhead Publishing, 8th January 1999, ISBN: 9781855733671
6.	M.E.Ansus and W.W.Adams, Physical Textile Testing
7.	Textile laboratory manual. Vol. 5: Fibres. W. Garner. Anal. Chem. , December 1967,
8.	B.S. Handbook No.11, Methods of test for textile, 1963 Edition
9.	P.A. Koch and C.J. Hooper, Microscopic and chemical testing of textile – A Practical Manual, 1963, ISBN 978-1-5041-0902
10.	A.S.T.M. standards for textile material, https://www.astm.org/Standards/textile-standards.html

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2020-21	
B.E.(Textile Engineering) Regular Programme									
Year	III	Core / Elective / Foundation TXE 1603L: Textile Testing Pract /TW/viva			Credits / Hours per week			04	
Semester	II	Year of Introduction: 2004 Year of Syllabus Revision: ---			Maximum Marks / Grade			50	
Mode of Transaction		Laboratory Experiments, discussion, term work and viva							
No.	Experiment				Contact hrs.	%Weightage	BT Level	CO	PSO
1	Introduction and layout of laboratory				17	29.167%	2,3,4,5	CO1 CO4	PSO1, PSO2, PSO4, PSO7, PSO8
	Fibre Testing								
2.	Standard Conditioning Oven								
3.	Shirley Trash analyzer								
4.	Comb Sorter								
5.	Star Moisture meter								
6.	Pressley Fibre Bundle Strength Tester								
7.	Fibro scan and Fibre Maturity Tester								
8.	Yarn testing				18	29.167%	2,3,4,5	CO1, CO2, CO3, CO4	
	Yarn count measurement								
9.	Count measurement by wrap reel and weighing method								
10.	Count measurement by Yarn quadrant balance								
11.	Yarn strength measurement								
12.	Single yarn strength Tester								
13.	Lea strength Tester								
14.	Ballistic strength Tester								
	Yarn twist measurement								
15.	Rock bank Twist tester								
16.	Automatic Twist tester								
17.	Evenness tester								
	Fabric Testing						2,3,4,5	CO1,	

18.	Fabric analysis	20	33%		CO3, CO4	
19.	Fabric Tensile strength tester					
20.	Tearing strength tester					
21.	Crease recovery					
22.	Stiffness tester					
23.	Drape meter					
24.	Bursting strength tester					
25.	Air permeability Tester					
26.	Wear resistance tester					
	<i>Demo experiments</i>	05	8.33%	2,3,4,5	CO1 CO4	
27.	HVI, Fibre Identification					
28.	Stelometer Bundle Strength Tester					
29.	Chemical oven					
30.	Density gradient tube					
31.	Soxhlet apparatus					
32.	Melt flow index tester					
34.	Humidity oven					
	Demo experiment for Fabric Testing					
35.	Pilling tester					
36.	Water permeability Tester					
37.	Sieve shaker					
38.	LLOYd and Instron universal Testing machine					

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2019-20					
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core / Elective / Foundation TXE 1701: Engineering of Textile Structures.	Credits / Hours per week			04(theory)				
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade			100(theory)				
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE 1701										
CO1 Understanding the fundamentals of Textile Structures and its geometry.										
CO2 Learn about how geometrical properties of textile structures affect its physical properties.										
CO3 Solving typical problems of textile structures related to its geometrical properties.										
CO4 Designing cloth structures using standard rules.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and

									Professional Ethics (PE)
1	Introduction to various textile structures with special reference to yarn, derivation of formula for yarn diameter (theoretical), experimental estimation of yarn diameter with merits and demerits of methods discussed by various researchers.	08	15%	1,2,3,4	CO1, CO3	PSO1, PSO2, PSO7, PSO8	EMP, SD	N, G	G, PE
2	Importance of twist in yarn structure, idealized yarn geometry and its derivation, twist contraction and retraction and related derivation.	08	10%	1,2,3,4	CO1, CO2	PSO1, PSO2, PSO7, PSO8			
3	Ideal fiber packing in yarn, contributing and disturbing factors	06	10%	1,2,3	CO1	PSO1			
4	Introduction to migration and techniques to measure it. Theoretical derivations to find migration based on research work of various researchers including zone wise distribution.	08	15%	1,2,3,4	CO2, CO3	PSO1, PSO2, PSO7, PSO8			
5	Important properties of Textile structures and comparison with other Engineering structures. Peirce's fabric geometry	07	10%	1,2	CO1	PSO1, PSO4, SO8			
6	Definition of cover, weight, thickness, its relationship with textile structural parameters, with different conditions.	06	10%	2,3	CO2				
7	Derivation of equations for air space analysis, special geometrical conditions and solving numerical based on it.	09	15%	2, 3, 4,5	CO3	PSO1, PSO4, PSO8			
8	Structural design of cloth structures using standard rules.	08	15%	3,4,5,6	CO4				
Reference Books									
1.	Textile Mathematics- Part I,II,III by J.E.Booth. Published by: Textile institute.1977								
2.	Structural Mechanics of Fibers, Yarn and Fabrics, Volume-I-J.W.S.Hearle, P.Grosberg, S.Backer. Published by: Wiley Inter science								

	Publication,1969
3.	Textile Manufacturing - M.G.Kulkarni. Published by:Current Technical literature Co.Ltd.,Mumbai.2001
4.	Structural Design of Woven fabrics,Textile Progress, Vol. 31, no.3

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2020-21						
B.E. (Textile Engineering): Regular Programme									
Year	IV	Core / Elective / Foundation TXE 1702: Manmade Fiber Technology I	Credits / Hours per week	04(theory)					
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade	100(theory)					
Mode of Transaction		Lectures & Tutorials							
Course Outcome (CO) TXE 1702 CO1 Understanding need and basic concepts of manmade fiber manufacturing techniques CO2 Impart basic knowledge about role and design of manufactured fiber spinning techniques process and machine variables. CO3 Understanding the importance of post spinning operations. CO4 Knowledge about Parameters influencing Structure of Polymer CO5 Instill important aspects of manufacturing processes used for commercially successful manufactured fibers. CO6 Learning polymer manufacturing process CO7 Understanding the characteristics and applications of man made fibres									
Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Develo	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) develop	Relation to Gender (G), Environment and Sustainability (ES), Human

							pment (SD)	mental needs	Values (HV)an d Profess ional Ethics (PE)
1	Limitations of Natural Fibers and introduction to Man-made fibres, Classification of man-made fibres, Advantages and disadvantages of Man-made fibres. Nomenclature of Manufactured fiber.	01	2%	1, 2	CO1				
2	a) Concept of Filament & Staple Fiber; Classification: manufacturing technique based, chemical group based. b) Definitions: Polymerisation, Degree of polymerisation (DP), Glass transition temperature, Melting temperature, difference between regenerated and synthetic fibres c) Different Techniques of Fiber Formation Process: Concept of Condensation, Addition & Subtraction in the Production of Polymer. i. Solution Spinning Technique: Wet Spinning , Dry Spinning ii. Melt Spinning Technique	13	20%	2, 3, 4, 5	CO1 CO2 CO3	PSO1, PSO4, PSO7 PSO8			
3	Post Spinning Operations: Hot Drawing, Cold Drawing, Spin Finish Application, Heat Setting etc.- Brief about various techniques in use and their associated application fields	03	5%	2, 3, 4, 5	CO3	PSO1, PSO4, PSO6 PSO8			
4	Parameters influencing Structure of Polymer : Concept of crystalline & amorphous regions in polymer structure, Quality parameters required for the polymer to be recognized as textile fiber. Their test methods.	03	5%	2,3,4, 5	CO1 CO2				

5	Machine Variables: Extruder, Spin box, Quenching chamber, Extruder bath , Spinneret etc for Dry spinning, wet Spinning & Melt Spinning Processes & their influence on the Polymer structure and properties. Basic concepts of Non woven fabric production techniques.	10	18%	1, 2,, 3, 4	CO1 CO2 CO3 CO4	PSO1, PSO2, PSO3, PSO5			
6	a) Manufacturing process of Viscose filament yarns along with its properties and applications. b) Chemistry of viscose rayon, Modern spinning baths, Role of zinc in spinning bath, Spinning with modifiers, diffusion boundries during spinning, c) Polynosic rayon, spinning bath conditions and property details of different rayons,	9	15%	1,2,3,4, 5	CO1, CO2, CO6, CO7	PSO2, PSO4, PSO6, PSO7			
7	a) Introduction to polyester (PET) polymer, b) PET polymer production thorough DMT and TPA routes: esterification and polycondensation process details, c) Important aspects to be considered in DMT and TPA routes, important factors which determines the polymer grade. d) PET filament spinning: Important aspects of batch process and continuous process	9	15%	1,2,3,4, 5,6	CO2, CO6, CO7				
8	a) Introduction to Acrylic fibres, Production of acrylonitrile monomer, b) Production of acrylonitrile polymer: Mechanism of polymerization, types of polymerization. c) Characterization of polyacrylonitrile polymer, spinning of acrylic fibre through wet spinning, Typical example	6	10%	1,2,3,4, 5	CO2, CO6, CO7				

	of acrylic fibre spinning in industry								
9	a) Introduction to Polypropylene fibre, problems with polypropylene fibre, b) Polymerisation: Monomer and polymer manufacturing, stereocity, catalyst system and its mechanism of working, c) Polypropylene filament characteristics: MFI, number average and weight average molecular weight, molecular weight distribution or polydispersity, effect of molecular weight on spinnability and fibre properties. d) Spinning processes of polypropylene: Short air quench melt spinning, long air quench melt spinning, spin draw process, spin draw texturising (BCF) process, water quench melt spinning process, tape yarn spinning process.	6	10%	1,2,3,4,5,6	CO1, CO2, CO6, CO7				
Reference Books									
1.	Manufactured Fibre Technology, V.K.Kothari & V.B.Gupta								
2.	Production of synthetic fibres, A.A. Vaidya								
3.	Manmade Fibres, R. W. Moncrieff								
4.	Textile Yarns, B.C.Goswami, J.G.Martindale and F.L.Scordioo (Wiley international)								
5.	Modern Yarn Production., G. R. Wary								
6.	Manmade fibres, NCUTE pilot programme, B.L.Deopura								
7.	Non Woven bonded fabrics, J. Lunenschloss and W.Albercht								

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year				2019-20			
B.E. (Textile Engineering): Regular Programme											
Year	IV	Core / Elective / Foundation TXE 1707: Theory and Design of Textile Machines		Credits / Hours per week				04(theory) 04(practical)			
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision:--		Maximum Marks / Grade				100(theory) 50(practical)			
Mode of Transaction		Lectures, Tutorials & Practical									
Course Outcome (CO) TXE 1707 and 1707L CO1 Understanding the fundamentals of design of textile machines. CO2 Learn about principles of mechanics applied to textile machine design. CO3 Solving typical performance requirements of textile machines. CO4 Understand the interrelationship between textile material behavior and textile machine parts. CO5 Learn about important design features of modern textile machines. CO6 Imparting practical knowledge of principles of Mechanics, Theory of Machine & Machine design employed in Textile machines. CO7 Employing engineering drawing knowledge for various machine parts of textile machines.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill	Relevance to Local (L)/ National (N)/ Regional(R)/Global (G)	Relation to Gender (G), Environment and Sustainability (ES).

Reference Books	
1.	Textile Mechanics-Vol II, K. Slater. Textile Institute, Manchester
2.	Weaving Technology-Ormerod
3.	Hand Book of Weaving-Sabit Adanur
4.	Shuttleless Weaving Machines- T.Swaty,SNTL publishers,Prague
5.	Theory of Machines and mechanism- Uicker,Gordon,Shigley .McGraw Hill.
6	Fundamental of Spun Yarn Technology, Carl A Lawrence
7	Articles, Company Catalogues, brochures, web sites

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
B.E. (Textile Engineering) Regular Programme										
Year	IV	Core / Elective / Foundation TXE 1707L: Theory and Design of Textile Machines Pract /TW/viva				Credits / Hours per week		04		
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision: ---				Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, drawing, term work and viva								
No.	Experiment					Conta thrs	%weighta ge	BT Level	CO	PSO
1	To verify Grashof’s Law & Sley offset measurement.					02	03.33%	1,2	CO6	PSO2, PSO3
2	Sley Kinematics: Conventional and Shuttle less looms					04	06.66%	2,3,4, 5		
3	Heald Kinematics & Shed shape diagram.					04	06.66%	2,3,4, 5		
4	Shuttle-Picker displacement (over pick)., Picker displacement (under pick),with changes in settings.					04	06.66%	2,3,4, 5		
5	Design of loom crank shaft.(calculations as per actual dimensions)					04	06.66%	4,5,6		
6	Shed depth at front wall of shuttle.					02	03.33%	2,3,4, 5		
7	Rapier Kinematics.					02	03.33%	2,3,4, 5		
8	Coefficient of restitution of shuttle& Elastic property of picking strap.					02	03.33%	2,3,4, 5		
9	Design of Knitting cam					02	03.33%	4,5,6		
10	Noise Profile of machines & Unwinding behaviour of weft from pirn.(using Shireley unwinding measurement device)					04	06.66%	2,3,4, 5		
	Drawing sheet									

1	Shedding Cam & pressure angle	04	06.66%	2,3,6	CO5 CO7	PSO2
2	Single lob/ Tri lob cam	02	03.33%			
3	Builder Cam /Cone Assembly	04	06.66%			
4	Rotor Assembly	04	06.66%			
5	Flyer / Spindle Assembly	04	06.66%			
6	Drafting Roller design for compact spinning	04	06.66%			
7	Crank Shaft Design-SFD & BMD diagram	04	06.66%			
8	New design of machine parts as per development	04	06.70%			

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year			2019-20				
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core /-Elective-/ FoundationTXE1704 Weaving III	Credits / Hours per week				04(theory)			
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade				100(theory)			
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE 1701 CO1 Understanding of fundamentals of modern weaving machine CO2 Fundamentals design concept of automatic and shuttle less loom CO3 Learn about principles and mechanism of different type automatic and shuttle less loom CO4 Learn about important design features of modern developments CO5 Solving typical problem related to setting requirements and Learn New design concepts										
Unit No.	Topic/Unit		Contact Hours	Weight age (%)	BT Level	CO	PSO	Element s of Employability (Emp)/ Entrepreneurship (Ent)/ Skill	Releva nce to Local (L)/ National (N)/ Regional (R)/Glo b al	Relatio n to Gende r (G), Environ ment and Sustain ability (ES), Human

							Develo p ment (SD)	(G) develo p mental needs	Values (HV)an d Professi on al Ethics (PE)
1	Introduction to Automatic shuttle looms & their classification Weft feelers on automatic looms – classification, midget feeler working, settings Plunger type feeler, depth feelers two prong electric weft feeler, electronic weft feeler Shuttles and pirns of Cop changing mechanism, Cop changing mechanism construction and working Timing and settings of cop changing mechanism Weft cutters on cop changing automatic looms Various practical aspects related to cop changing mechanism such as various fabric faults caused due to malfunctioning of cop changing mechanism and weft cutters Stop type of shuttle changing mechanism, construction and working Non-stop type of shuttle changing mechanism	7	11.67	1,2,3	CO1 CO2	PSO 1 PSO 2 PSO 3 PSO 4 PSO 7 PSO 8	SD	R, N	ES
2	Introduction to projectile looms, Salient features of Sulzer projectile looms, its weaving cycle, picking mechanism, beat up motion, details of various picking elements, their functions, construction, selvedge formation, projectile flight control	10	16.67	1,2,3,4 ,5,6	CO3 CO4	PSO 1 PSO 2 PSO 3 PSO 4 PSO 5 PSO 6 PSO 7	Emp, Ent, SD	R, N, G	

						PSO 8			
3	Introduction to rapier looms, Classification of rapier looms, picking cycle of different rapier looms, rapier gripper construction, important elements of rapier weaving, weft tension control, positive and negative rapiers, free flight rapiers, rapier driving mechanisms	13	21.66	1,2,3,4,5.6	CO5	PSO 1 PSO 2 PSO 3 PSO 4 PSO 5 PSO 6 PSO 7 PSO 8	Emp, Ent, SD	R, N, G	
4	Introduction to Air jet loom, Different weft insertion system like Single nozzle and multiple nozzle system, Detail of different parts like accumulator, Nozzle geometry, confuser, Profile reed, sub nozzle and stretch nozzle. Step Graph for sub nozzle sequential operation.	12	20	2,3,4	CO2, CO3, CO4				
5	Introduction to Water jet loom, Detail of different parts like accumulator, Nozzle geometry, Pump .Development in new water jet machine. Positive, Crank and E shedding concept, 4link-6link beat up in air jet and water jet, other new concept and engineering aspect for technical yarn weaving	12	20	2,3,4	CO2, CO3, CO4	PSO 1 PSO 2 PSO 3 PSO 4 PSO 5 PSO 6 PSO 7	Emp, Ent, SD	R, N, G	
6	Classification of Let off, Concept, Limitations of negative let off motions, Semi positive and Positive let off motions, E let-off	06	10	2,3,4,5	CO2, CO3, CO5				

Reference Books:

1.	Handbook of Weaving by Sabit Adanur, CRC Press, 2001
2.	Weaving: Machines, Mechanisms, Management by Marinal Kanti Talukdar, P. K. Sriramulu,, Dinkar Bapurao Ajgaonkar, Mahajan Publishers, 1998
3.	Shuttleless weaving: Talavasek, Svaty, Textile Science and Technology 1981
4.	Principles of Weaving, Marks, Robinson, Textile Institute, 1976

5.	Company Catalogs, brochures, patent literature

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20		
B.E. (Textile Engineering) Regular Programme									
Year		IV	Core / Elective / Foundation TXE 1704L: Weaving-III Lab (Practical/TW/Viva)			Credits / Hours per week		04	
Semester		I	Year of Introduction: 2005 Year of Syllabus Revision: ---			Maximum Marks / Grade		50	
Mode of Transaction		Laboratory Experiments, discussion, drawing, term work and viva							
No.	Experiment				Contact hrs.	%Weightage	BT Level	CO	PSO
1	Automatic Loom: 1. Study of warp stop and center weft fork motions on an automatic shuttle loom 2. Study of cop changing mechanism on a 4x1 cop changing automatic loom 3. Study of warp stop and center weft fork motions on an automatic shuttle loom				15	25	1,2,3,4	CO3, CO4, CO5	PSO1, PSO2, PSO3, PSO4, PSO5, PSO6
2	Automatic shuttle loom: Construction, working, settings, technical drawing and measurement/calculations of various parameters of following mechanism on the Automatic shuttle loom. 1. Measurements of various parameters of different types of shuttles and pirns used for auto and non-auto shuttle looms. 2. Study of Cop changing mechanism 3. Study of Weft cutters on cop changing automatic looms 4. Study of Bartlett and Roper type of let-off motions 5. Study of mechanical warp stop motion 6. Study of stern's parallel picking motion				15	25	1,2,3,4	CO 3 CO 4 CO 5	PSO1, PSO2, PSO3, PSO4, PSO5, PSO6
3	Airjet loom: Introduction to shuttleless loom, different insertion system, Passage, function of				15	25	1,2,3,4	CO 3 CO4	PSO1, PSO2,

	different parts, Insertion concept and design, shedding, beat up, Let off comparison with modern machines				CO5	PSO6
4	Water jet: 1. Water jet loom: Introduction, Passage of warp and weft through waterjet loom 2. Drive to different mechanisms of water jet loom 3. Shedding mechanism, Beat up mechanism, Pump, Suction device 4. Study of the timing of water jet loom 5. Study of different selvedge mechanisms like dummy and twisted selvedge, Important settings of loom	10	17	1,2,3,4	CO 3 CO4 CO5	PSO1, PSO2, PSO6
5	Rapier Loom Rapier Loom: Introduction, Passage of warp and weft through rapier loom Drive to rapier, study of speed change of rapier in a pick cycle. Preparation and insertion of weft pattern chain and running of rapier loom	05	8	1,2,3,4	CO 3 CO4 CO5	

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year			2020-21				
B.E. (Textile Engineering): Regular Programme											
Year	IV	Core / Elective / Foundation TXE 1705: Yarn Manufacturing - III		Credits / Hours per week			04 (theory)				
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision: ---		Maximum Marks / Grade			100 (theory)				
Mode of Transaction		Lectures & Tutorials									
Course Outcome (CO) TXE 1705											
CO1 Understand different manufacturing steps followed in yarn formation process.											
CO2 Instil the fundamental as well as advances in engineering & design concepts of cotton yarn manufacturing processes.											
CO3 Learn about machine, and process parameters and their influences on versatile Ring spun yarn as well as unconventional spun yarns to get desired quality at an economical rate. .											
CO4 Learn about yarn manufacturing process calculus for draft, twist, fibre flux, production, yarn lay etc.											
CO5 Impart knowledge about Yarn Doubling process and fancy yarn production along with their significance in textile manufacturing process.											
CO6 Understand about spinning systems other than Ring Spinning											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES),

							Develo pment (SD)	develop mental needs	Human Values (HV)an d Profess ional Ethics (PE)
1	Basic objective & Working of Ring frame, Skeleton Structure of Machine.	01	1%	1, 2	CO1	PSO1, PSO4, PSO7 PSO8	EMP, SD	N, G	G, ES
2	Machine Variables: Classical & Modern machines Creel: Type of creels along with advantages & disadvantages Drafting system variables: Bottom rollers, Top rollers, Top arm, Waste collection system • Their Structure & Dimensions, Mounting, Drive maintenance & settings. • Draft calculus: Total draft, Actual draft, mechanical draft, DC, DCW, Break draft, BDC Twisting and Winding Variables: Lappet guide, Spindle, Ring-Traveller, Bobbin • Their significance in ring spinning, structural features, mounting, cleaning and maintenance • Different modes of drive to the spindle • Calculus: Twist, Twist constant, Delivery speed, Production rate, machine efficiency.	12	20%	2, 3, 4, 5	CO2				
3	Process variables: Types of package build, Builder mechanism of on classical & modern ring frame • Traversing mechanism, • Advancing mechanism, • Cop heel formation mechanism	07	12%	2, 3, 4,5	CO3				

[illegible]

4.	Textile Mathematics- Part I,II,III by J.E.Booth. Published by: Textile institute.1977
5.	Gilbert R.Merrill, Cotton Spinning
6.	R. Neild, Rotor Spinning
7.	Eric Oxtoby, Spun yarn Technology
8.	Salhotra K.R., Spinning of Man-Mades and blends on cotton spinning system
9.	Text. Asso. of India, Spinning Tablets - (Ring frame, doubling)
10.	M.E.I. Hand Book

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2020-21		
B.E.(Textile Engineering) Regular Programme									
Year	IV	Core / Elective / Foundation TXE 1705L: Yarn Manufacturing - III Pract /TW/viva			Credits / Hours per week		04		
Semester	I	Year of Introduction: 2005 Year of Syllabus Revision: ---			Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, term work and viva							
No.	Experiment				Conta ct hrs.	%Weighta ge	BT Level	CO	PSO
1	Material flow on Ring frame, Design of Ring frame skeleton Structural & significance w.r.t. slow speed and high-speed machine				04	6%	1,2	CO1	PSO1
2	Creel: Type, Structural design, Maintenance and Cleaning				02	2%	2,3,4, 5	CO1 CO2	PSO1, PSO2
3	Drafting System: Types, Design features of Drafting system variables and their measures, Mounting on Skeleton structure, Associated Settings, Maintenance and cleaning, Waste evacuation system				10	16%	2,3,4, 5	CO1 CO2	PSO1, PSO4, PSO7, PSO8
4	Drive to bottom drafting rollers, Calculus: Draft, DC, Draft range, Delivery speed, Production/ unit time, Doffing frequency – Study w.r.t. slow speed and High-speed RF.				04	8%	2,3,4, 5	CO2 CO4	PSO2, PSO3
5	Twisting Mechanism: Design features of Lappet guide, Ring-traveller, bobbin & Spindle, Measurement of variables affecting twist transfer: Front roller over hang, Roller stand angle, Spinning angle, Associated Settings, Maintenance and cleaning- – Study w.r.t. slow speed and High-speed RF.				06	12%	2,3,4, 5	CO2 CO3 CO4	PSO2, PSO3, PSO4
6	Tracing Twist gearing and associated calculus: TPI, TC, Twist range, Twist direction and arrangement for changing twist direction, Variation in twist throughout the doff, Associated Settings, maintenance & cleaning – Study w.r.t. slow speed and High-speed RF.				02	4%	2,3,4, 5	CO2 CO3 CO4	PSO2, PSO3, PSO4
7	Winding Mechanism: Design features of machine variables and their measures,				04	7%	4,5,6	CO2	PSO2,

	Associated settings, Maintainace and cleaning, Calculus: Winding speed & its variation due to change in bobbin diameter, Winding on angle – Study w.r.t. slow speed and High speed RF.				CO3 CO4	PSO3, PSO4
8	Builder Mechanism: Study of Traversing, Advancement, Cop heel, Shoulder heel and Under winding mechanisms and their settings to deal with different count range done w.r.t. slow speed and High speed RF.	10	14%	2,3,4, 5	CO1 CO2 CO3	PSO1, PSO2, PSO3, PSO4
9	Calculus for Builder motion: Lay gearing and calculation for coil density and its variations w.r.t. doff position, Winding coil: Binding coil and their significance	02	4%	2,3,4, 5	CO1 CO2 CO4	PSO2, PSO3, PSO4
10	Material flow on Rotor, Study for Design features and measures of Rotor machine variables & significance w.r.t. slow speed and high speed machine	04	8%	2,3,4, 5	CO2 CO3	PSO1, PSO2, PSO3
11	Rotor Calculus: Draft and fiber flux present at various zone, Delivery speed & Production per unit time, Associated Settings, maintenance & cleaning	02	4%	4,5,6	CO2 CO4	PSO2, PSO3, PSO4
12	Material flow on Dref Spinning machine, Study for Design features and measures of Dref machine variables & significance	02	4%	2,3,4, 5	CO1 CO2	PSO1, PSO2, PSO3
13	Material flow on Air jet spinning, Study for Design features and measures of Air jetspinning machine variables & significance	02	4%	2,3,4, 5	CO1 CO2	PSO1, PSO2, PSO3
14	Material flow on T.F.O., Study for Design features and measures of T.F.O. machine variables w.r.t.processing of cotton, blend and man-made yarns. Associated settings, Maintainace and cleaning,	04	5%	2,3,4, 5	CO1 CO5	PSO1, PSO2, PSO3
15	Calculus for T.F.O.: TPI, TC, Twist range, Delivery rate, Production per unit time	02	2%		CO4 CO5	PSO1, PSO2, PSO3, PSO5

 THE MAHARAJA SAYAJIRAO UNIVERSITY OF BARODA सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2019-20
B.E. (Textile Technology): Regular Programme				
Year	IV	Core / Elective / Foundation TXE1801 Advanced fabric structure (elective)	Credits / Hours per week	04(theory)
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade	100(theory)
Mode of Transaction		Lectures & Tutorials		
Course Outcome (CO) TXE 1801 CO1 Introduction to different compound structures CO2 Understanding Stripe and check weave combinations CO3 Understanding Color and weave effects CO4 Understanding Backed cloth structures CO5 Understanding various double cloth structures CO6 Understanding multi-layer fabric constructions CO7 Understanding face to face weaving CO8 Understanding Terry Structure CO9 Understanding weft pile fabric CO10 Understanding figuring with extra threads CO11 Understanding Gauze and Leno weave CO12 Understanding Jacquard Designing				

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Introduction to colour and weave effects, representation of colour and weave effects, varieties of colour and weave effects produced in same weave and colour order Simple colour and weave effects, stripe and check colour and weave effects	4	6	1,2,3,4,5,6	CO1 CO3	PSO 1 PSO 2 PSO 4 PSO 6 PSO 8	Emp/ SD	L, N, R, G	--
2	Introduction to stripe and check weave combinations, forms of stripe and check weave	4	6	1,2,3,4,5,6	CO2	PSO 1 PSO 2			

	combinations, selection of suitable weaves Various designs for stripe and check weave combinations					PSO 4 PSO 6 PSO 8			
3	Introduction to backed cloths, classification of backed cloths, principle of construction of backed cloth designs, Reversible weft backed cloths, methods of weft backing standard weaves, Wadded backed cloths, comparison of warp backed and weft backed structures	4	8	1,2,3,4,5,6	CO4	PSO 1 PSO 2 PSO 4 PSO 6 PSO 8			
4	Classification of double cloths, principle of construction of a double cloth structure Self stitched double cloths, selection of a suitable stitch position Centre stitched double cloths Wadded double cloths	7	10	1,2,3,4,5,6	CO5	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			
5	Introduction to interchanging double cloths, Hairlines in interchanging double cloth, Various designs for hairlines in interchanging double plain cloths Mixed colour effects in interchanging double cloths, Producing motifs in interchanging double cloths	6	10	1,2,3,4,5,6	CO5	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			

6	Multilayer fabrics – introduction, construction of stitched treble cloths	3	4	1,2,3,4,5,6	CO6	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			
7	Face to face weaving – introduction, loom elements for face to face weaving, Special features of looms for face to face weaving Designs of various face to face weaving structures	2	6	1,2,3,4,5,6	CO7	PSO 1 PSO 2 PSO 4 PSO 6 PSO 8			
8	Introduction to terry fabric Formation of Terry Pile, Terry weave, Principle of loop formation, Special mechanism required in Terry Weaving, Terry Ornamentations.	6	12	1,2,3,4,5,6	CO8	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			
9	Weft pile fabric Construction of weft pile fabric, Classification of weft pile fabrics, All over or plain velveteens, Plain back velveteen, Twill back velveteen, Length and density of pile, Corded velveteen, Plain back corduroy, Twill back corduroy.	7	12	1,2,3,4,5,6	CO9	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			
10	Figuring with extra threads Principle, Methods of introducing extra	5	8	1,2,3,4,5,6	CO10	PSO 1 PSO 2			

	figuring threads, Extra warp figuring, Extra Weft figuring					PSO 4 PSO 6 PSO 7 PSO 8			
11	Gauze and leno weave Principle of leno structure, Basic sheds of leno weaving, leno weaving with flat steel doup with an eye, leno weaving with flat steel slotted doup, Easing motion, Simple net leno, Russian cord	8	12	1,2,3,4,5,6	CO11	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			
12	Jacquard designing (development of figure, insertion of ground weave) and Designing software	4	6	1,2,3,4,5,6	CO12	PSO 1 PSO 2 PSO 4 PSO 6 PSO 7 PSO 8			
Reference Books:									
1.	Z. J. Grosiski	: Watson's Textile Design And Colour, Woodhead publishing series in Textiles							
2.	Z. J. Grosiski	: Watson's Advanced Textile Design, Woodhead publishing series in Textiles							

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2020-21					
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core / Elective / Foundation TXE 1803: Garment Technology	Credits / Hours per week			04(theory)				
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade			100(theory)				
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE 1803										
1. CO1 Imparting knowledge about different operations along with constrains involved in Readymade Garment Industry.										
2. CO2 Understanding concept of grading to switch over from one size to another with due precision.										
3. CO3 Building fundamental base required for the marker planning to reduce fabric waste.										
4. CO4 Evaluating position of Indian and global garment manufacturing scenario using SWOT analysis.										
5. CO5 Understanding the branding strategy and its impact on profitability for a garment manufacturing operation.										
6. CO6 Instil concept of retailing, marketing and merchandizing.										
7. CO7 Understanding modern concept like e-retailing, e-merchandising										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) development	Relation to Gender (G), Environment and Sustainability (ES), Human Values

							(SD)	needs	(HV)and Profess ional Ethics (PE)
1	Introduction: Definition of Garment, Difference between tailor made garment manufacturing & Readymade garment manufacturing industry, Different steps involved in bulk garment manufacturing.	02	3.33%	1, 2	CO1	PSO1, PSO4, PSO7 PSO8	EMP, ENT, SD	L, N, G	G, ES
2	Design studio: Planning of a particular type/sort of garment manufacturing, Importance of fabric properties and selection fabric for garment production.	04	6.67%	2, 3, 4, 5, 6	CO1				
3	a) Pattern Making: Pattern making process and various tools used in pattern making. b) Sizing: Importance of sizing of garment and the process of generating size charts. c) Grading: Various techniques of grading of pattern size to accommodate the target group.	09	15%		CO1 CO2 CO3	PSO1, PSO4, PSO6 PSO8			
4	a) Marker Maker and Marker Planning: Various process and the systems used in lay planning method, marker planning and their relevant calculations.	09	15%						
5	Spreading: Role of spreading, Different methods and accessories of spreading, Modes of spreading, Concept of symmetric fabric & asymmetric fabric and its impact on selection of spreading mode, Constrains of spreader.	04	6.67%			PSO1, PSO2, PSO3, PSO5			
6	Cutting Room: Requirements of good cutting, Various types of scissors used during cutting, Types of manually operated cutters, Computerized knife cutter, Structural & technical details of Unconventional Cutter,sAuxiliaries of cutting room:	08	13.33%						

	Driller & Notcher, their role & operating mode.								
7	Sewing room: Requirements of good sewability, Sewing room Variables: - Seam: Requirements of good seam, Types of seam along with their application area, - Stitch: Types of stitch, Stitch formation cycle for simple lock stitch as well as chain stitch, comparison of chain stitch & lock stitch, - Sewing Machine: Different parts of sewing machine & their role, - Feed Mechanisms: Structural design of parts involved in feeding mechanism and their role, Types of Feed Mechanisms used on Industrial sewing machine - Sewing Needle: Anatomy of sewing needle, role of different parts of needle, Designation of needle, types of needle & their application area. - Sewing Thread: Sewing thread types, designation of thread, Quality requirements for good sewing threads	10	16.67%	2,3,4,5	CO1 CO2 CO3				
8	a) SWOT analysis of readymade garment manufacturing industry. b) Branding and its strategy of readymade garment manufacturing industry. c) Retailing, marketing and sales of readymade garment manufacturing industry. d) Merchandizing of readymade garment manufacturing industry e) Garment industry in India and investment appraisal analysis of readymade garment manufacturing industry. f) Intellectual property right and its relevance in garment industry.	14	23.33%	3, 4 ,5, 6	CO1, CO4, CO5, CO6, CO7				

Reference Books	
1.	The Technology of Clothing Manufacture [II nd Edition]: - Harold Carr & Barbara Latham. ISBN-10: 0632037482, ISBN-13: 978-0632037483, Wiley-Blackwell Publication, March 30, 1994
2.	Introduction to Clothing Manufacturing: - Gerry Cookling. ISBN-10: 9780632058464, ISBN-13: 978-0632058464, Wiley-Blackwell; 2 editions (September 1, 2006)
3.	Garment Technology for Fashion Designers, Gerry Cooklin, ISBN: 9788126515844, Wiley India Publication.
4.	Garment Technology: - NCUTE Proceedings.
5.	Inside Fashion Design – Sharon Lee Tate, Harper Collins Publication, U.K., 1989
6.	Fundamentals of Clothing and Textile by Mary Evans

 सत्यं शिवं सुन्दरम्	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2019-20					
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core / Elective / Foundation TXE1804 Knitting	Credits / Hours per week			04(theory)				
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade			100(theory)				
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE 1804 CO1 Understanding different between woven and knitted structures CO2 Understanding and learning different basic weft knit structures CO3 Understanding and learning different stitch variations in weft knit structures CO4 Understanding and learning different methods of ornamenting weft knit structure CO5 Understanding different between warp and weft knitted structures CO6 Understanding basic elements of knitting CO7 Understanding and learning loop formation in warp knitting CO8 Understanding and learning developments in warp knitting										
Unit No.	Topic /Unit		Contact Hours	Weight age (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Develop	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G)	Relation to Gender (G), Environment and Sustainability (ES), Human

							ment (SD)	develop mental needs	Values (HV)an d Professi on al Ethics (PE)
1	Introduction to weft knitting, courses and wales in a weft knit structure, some technical terms in weft knit structures- face loop stitch, reverse loop stitch	1	5	1,2,3, 4,5	CO1 CO3	PSO 1 PSO 2	EMP, ENT, SD	L, N, R, G	G, ES
2	Single jersey structure- introduction, symbolic representation, technical face and technical back in a single jersey structure An anatomy of loop a loop stitch, cross over points and configuration of a single jersey structure, laddering effect in a weft knit structure, characteristics of a single jersey structure	3	5	1,2,3, 4,5	CO2	PSO 1 PSO 2 PSO 3 PSO 6 PSO7			
3	Rib, interlock and purl structures knit structure – introduction, symbolic representation, features and properties of fabric and machine to knit them	4	10	1,2,3, 4,5	CO4	PSO 1 PSO 2 PSO 3 PSO 6 PSO7			

4	Various elements of weft knitting – different needles, cylinder, cam, sinker	04	7.0	1,2,3	CO5	PSO5			
5	<u>Knitting machines:</u> 1. Rib knitting machine: Parts of the machine and knitting cycles 2. Purl knitting machine: Parts of the machine and knitting cycles 3. Interlock knitting machine: Parts of the machine and knitting cycle	08	13.0	1,2,3	CO7	PSO7			
6	Tuck and float stitches, knitting of float stitches, symbolic representation Structural variations in weft knit structures through tuck and float stitches, multiple cam tracks in a weft knitting machine, swing cam, interchanging cams Production of multi-colour designs through tuck and float stitches, weft knitting machines with jacquard Determining number of cam tracks and needle arrangement for a given design Effect of float and tuck stitches on fabric properties	10	15	1,2,3, 4,5,6	CO5	PSO 1 PSO 2 PSO 3 PSO 4 PSO 6 PSO7 PSO 8			
7	Loop transfer stitches- introduction, knitting, symbolic representation, Loop transfer stitches for ornamenting single jersey structure, Rib to plain structure through	4	7.5	1,2,3, 4,5,6	CO5	PSO 1 PSO 2 PSO 3 PSO 4			

	loop transfer, Racked rib structure					PSO 6 PSO7 PSO 8			
8	<u>Weft knitting Calculations</u> Production and other calculations related to weft knitting machines and fabrics	06	10.0	1,2,3	CO5	PSO 1 PSO 2 PSO 3 PSO 4 PSO 6 PSO 7			
9	Principle of production of sock structure and knitted gloves	2	2.5	1,2,3, 4,5	CO6	PSO 1 PSO 2 PSO 3 PSO 4 PSO 6 PSO 7			
10	Ornamentation of single jersey fabrics – horizontal stripes, plated jersey fabrics etc., Ornamentation of rib structures, Some double knit structures like single pique, ponte-di-roma, ottoman rib...	4	5	1,2,3, 4,5	CO7	PSO 1 PSO 2 PSO 3 PSO 4 PSO 6 PSO 7 PSO 8			
11	Knitting actions: Knitting actions of latch, beard and compound needles	05	7.0	1,2,3	CO6	PSO 1 PSO 2 PSO 3 PSO 4 PSO 6 PSO 7			
12	Warp knitting: a) Introduction b) Classification of Warp knitting machines	09	13.0	1,2,3	CO8	PSO 1 PSO 2 PSO 3			

	c) Racshel machine-Parts and knitting cycle d) Tricot machine- Parts and knitting cycle e) Fabric faults f) Developments					PSO 4 PSO 6 PSO 7			
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Reference Books:

1.	Knitting Technology by David.J.Spencer Published by Pergammon Press
2.	Knitting Technology by Prof. D. B. Ajgaonkar, Universal Publishing Corporation
3.	Warp knitting production: S Raz; Published by MelliandTextilberichte.
4.	Flat Knitting by S Raz; Published by MelliandTextilberichte.
5.	Circular knitting by Iyer, Mammel and Schach; Published by Meissenbach GmbH.

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2020-21							
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core / Elective / Foundation TXE 1805: Manmade Fiber Technology II	Credits / Hours per week					04(theory)		
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: ---	Maximum Marks / Grade					100(theory)		
Mode of Transaction		Lectures & Tutorials								
Course Outcome (CO) TXE 1805 CO1 Understand Need and various conversion methods established for transformation of flat filament yarn to preferable voluminous yarn CO2 Understand detailing of commercially successful textured yarn production systems. CO3 Analyse impact of various factors on textured yarn quality and cost. CO4 Understanding correlation between manmade fiber properties and short staple spinning process variables CO5 Impart basic knowledge about different technical changes required on short staple spinning set up for processing manmade fibers and their blends.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) development	Relation to Gender (G), Environment and Sustainability (ES), Human Values

							(SD)	needs	(HV)and d Profess ional Ethics (PE)
1	a) Need for imparting bulk to flat configured filaments, b) Texturizing: • Definition, Benefits on short staple spinning, • Types of textured yarns: stretch yarn, modified stretch yarn & bulk yarn, • Different concepts launched for texturizing along with their associated merits & demerits	03	5%	1, 2	CO1				
2	d) Concept of Draw texturizing, types of Draw Texturising e) False twist Texturising: • Basic physics involved in false twist texturizing process for the transformation of flat yarn to stretch & modified stretch yarn, • Correlation of twist theory with false twist textured yarn structure. • Structure features of false twist texturizing machine variables. • Effect of different Process variables: Twist, Tension, Temperature & Time on textured yarn quality. • Effect of different material variables on the performance of false twist textured yarn • Factors influencing performance of friction textured yarn: D/Y ratio, tension ratio, angle of	08	14%	2, 3, 4, 5	CO1 CO2 CO3	PSO1, PSO4, PSO7 PSO8	EMP, SD	N, G	G, ES

	contact, coefficient of friction, twister angle								
3	Testing of False (Friction) textured yarn: - Physical properties- denier, twist amount & direction - Textured yarn characteristics: boiling water shrinkage, residual shrinkage, crimp rigidity, crimp contraction force by CCC-method or HCC- method, Dynafil, TYT	05	8%	2, 3, 4,5	CO3				
4	Air jet texturizing: Significance in terms of properties & versatility of material. - Modern air jet texturizing machine parts and their role in improving textured yarn quality. - Types of air jet nozzles: Conversion-Diversion type Nozzle & Cylindrical nozzle, Their merits & demerits. - Effect of different machine & process variables on the performance of air jet textured yarn: type of nozzle, Stretch, Over feed, wetting etc. - Effect of different material variables on the performance of air jet textured yarn: Fineness, Dpf, filament cross-section, spin finish etc.	09	15%	2,3,4, 5	CO1 CO2 CO3	PSO1, PSO4, PSO6 PSO8			
5	Testing of Air jet Textured yarn: - Physical characteristics: fineness, - Mechanical properties. - Structural details: loop stability, loop frequency etc. Non-classical texturizing techniques: Differential shrinkage, Mechanical crimp texturizing	05	8%	1, 2, 3, 4	CO3	PSO1, PSO2, PSO3, PSO5			
6	Limitations of cotton fiber production system in completing demands of world populations. Types of man-made fibers available in world market and their	08	13%	3,4,6	CO5				

	Merits and demerits in relation to cotton fiber. Common Spinning systems: Cotton, Worsted and Woolen. Fiber characteristics required for better Spinnability or problems faced in spinning flat configured manmade cut staples on short staple or long staple spinning systems; crimp, spin finish, static charges generation, low bulk etc. Importance of blending of manmade cut staple with natural cotton fibers. Fiber properties need to be verified before formulating blend: significance on quality and cost of yarn produced					PSO1, PSO2, PSO3, PSO4			
7	Selection of blend components, Importance and methods for verifying compability of fibers used in blending, blend ratio. Importance of blend homogeneity, Different methods of measuring blend homogeneity. Different mechanics of blending used in short staple spinning. Blow room blending: importance, detailing of blow room blending process. Merits and demerits of blow room blending in meeting desired quality and cost of blended yarn. Draw frame blending: importance, detailing of Draw frame blending process. Merits and demerits of draw frame blending in meeting desired quality and cost of blended yarn	12	20%	3,4,5	CO5	PSO2, PSO3, PSO5			
8	Structural features of man-made fibre processing card at high production rate. Comparative features of blow room blending process with draw frame blending process with respect to one of the leading manufacturer's production line. Calculations associated with blend homogeneity. Possibility of spinning blend on unconventional spinning system: problems and possible remedial measure. Changes required for the Rotor machine set up to spin the blend successfully.	10	17%	4,5,6	CO5	PSO1, PSO2, PSO6, PSO7			

	Quality parameters of blended yarn and methods of their measurement								
Reference Books									
1.	Textured yarn Technology- MANTRA publications								
2.	False Twist Textured Yarns: Principles, Processing and Applications, C. Atkinson,, Woodhead Publishing Ltd, Cambridge (2012)								
3.	Yarn Texturing Technology, J.W.S. Hearle, L. Hollick, D.K. Wilson, Woodhead Publishing Ltd, Cambridge (2001)								
4.	https://youtu.be/txXBVZ6YhVA								
5.	Spinning of Manmade and Blends on Cotton system by K. R. Salhotra								
6.	W. Klein Series Vol-6								
7.	Textile Yarns by B. C. Goswami, J.G. Martindale and Scardino								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2020-21		
B.E. (Textile Engineering) Regular Programme										
Year	IV	Core / Elective / Foundation TXE 1805L: Manmade Fiber Technology II Pract /TW/viva				Credits / Hours per week		02		
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: ---				Maximum Marks / Grade		50		
Mode of Transaction		Laboratory Experiments, discussion, term work and viva								
No.	Experiment					Contact hrs.	%Weightage	BT Level	CO	PSO
1	Classification of various Texturing methods & textured yarns					2	6%	1, 2,4	CO1, CO2, CO3	PSO1, PSO4, PSO7
2	Importance of Texturing continuous filaments									
3	Write diagrammatically texturing methods with diagrams and brief explanations.									
4	Draw Winding: Introduction of the draw winding machine. Objects of drawing and concept of heating during drawing. Passage of POY multifilament yarn through the draw winding machine. Drive to different parts of the machine-like drawing godets and winding drum. Calculation of draw ratio, Over feed percentage.					6	20%			
5	Draw Texturing Machine: Introduction of the draw texturizing machine. Objects of draw texturizing and different concept used during draw texturizing process. Passage of POY multifilament yarn through the draw texturizing machine. Drive to different parts of the machine like V1, V2, V3 rollers, twisting unit, take up roller, traversing guide and oil roller. Calculation of draw ratio, Over feed percentage at stabilizing and take up zone, D/Y ratio.					6	20%			
6	Airjet Texturing Machine: Introduction of Airjet Texturizing machines. Objects of Air jet texturizing ad different concepts used during air jet texturizing process. Different types of airjet nozzles. Passage of POY multifilament yarn through airjet nozzle of airjet texturizing machine. Drive to different parts of machine like, godgets, winding drum & traversing guide. Calculation of draw ratio & Over feed percentage.					8	27%			

7	Write the parameters which can be changed and have effect on textured yarn quality					
8	Testing of drawn yarn: Denier, strength, elongation, boiling water shrinkage. Testing of draw texturized yarn: Denier, strength, elongation, boiling water shrinkage, textured yarn defects and their possible causes and remedies, effect of ambient condition, process control programme at continuous filament plant. Testing of air jet texturized yarn: Denier, strength, elongation, boiling water shrinkage, loop height, loop frequency, bulk %, textured yarn defects and their possible causes and remedies, effect of ambient condition, process control programme at continuous filament plant.	8	27%			

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year		2020-21					
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core/Elective/Foundation TXE 1806: Technical Textile	Credits / Hours per week			04(theory)				
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: --	Maximum Marks / Grade			100(theory)				
Mode of Transaction		Lectures, Tutorials								
Course Outcome (CO) TXE 1806										
CO1 Understanding the fundamentals of design of technical textile and application										
CO2 Learn the principles of manufacturing specialty fibres, nonwoven and technical textile.										
CO3 Solving typical performance requirements of technical products										
CO4 Understand the interrelationship between textile material, behavior and requirement based on application										
CO5 Learn about important designing and standardization										
CO6 Explore the different application and understand reverse engineering.										
CO7 Understand the requirement of sustainable materials, product and process										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Develo	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) develop	Relation to Gender (G), Environment and Sustainability (ES), Human

							pment (SD)	mental needs	Values (HV)and d Profess ional Ethics (PE)
1	Introduction: Technical Textiles, Importance of Technical Textiles, Growth of Technical Textiles and Nonwoven Technical Textiles, End use applications	3	5	2,3	CO1	PSO1	Emp,S D,Ent	N,G	ES
2	Classification of High performance fiber, how technicality can be introduced at different stage of material, Nano fiber production and application	6	10	2,3	CO2	PSO 1, PSO 2			
3	Technical and Hybrid yarns, Structures, Modification in Conventional method and Newly developed methods. Application in elastomar and conductive yarns.	7	12	2,3,5	CO3, CO4	PSO 2, PSO 4 PSO 5			
4	Technical fabrics for different application like spots, protection etc Different Preforms structure, production of multiaxial and 3D Fabric and its application in Textile structural composite.	8	13	2,3,4,5	CO3, CO4, CO 6	PSO 2, PSO 4 PSO 5			
5	Technical textile with sustainable concept and coating technology and sustainable medical application and its quality standered.	6	10	1,2,3	CO5, CO7	PSO 4, PSO 6, PSO 7			
6	Production of Specialty Fibers for Technical Textiles, its properties and characteristics.	6	10	1,2,3,4	CO1, CO2, CO4,	PSO1, PSO6, PSO7			
7	Classification of Nonwovens, Production Methods of Nonwovens, Production of needle-punched Nonwovens and its application in Filter fabrics for industrial use.	12	20	1,2,3,4, 5,6	CO1, CO2, CO3,	PSO1, PSO2, PSO6,			

	Application of Needle punch nonwovens like Automotive Textiles etc. and other automotive textile like airbag, belt etc				CO4, CO5	PSO7			
8	Span lace, Spun bond, Meltblown and other techniques to produce nonwoven, its characteristics and applications in filtration, medical etc.	6	10	2,3,4,5, 6	CO1, CO2, CO3, CO4, CO6	PSO1, PSO2, PSO4, PSO6, PSO7			
9	Lamination and Nano finishing techniques for technical textile	6	10	2,3,5,6	CO3, CO5, CO6, CO7	PSO1, PSO2, PSO4, PSO6, PSO7			

Reference Books:

1.	Hand Book of Industrial Textiles by Sabit Adanur
2.	Hand Book of Technical Textile by <u>A. Richard Horrocks</u> , <u>Subhash C. Anand</u>
3.	Hand Book of Technical Textile by V. K. Kothari
4.	Hand Book of Nonwoven by S Russell
5.	Series of Books on Medical Textile, Automotive Textile, Composite etc
6	Book on Specialty yarn and Fabric structures by R H Gong
7	Handbook of Properties of Textile and Technical Fibres by A. R. Bunsell
8	New Fibers by Tatsuya Hongu Glyn O. Phillips

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering	Academic Year	2019-20							
B.E. (Textile Engineering): Regular Programme										
Year	IV	Core / Elective / Foundation TXE1807 Textile Production Management and Costing	Credits / Hours per week					04(theory) 04(practical)		
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision:--	Maximum Marks / Grade					100(theory) 50(practical)		
Mode of Transaction		Lectures, Tutorials & Practical								
Course Outcome (CO) TXE 1807 and 1807L CO1 Understanding the concept and applicability of textile production planning and control. CO2 Learning about textile costing and financial management of textile mill. CO3 Imparting knowledge about textile project management and aware about government’s policies related to textile industry. CO4 Appraising about textile mill organization, human relationship management, standing orders under factory’s act. CO5 Drawing of lay outs and solving tutorials of cost calculations.										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development	Relevance to Local (L)/ National (N)/ Regional (R)/ Global (G) development	Relation to Gender (G), Environment and Sustainability (ES), Human Values

							(SD)	needs	(HV) and Professional Ethics (PE)
1	Introduction to subject and significance of subject title Important worked: Production, management and costing. Flow charts of spinning lines Conventional and modern	06	10%	1., 2, 3,	CO1	PSO2, PSO3	Emp, Ent	L, N, G	G, ES, HV, PE
2	Brief explanation of innovative technology with calculation on Blow Room production, 'Spin plan' carded yarn, combed yarn, Rotor yarn, Hosiery yarn, blended yarn, (In Ne and Tex system). Free hand layout of spinning machines	09	15%	2, 3, 4,5	CO1 CO2	PSO2, PSO3, PSO8			
3	Different machine calculation and system used in Ring yarn (carded, combed and blend), Knitted yarn and Rotor yarn production line	09	15%	2, 3, 4,5	CO1 CO2	PSO2, PSO3. PSO8			
4	Essential Characteristics of an Entrepreneur, Material handling equipment, Standard layout of spinning line.	06	10%	1., 2, 3	CO4	PSO5, PSO7			
5	Estimation of raw material and machine requirement for different varieties of fabrics (cotton, blends & manmade). Time required processing order, balancing of production and associated calculations	09	15%	2,3,4	CO1	PSO2, PSO3, PSO8			
6	Techno economic analysis of typical fabric conversion processes, cost calculation, break even analysis and solving typical practical decision-making problems using marginal costing and other financial ratio techniques (IRR, NPA, ROI etc). Inventory management.	09	15%	2,3,4	CO2	PSO2, PSO3,			
7	Factors affecting site selection, new project	06	10%	2, 3,	CO3				

	management, Government approvals required, Government policies/schemes related to Textile industry.			4,5					
8	Organization structure of textile mill, labour relations, training, motivation, disciplinary action as per standing orders	06	10%	1,2,3	CO4	PSO5, PSO7			

Reference Books

1.	Textile Project Management-Ormerod Textile Institute
2.	Weaving-Machines, Mechanism, Management, Talukdar, Sriramulu, Ajgaonkar. Mahajan Publishers Pvt. Ltd.
3.	IGNOU-study material.
4.	Projects-planning, analysis, selection, implementation and review. Prasanna Chandra, Tata McGraw-Hill publication.
5.	Cost Accounting, Charles T. Horngren, George Foster. Prentice-Hall of India publication.
6.	Brochures of Spinning machines from RIETER, LMW, TRUETZSCHLER etc. (Includes machine data for production, layout etc.
7.	Machine Manuals and standard Layout

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2019-20		
B.E. (Textile Engineering) Regular Programme										
Year	IV	Core / Elective / Foundation TXE1807L: Textile Production Management and Costing				Credits / Hours per week		04		
Semester	II	Year of Introduction: 2005 Year of Syllabus Revision: ---				Maximum Marks / Grade		50		
Mode of Transaction		Drawing, term work & tutorial solving.								
No.	Experiment (Drawing Sheet)					Contact hrs	%weightage	BT Level	CO	PSO
1	Lay out drawing of weaving unit with modern machineries (single product)					06	10%	4,5,6	CO5	PSO3
2	Lay out drawing of weaving unit with modern machineries (multi products)					06	10%	4,5,6	CO5	PSO3
3	Lay out drawing of Knitting and garment Unit.					06	10%	4,5,6	CO5	PSO3
4	Production time estimation bar chart.					06	10%	4,5	CO5	PSO3
5	Textile product cost calculations & preparation of project report for a textile product.					06	10%	4,5,6	CO5	PSO3, PSO5
6	Spinning Project-I, Carded yarn, Lay out drawing with inking					10	17%	4,5,6	CO5	PSO3
7	Spinning Project-II, Combed yarn, Lay out drawing with inking					08	13%	4,5,6	CO5	PSO3
8	Spinning Project-III, Modern Machinery, Lay out drawing with inking					12	20%	4,5,6	CO5	PSO3

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering		Academic Year			2019-20				
B.E. (Textile Engineering): Regular Programme											
Year	IV	Core / Elective / Foundation Textile Chemical Processing Machines TXC 1801		Credits / Hours per week			04				
Semester	II	Year of Introduction: 1953 Year of Syllabus Revision: NA		Maximum Marks / Grade			100				
Mode of Transaction		Lectures									
Course Outcome (CO) TXC 1801 CO 1 Learning classification of pre-treatment machinery. CO 2 Learning machinery used in pre-treatment processing of various textile fibres. CO 3 Understanding working principle of different pre-treatment machinery. CO 4 Learning classification of dyeing machinery. CO 5 Learning material of construction of dyeing machinery. CO 6 Understanding working principle of different dyeing machine. CO 7 Learning different ingredients used in printing. CO 8 Learning styles and methods of printing. CO 9 Understanding working principle of printing machines. CO10 Understanding principle of machine used for development of printed colour. CO11 Leaning importance and classification of finishing machinery. CO12 Understanding working principle of various finishing machinery. CO13 Learning development in wet processing machineries.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Pre-treatment Machineries: • Introduction & Classification of Pre-treatment Machineries. • Brief Introduction of various Pre-treatments stages and			15	25	1,2,3	CO1, CO2, CO3, CO13	PSO1,2,3 ,4,5,6,7,8	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	their objects • Ancillary equipment employed in textile wet processing • Shearing and Cropping. → Principle of Shearing operation with diagram. → Line diagram of Shearing and Cropping Machine. → Function of various parts of Shearing Machine. → Precautions and parameters of Shearing and Cropping. → Various types of Shearing bed. • Singeing Machine → Object and types of Singeing → Line diagram of 2-burner gas singeing machine → Working, precautions, parameters, faults of gas singeing process • Desizing and Washing Machine → Object and types of Desizing → Working principle and line diagram of tight and slack rope washing machine • Scouring and Bleaching Machine → Object and classification of Scouring and Bleaching → Working principle and line diagram of Pressure Kier, Open Kier, J-box System and Vaporloc System • Mercerization Machines: → Objects and structural modifications of cotton on mercerization. → Working principle of different mercerizing machines.								
2.	Dyeing Machineries: • Introduction & Classification of Dyeing Machineries. • Classification of textile fibres and dyes for dyeing. • Dyeing operation. • Essential & desirable requirements for the construction of a dyeing machine. • Forces/Bonds present in the dye-fibre systems. • Working principle and diagram of Loose fibre dyeing machine, Package dyeing machine, Jigger dyeing machine, Winch dyeing machine, Beam dyeing machine, Jet dyeing machine, etc. • Some developments in Beam dyeing machine.	15	25	1,2,3,4,5	CO4, CO5, CO6, CO13	PSO1,2,3 ,4,5,6,7,8			

	• Some developments and faults in Jet dyeing machine. • Dry dyeing/Supercritical fluid dyeing of polyester. • Problems and remedies in texturised polyester yarn dyeing. • Difference between dyes and pigments.								
3.	Printing Machinery: • Introduction & Classification of Printing Machineries. • Steps in textile printing and various ingredients of the printing paste. • Difference between styles and methods of printing. • Essential requirements of a thickener to be used for textile printing. • Methods of fixation of prints. • Roller printing machine. • Modern flatbed printing machine. • Block printing, screen printing and transfer printing. • Digital textile printing.	15	25	1,2,3,4,5	CO7, CO8, CO9, CO10 CO13	PSO1,2,3 ,4,5,6,7,8			
4.	Finishing Machineries: • Definition, Importance & Classification of Finishing Machineries. • Drying → Machines for drying by mechanical removal of water: Hydroextractor → Machines for drying by heat treatment: Cylinder Drying & Stenter • Machines for Chemical Finishing → Resin Finishing with Padding Mangle and Stenter • Damping and Conditioning Machines → Brush Damping Machine. → Spray Damping Machine • Machines for Mechanical Finishing of Textiles → Starching → Various back filling (Tommy Dodd & Betty Dodd) Machines • Ordinary starching: Padding mangle → Calendars:	15	25	1,2,3,4,5	CO11 CO12 CO13	PSO1,2,3 ,4,5,6,7,8			

	→ Working principle with line diagram of 7-Bowl Universal Calendar, Swissing Calendar, Chasing Calendar. • Machinery for Anti-Shrink Finish on Cotton → Object and principle of Durable Mechanical Anti-Shrink Finish. → Line diagram and working principle of Sanforising. • Working principle of others finishing equipment.								
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Reference Books

1.	Handbook of Textile processing machinery by R. S. Bhagwat
2.	Dyeing & Chemical Technology of Textile Fibres by E. R. Trottman
3.	Technology of Bleaching by V. A. Shenai
4.	Technology of Printing by V. A. Shenai
5.	Technology of Finishing by V. A. Shenai

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering			Academic Year		2019-20		
	B.E. (Textile Engineering): Regular Programme							
Year	IV	Core / Elective / Foundation TXC1801L: Textile Chemical Processing Machines - Practical		Credits / Hours per week		02		
Semester	II	Year of Introduction: 1956 Year of Syllabus Revision: NA		Maximum Marks / Grade		50		
Mode of Transaction		Term work, Practical and viva						
No.	Experiment			Contact Hours	Weightage (%)	BT Level	CO	PSO
1	Study the working principle of different wet processing machines and draw line diagram of machine showing passage of fabric and important parts of the machine.			30	100	1,2,3	2,3,5,6,9,10,12	1,2,3,4,5,6,7,8