

Program Name

**Bachelor of Engineering - CRS
(Textile Processing)**

**Program Code
619112**



Department of Textile Chemistry

**Faculty of Technology & Engineering
The Maharaja Sayajirao University of Baroda
Vadodara**

Programme Name: B.E. (Textile Processing) - CRS

Program Specific Outcome (PSO)

- PSO1** Apply knowledge of textile processing to identifying and providing appropriate solutions to problems of textile industry
- PSO2** Understand the recent development, current wet processing trends and technological changes in the area of textiles processing.
- PSO3** Apply creative, managerial and technical skills for careers and to prepare individual with knowledge for entrepreneurship.
- PSO4** Apply knowledge of mathematics, engineering and fundamentals of management in textile processing engineering and solution to quality improvement in textile fields.

Bloom's Taxonomy Levels:

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

Teaching & Examination Scheme BE – CRS – Textile Processing

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination				Credit
		L	Tu	P	Total	Theory		Practical	Total	
						Internal Assessment (IA)	University Assessment (UA)	T.W/Viva		
First Semester of B.E (CRS) - I (TP) : Semester - I										
AMT1112CS	Applied Mathematics – I	3	1	-	4	-	100	-	100	4
APH1106CS	Applied Physics – I	3	1	-	4	-	100	-	100	4
APH1106LCS	Applied Physics – I (TW & Practical/Viva)	-	-	3	3	-	-	50	50	1.5
CVL1115CS	Fundamental of Civil & Environmental Engineering	3	1	-	4	-	100	-	100	4
CVL1115LCS	Fundamental of Civil & Environmental Engineering (TW/Viva)	-	-	2	2	-	-	50	50	1
MEC1113CS	Engineering Drawing – I	2	-	-	2	-	100	-	100	2
MEC1113LCS	Engineering Drawing – I (TW & Practical/Viva)	-	-	4	4	-	-	50	50	2
MEC1122LCS	Workshop Practices	-	-	4	4	-	-	100	100	2
MME1109CS	Material Science	3	1	-	4	-	100	-	100	4
FTE1101CS	Universal Human Value - I	2	-	-	2	-	-	-	-	0
Total of First Semester of B.E. - I (TP) : Semester - I		16	4	13	33	0	500	250	750	24.5
Second Semester of B.E (CRS) - I (TP) : Semester - II										
ACH1204CS	Chemistry – I	3	1	-	4	-	100	-	100	4
ACH1204LCS	Chemistry – I (TW & Practical/Viva)	-	-	2	2	-	-	50	50	1
AMT1216CS	Applied Mathematics – II	3	1	-	4	-	100	-	100	4
APH1210CS	Applied Physics – II	3	1	-	4	-	100	-	100	4
APH1210LCS	Applied Physics – II (TW/Viva)	-	-	3	3	-	-	50	50	1.5
APM1210CS	Applied Mechanics	3	1	-	4	-	100	-	100	4
APM1210LCS	Applied Mechanics (TW & Practical/Viva)	-	-	3	3	-	-	50	50	1.5
MEC1218CS	Thermodynamics	3	1	-	4	-	100	-	100	4
Total of Second Semester of B.E. - I (TP) : Semester - II		15	5	8	28		500	150	650	24
Total of B.E - I (TP)		31	9	21	61		1000	400	1400	48.5

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination Theory Marks: 30% IA & 70% UA				Credit
		L	Tu	P	Total	Theory		Practical	Total	
						Internal Assessment (IA)	University Assessment (UA)	T.W/Viva		
First Semester of B.E (CRS) - II (TP) : Semester - III										
BEC1319CS	Elements of Economics	2	-	-	2	15	35	-	50	2
ACH1309CS	Chemistry – II	4	-	-	4	30	70	-	100	4
CHL1306CS	Chemical Industry & Process Calculations	4	-	-	4	30	70	-	100	4
ELE1330CS	Electrical Engineering	4	-	-	4	30	70	-	100	4
ENG1320CS	Communication Skills	2	-	-	2	15	35	-	50	2
ENG1320LCS	Communication Skills Lab	-	-	1	1	-	-	50	50	0.5
TXC1311CS	Chemistry of Fibers	4	-	-	4	30	70	-	100	4
TXC1310CS	Technology of Bleaching - I	4	-	-	4	30	70	-	100	4
TXC1312LCS	Fibre Identification & Testing (TW & Practical/Viva)	-	-	4	4	-	-	50	50	2
Total of First Semester of B.E. - II (TP) : Semester - III		24	0	5	29	180	420	100	700	26.5
Second Semester of B.E (CRS) - II (TP) : Semester - IV										
ACH1406CS	Chemistry - III	4	-	-	4	30	70	-	100	4
MEC1414CS	Generation & Transmission of Mechanical Power	4	-	-	4	30	70	-	100	4
MEC1414LCS	Generation and Transmission of Mechanical Power (TW & Practical/Viva)	-	-	2	2	-	-	50	50	1
TXE1415CS	Textile Manufacture	4	-	-	4	30	70	-	100	4
TXC1405CS	Technology of Bleaching - II	4	-	-	4	30	70	-	100	4
TXC1406CS	Technology of Dyeing – I	4	-	-	4	30	70	-	100	4
TXC1407LCS	Technical Analysis (TW & Practical/Viva)	-	-	4	4	-	-	100	100	2
TXC1408LCS	Dye House - I (TW & Practical/Viva)	-	-	4	4	-	-	100	100	2
FTE1401CS	Universal Human Value - II	2	1	-	3	30	70	-	100	3
Total of Second Semester of B.E. - II (TP) : Semester - IV		22	1	10	33	180	420	250	850	28
Total of B.E - II (TP)		46	1	15	62	360	840	350	1550	54.5

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination Theory Marks : 30% IA & 70% UA				Credit
		L	Tu	P	Total	Theory		Practical	Total	
						Internal Assessment (IA)	University Assessment (UA)	T.W/Viva		
First Semester of B.E (CRS) - III (TP) : Semester - V										
TXC1505CS	Chemistry and Application of Textile Auxiliaries	4	-	-	4	30	70	-	100	4
MEC1507LCS	Engineering Drawing – II	-	-	6	6	-	-	50	50	3
MME1507CS	Material Technology	2	-	-	2	15	35	-	50	2
CHL1506CS	Chemical Engineering Operations	4	-	-	4	30	70	-	100	4
CHL1506LCS	Chemical Engineering Operations (TW & Practical/Viva)	-	-	2	2	-	-	50	50	1
TXC1504CS	Technology of Printing – I	4	-	-	4	30	70	-	100	4
TXC1503CS	Technology of Dyeing – II	4	-	-	4	30	70	-	100	4
TXC1502CS	Wet Processing Machinery (Bleaching & Dyeing)	4	-	-	4	30	70	-	100	4
TXC1506LCS	Dye House - II (T.W & Practical/Viva)	-	-	4	4	-	-	100	100	2
Total of First Semester of B.E. - III (TP) : Semester - V		22	0	12	34	165	385	200	750	28
Second Semester of B.E (CRS) - III (TP) : Semester - VI										
TXC1601CS	Chemistry of Intermediates and Dyes	4	-	-	4	30	70	-	100	4
TXC1603CS	Man Made Fibre Production & Technology	4	-	-	4	30	70	-	100	4
TXC1602CS	Fiber structure & Theory of Dyeing	3	1	-	4	30	70	-	100	4
CHL1611CS	Instrumentation & Process Control Chemical Reaction Engineering	3	1	-	4	30	70	-	100	4
	Institute Elective Subject	3	-	-	3	30	70	-	100	3
TXC1604LCS	Shade Matching (TW & Practical/Viva)	-	-	4	4	-	-	100	100	2
TXC1605LCS	Tinctorial Chemistry (TW & Practical/Viva)	-	-	4	4	-	-	100	100	2
Total of Second Semester of B.E. - III (TP) : Semester - VI		17	2	8	27	150	350	200	700	23
Total of B.E - III (TP)		39	2	20	61	315	735	400	1450	51

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination Theory Marks : 30% IA & 70% UA				Credit
		L	Tu	P	Total	Theory		Practical	Total	
						Internal Assessment (IA)	University Assessment (UA)	T.W/Viva		
First Semester of B.E (CRS) - IV (TP) : Semester - VII										
BEC1701CS	Chemical Process Economics	2	-	-	2	15	35	-	50	2
CBM1701CS	Industrial Management	2	-	-	2	15	35	-	50	2
TXC1701CS	Technology of Printing – II	4	-	-	4	30	70	-	100	4
TXC1702CS	Analysis & Testing of Textiles	3	1	-	4	30	70	-	100	4
TXC1711CS	Technology of Finishing	4	-	-	4	30	70	-	100	4
TXC1712CS	Wet Processing Machinery (Printing & Finishing)	4	-	-	4	30	70	-	100	4
TXC1713LCS	Dye House - III (T.W & Practical/Viva)	-	-	4	4	-	-	100	100	2
TXC1705LCS	Instrumental Method of Analysis (TW & Practical/Viva)	-	-	4	4	-	-	100	100	2
Total of First Semester of B.E. - IV (TP) : Semester - VII		19	1	8	28	150	350	200	700	24
Second Semester of B.E (CRS) - IV (TP) : Semester - VIII										
TXC1801LCS	Project Work (Presentation & Viva)	-	-	10	10	-	-	200	200	5
TXC1802LCS	Internship									
Total of Second Semester of B.E. - IV (TP) : Semester - VIII		0	0	10	10	0	0	200	200	5
Total of B.E - IV (TP)		19	1	18	38	150	350	400	900	29
Total of B.E - TP		135	13	74	222	825	2925	1550	5300	183

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme												
Year	I	Core / Elective / Foundation AMT1112CS: APPLIED MATHEMATICS-I				Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction: 2016 Year of Syllabus Revision:				Maximum Marks / Grade		100				
Mode of Transaction		Lecture										
Course Outcome (CO) AMT1112CS												
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	1	4	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	2	4	Emp, SD	G	PE
3	Complex Numbers: Complex numbers & their geometrical representation, Complex numbers in polar form, Demoivre's theorem and its applications, Exponential, logarithmic, trigonometric & hyperbolic functions.	8	16.67	1,2,3,4	3	4	Emp, SD	G	PE
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 higherdegree.	8	16.67	1,2,3,5	4,5,9	4	Emp, SD	G	PE
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	6,7,8,9	4	Emp, SD	G	PE
6	Bessel and Legendre's equations, Properties of Bessel functions. Introduction to Legendre polynomials	6	12.5	1,4,5	10	4	Emp, SD	G	PE

Reference Books

1.	Erwin Kreyszing	Advanced Engineering Mathematics, (6th edition) Johnwiley&Sons.,1988
2.	Donald Greenspan	Introduction to Partial Differential Equations, Mc. Graw – Hill Inc., 2012
3.	C. R. Wylie	Advanced Engineering Mathematics,Mc. Graw – Hill Inc., 1986
4.	G. B. Thomas, R. L. Finney	Calculus and Analytic Geometry, Addison-Wesley Publishing Co., 2010
5.	J. W. Brown, R.V. Churchill	Complex variables and Applications, McGraw-Hill Higher Education, 2013.
6.	P. V. O'Neil	Advanced Engineering Mathematics, Cengage Learning (India edition), 1991.
7.	B. V. Ramana	Higher Engineering Mathematics, Tata Mc. Graw – Hill. (Core Engineering Series), 2006.
8.	David V. Widder:	Advanced Calculus, Prentice Hall of India Pvt. Ltd., 1986.

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B.E. (Textile Processing): Regular Programme										
Year	I	Core / Elective / Foundation APH1106CS: Applied Physics - I				Credits / Hours per week		04 / 04		
Semester	I	Year of Introduction:2016 Year of Syllabus Revision:2022				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) APH1106CS										
CO 1 Understand the basics of laws governing physical world.										
CO 2 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) developmenta l 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.		05	10	1,2	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
2	Diffraction: - Introduction, Two kinds of diffraction, Difference between interference and diffraction. - Fraunhofer diffraction at a circular aperture, Plane		05	10	1,2	1,2	4	Emp, Ent, SD	N, R, G	ES, PE

	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.								
3	Resolving Power of Optical Instruments: • Meaning of resolving power, Rayleighs criterion of resolution. • Resolving power of grating, prism, telescope and microscope.	05	06	1,2	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
4	Polarization: • 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.	04	10	1,2	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
5	LASER: • Lasers, spontaneous and stimulated emission, population inversion, pumping and active system. • The Ruby laser. Gas laser. Semiconductor laser. • CO₂ laser, design of CO₂ laser, mechanism of CO₂ laser. Uses of lasers.	05	10	1,2,3,4	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
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	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
7	Ultrasonics: • Ultrasonic waves, production of ultrasonic	05	10	2,3,4,5	1,2	4	Emp, Ent, SD	N, R, G	ES, PE

	waves. • Detection of ultrasonic, properties of ultrasonic, wavelength of ultrasonic waves. • Applications of ultrasonic waves.								
8	Maxwell's equations and electromagnetic waves: - Vector field, Irrotational 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.	06	10	2,3,4,5	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
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 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.	08	10	2,3,4,5	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
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.	03	10	2,3,4,5	1,2	4	Emp, Ent, SD	N, R, G	ES, PE

	Factors for the selection of a thermometer for a particular use, temperature range of 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	2,3,4,5	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
Reference Books									
1.	Engineering Physics: by R. K. Gaur and S. L. Gupta, Dhanpat Rai Publications (P) Ltd. 8th Edition.								
2.	Fundamentals of Physics: by D. Halliday, R Resnick and J. Walker, Asian Books Pvt. Ltd. 6th 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								

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B.E. (Textile Processing): Regular Programme												
Year	I	Core / Elective / Foundation APH1106LCS: Applied Physics – I Practical					Credits / Hours per week		1.5 / 03			
Semester	I	Year of Introduction:2016 Year of Syllabus Revision:2022					Maximum Marks / Grade		50			
Mode of Transaction		Term work, Practical & Viva										
Course Outcome (CO) APH1106LCS CO 1 Understanding the optics CO 2 Understanding the physical properties through experiments CO 3 Methods to determine physical properties CO 4 Understanding of advances in instrumentation CO 5 Understanding the spectroscopy												
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) developmenta l needs	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	12.5	1,2	1,2	4	Emp, Ent, SD	N, R, G	ES, 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	12.5	2	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
3.	Frequency of AC Mains: To determine the frequency of A. C. Mains.				06	12.5	2,3	3,4	4	Emp, Ent, SD	N, R, G	ES, PE
4.	Ultrasonic Waves: To determine the frequency				06	12.5	3,4	3,4	4	Emp, Ent, SD	N, R, G	ES, PE

	of Ultrasonic waves and find out the velocity of Ultrasonic wave in air medium by using the interference theory of longitudinal wave.								
5.	Resolving Power of Telescope:- Comparative study between resolving power of Travelling Microscope and Telescope.	06	12.5	2,3	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
6.	Solar Cell: Study of various parameters of solar cell	03	6.25	2,3	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
7.	Dispersion of Light: Calculate the refractive index of different wavelength associated with white light using the prism.	03	6.25	3,4	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
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.	03	6.25	3,4	5	4	Emp, Ent, SD	N, R, G	ES, PE
9.	Polarimeter: To determine the specific rotation of the given optically active substance.	03	6.25	2,3,4	1,2	4	Emp, Ent, SD	N, R, G	ES, PE
10.	Rectifier Circuits: To study the process of rectification through half wave, full wave and bridge rectifiers.	06	12.5	2,3,4	3,4	4	Emp, Ent, SD	N, R, G	ES, PE

Reference Books

1.	Engineering Physics: by R. K. Gaur and S. L. Gupta, Dhanpat Rai Publications (P) Ltd. 8th Edition.
2.	Fundamentals of Physics: by D. Halliday, R Resnick and J. Walker, Asian Books Pvt. Ltd. 6th 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

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B.E. (Textile Processing): Regular Programme													
Year	I	Core / Elective / Foundation CVL1115CS: Fundamentals of Civil and Environmental Engineering					Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction: 2016 Year of Syllabus Revision: 2019; 2022					Maximum Marks / Grade		100				
Mode of Transaction		Lectures											
Course Outcome (CO) CVL1115CS													
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	27	2,3	1	4	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					12	23	2,3	2	4	Emp, Ent, SD	L, N, R, G	ES, PE

	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.								
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	27	2, 3, 4	3	4	Emp, Ent, SD	L, N, R, G	ES, PE
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	23	1, 2, 3	4	4	Emp, Ent, SD	L, N, R, G	ES, PE

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 Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme										
Year	I	Core / Elective / Foundation MEC1113CS: Engineering Drawing I				Credits / Hours per week		02 / 02		
Semester	I	Year of Introduction: 2016 Year of Syllabus Revision: 2022				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) MEC1113CS 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 Create freehand sketches of basic machine components										
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) developmenta l 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, construction of cycloid, epicycloid and hypocycloid, construction of spiral, construction of normal and tangent to all curves.		08	12	1,2,6	1,3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
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	24	1,2,6	1,5	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
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		08	14	3,4,6	1,4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	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								
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	14	1,2,4	1,4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Orthographic projection Fundamental of projection along with classification, Projections from the pictorial view of the object on the principal planes for view from front, top and sides using first angle projection method and third angle projection method, full sectional view	08	18	2,3,5	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6	Isometric Projections and Isometric View or Drawing: Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing of objects	08	18	2,4,5	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

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 Chemistry					Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme										
Year	I	Core / Elective / Foundation MEC1113LCS: Engineering Drawing I - Practical					Credits / Hours per week		04 / 02	
Semester	I	Year of Introduction: 2016 Year of Syllabus Revision: 2022					Maximum Marks / Grade		50	
Mode of Transaction		Term work, Practical & Viva								
Course Outcome (CO) MEC1113LCS										
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 Create freehand sketches of basic machine components										
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.	Lines, lettering and dimensioning	08	12.5	1,2,	1	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
2.	Engineering Curves	08	12.5	1,2,6	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
3.	Orthographic projection	12	18.75	2,3,5	2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
4.	Isometric projection	12	18.75	2,4,5	2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
5.	Projection of Point and Lines	08	12.5	3,4,6	4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
6.	Projection of planes	08	12.5	1,2,4	4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
7.	Free hand sketch	08	12.5	1,2,6	5	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
Reference Books										
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 Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation MME1109CS: Material Science				Credits / Hours per week		04 / 04			
Semester	I	Year of Introduction:2016 Year of Syllabus Revision: 2022				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) MME1109CS											
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 corrosions 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 (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Introduction of Engineering Materials Metalica Materials, Ceramic Material, Polymers, Composite and Nano-materials.			04	7.7	1, 2, 3, 4	1	4	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 planes, notations, Inter-planar spacings and angles, co-ordination number, packing factors stacking sequence in BCC, FCC and HCP.			08	15.4	1, 2, 3, 5	2	4	SD	G	ES
3	Mechanical Properties of Materials Concepts of stress and strain, Stress-Strain diagrams; Properties obtained from the tensile test; Elastic			08	15.4	1, 2, 3	3	4	SD	G	ES

	deformation, Plastic deformation. Impact Testing & toughness behavior. Hardness of materials.								
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	15.4	1, 2, 3	4	4	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.	06	11.5	1, 2	5	4	SD	G	ES
6	Corrosion Types of corrosion – Dry and Wet corrosion, Electro chemical and oxidation (Chemical) corrosion. Corrosion prevention – anodic and cathodic protection & coatings	06	11.5	1, 2, 3	6	4	SD	G	ES
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.	06	11.5	1, 2	7	4	SD	G	ES
8	Advanced Materials Nano Materials & its application, Metallic glasses, Super conducting material, optic fibers, smart materials.	06	11.5	1, 2	8	4	SD	G	ES

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 Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation MEC1122LCS: Workshop Practice				Credits / Hours per week		02 / 04			
Semester	I	Year of Introduction:2016 Year of Syllabus Revision: 2022				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) MEC1122LCS											
CO 1 Understand carpentry shop work, different tools, use of tools and hand on practices of subject.											
CO 2 Understand Smithy workshop related tools and learning forging operation in workshop											
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.	Carpentry: Name, use and setting of hand tools, Construction of halved single mortise and tenon joints, dovetail joint, bridle joint, oblique mortise and tenon joint and rafter joint.			20	50	1,2,3,4,5,6	1	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Smithy: Tools used for preparing simple jobs in hand forging.			20	50	1,2,3,4,5,6	2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
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 Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation ACH1204CS: Chemistry – I				Credits / Hours per week		04 / 04			
Semester	II	Year of Introduction:2016 Year of Syllabus Revision: 2021; 2022				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) ACH1204CS											
CO 1 To study radiation chemistry and kinetics of reactions.											
CO 2 To learn about phase diagrams and X-ray crystallography.											
CO 3 To study physical properties of liquids and chemistry/extraction/corrosion in metals.											
CO 4 To study about quality of industrial water and its effect on reactors/boilers together with adhesives/abrasives/ refractories materials.											
CO 5 To learn about fuel and fuel analysis. Theories of gases and buffer solutions together with application of law of mass action.											
CO 6 To understand about detection of organic compounds and valency bond concept related to them											
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) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	(a) Positive ray analysis, mass spectrograph, separation of isotopes, artificial disintegration, induced radioactivity, application of radio isotopes, atomic fission, Atomic fusion, Electrical conductivity of a solution, transport number of an ion strong electrolytes. (b) Theory of acids and bases: Chemical Kinetics – first and second order reactions.			06	12	1,2,3,4	1	4	Emp	G	ES
2.	(a) Phase rule and its application to water, sulphur and binary solid-solid systems. (b) Crystal, structure, application of X-rays to crystal structure.			06	12	1,2	2	4	Emp	G	ES
3.	(a) Properties of molecule in relation to structure: surface tension viscosity, refractive Index, optical rotation.			06	12	1,2,3	3	4	Emp	G	ES

	(b) Chemistry of beryllium, radium, thorium, uranium, platinum, metals transuranic elements, Rare gases.								
4.	(a) Metallurgy of silver, lead, nickel, iron, steels and alloy etc. Thermite process, homogeneous equilibria. (b) Corrosion, passivity; Paints, pigments, varnishes; Lime Mortar cement glazes, ceramics.	06	12	2,3,4	3	4	Emp	G	ES
5.	(a) Water for industrial and boiler feed purposes, demineralization of water. (b) Adhesives, abrasives, refractories, Lubricants, Silicon, Silicates, Industrial explosives.	06	12	1,2,3	4	4	Emp	G	ES
6.	(a) Fuels: proximate and ultimate analysis of fuels, rocket fuel. (b) Kinetic theory of gases, Van der Waals's equation, critical phenomenon, law of corresponding States, liquefaction of gases energy changes, Joule-Thomson law.	06	12	1,2,3	5	4	Emp	G	ES
7.	(a) Buffer solutions, theory of indicators. (b) Applications of the law of mass action to homogeneous equilibrium. Ostwald's dilution law.	04	10	2,3	5	4	Emp	G	ES
8.	(a) Organic compounds: detection of elements, principles of organic chemistry as illustrated by the study of representative compounds (halides, polyhalogen compounds, amine etc.) (b) Building up principles, VB concept of covalent bond, sigma and pi bonds; Methods of determination of molecular weight	08	18	2,3	6	4	Emp	G	ES

Reference Books

1.	Engineering Chemistry: Jain and Jain, Dhanpat Rai 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.

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B.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation ACH1204LCS: Chemistry – I Practical				Credits / Hours per week		01 / 02			
Semester	II	Year of Introduction:2016 Year of Syllabus Revision: 2021; 2022				Maximum Marks / Grade		50			
Mode of Transaction		Term work, Practical and viva									
Course Outcome (CO) ACH1204LCS											
CO 1 To determine the strength and normality of an unknown analyte by performing a redox titration											
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 al needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	To determine the strengths and normalities of KMnO ₄ and FeSO ₄ .7H ₂ O solutions using a standard solution of Oxalic acid.			03	13	1,2,4	1	4	Emp	G	ES
2.	To determine the strengths and normalities of KMnO ₄ and FeSO ₄ (NH ₄) ₂ SO ₄ .6H ₂ O solutions using a standard solution of Oxalic acid.			03	13	1,2,4	1	4	Emp	G	ES
3.	To determine the strengths and normalities of KMnO ₄ and H ₂ O ₂ solutions using a standard solution of Oxalic acid.			03	12	1,2,4	1	4	Emp	G	ES
4.	To determine the strengths and normalities of KMnO ₄ and NaNO ₂ solutions using a standard solution of Oxalic acid.			03	13	1,2,4	1	4	Emp	G	ES
5.	To determine the strength and normality of I ₂ solution against a standard solution of Na ₂ S ₂ O ₃ .			03	12	1,2,4	1	4	Emp	G	ES
6.	To determine the strengths and normalities of I ₂ and CuSO ₄ .5H ₂ O solutions using a standard solution of Na ₂ S ₂ O ₃ .			03	13	1,2,4	1	4	Emp	G	ES
7.	To determine the strengths and normalities of I ₂ and Na ₃ AsO ₃ solutions using a standard solution of Na ₂ S ₂ O ₃ .			03	12	1,2,4	1	4	Emp	G	ES

8.	To determine the strength and normality of CaOCl_2 solution against a standard solution of $\text{Na}_2\text{S}_2\text{O}_3$.	03	12	1,2,4	1	4	Emp	G	ES
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.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme													
Year	I	Core / Elective / Foundation AMT1216CS: Applied Mathematics - II					Credits / Hours per week		04 / 04				
Semester	II	Year of Introduction:2016 Year of Syllabus Revision: 2022					Maximum Marks / Grade		100				
Mode of Transaction		Lectures											
Course Outcome (CO) AMT1216CS													
CO1 Understand and apply the concept of multivariable functions, its differentiability concept and applications of partial derivatives in various engineering problems.													
CO2 Able to focus on understanding and applications of gradient, curl and divergence in engineering problems.													
CO3 Apply the concept of surfaces and level curves in solid geometry which helps in solving various application of engineering.													
CO4 Understand and implement the methods of curve tracing in two – dimensional space.													
CO5 Implement various concepts of matrices in engineering problems and able to solve system of linear equations using matrices.													
CO6 Apply the idea of Laplace transforms to solve Boundary Value Problems which occur in almost every problem of engineering.													
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 –Definition, limit, continuity and partial derivatives, Chain rule,Euler’s theorem, implicit functions differentials Applications of partial derivatives (Tangent plane and normal line, approximation, maxima and minima, Lagrange’s multiplier’s method), Jacobians and transformations					12	24	1,2,3	1	4	Emp, Ent	N, G	PE
2	Vector Calculus: Reorientation, scalar and vector fields gradient of a scalar function, Directional					05	11	1,2,3	2	4	Emp, Ent	N, G	PE

	derivative divergence and curl of a vector field and their applications								
3	Analytical Geometry: Reorientation, curvilinear coordinates(polar, cylindrical and spherical), cone, cylinder Conicoids, Surfaces and solids of revolutions	10	20	2, 3, 4,5	3	4	Emp, Ent	N, G	PE
4	Tangent planes and normal lines to above surfaces by calculus method, Tracing of curves: Cardioid, cycloid, lemniscates, spiral, four leaved rose	07	15	2, 3, 4,5	4	4	Emp, Ent	N, G	PE
5	Rank of matrix Solution of homogeneous and non-homogeneous systems of linear equations, Eigen values and eigen vectors of a matrix Cayley-Hamilton theorem	07	15	1, 2, 3,5	5	4	Emp, Ent	N, G	PE
6	Laplace Transforms Laplace transforms of elementary functions, inverse Laplace transforms, linearity property, first and second shifting theorem. Laplace transforms of derivatives and integrals, applications of Laplace transforming solving ordinary differential equations.	07	15	1,2,3,4,5	6	4	Emp, Ent	N, G	PE

Reference Books

1.	Erwin Kreyszig: Advanced Engineering Mathematics, (6 th edition) John-Wiley & Sons.
2.	Srivastava, Dhavan: Text Book of Engineering Mathematics, Dhanpat Rai & Sons.
3.	Shantinakaran: Differential Calculus, S. Chand & Co. New Delhi.
4.	Willfred Kaplan: Advanced Calculus, Addison Weseley Publ. Company, Inc.
5.	C. R. Wylie: Advanced Engineering Mathematics, Mc. Graw-Hill, Inc.

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	I	Core / Elective / Foundation APH1210CS: Applied Physics - II				Credits / Hours per week		04 / 04		
Semester	II	Year of Introduction:2016 Year of Syllabus Revision:2021; 2022				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) APH1210CS										
CO 1 Understand the basics of laws governing physical world										
CO 2 Application of physical laws in various engineering applications										
Unit No.	Topic/Unit		Contact Hours	Weightage (%)	BT Level	C O	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.	Schrodinger equation, step potential function, potential barrier and penetration, harmonic oscillator, allowed and forbidden energy bands, Kronig Penney model, the energy band and bond model, drift current, electron effective mass, concept of a hole, k-space diagrams of Si and GaAs.		15	25	1,2,4	1,2	4	Emp, Ent	N, R, G	ES, PE
2.	Statistical mechanics: Statistical distributions (three different kinds), Maxwell Boltzmann distribution, molecular energies in an ideal gas, Bose Einstein distribution, Rayleigh Jeans formula, Planck's radiation law, specific heats of solids, Fermi Dirac distribution, free electrons in metals, the density of states, specific heat of electrons, thermionic emission, the Schottky effect.							Emp, Ent	N, R, G	ES, PE
3.	Conductivity of metals: Ohm's law and relaxation time of electrons, relaxation and collision time, mean free path, electron scattering and resistivity of metals, superconductivity and applications.		15	25	1,2,4	1,2	4	Emp, Ent	N, R, G	ES, PE
4.	Mechanism of conduction in semiconductors, the chemical bond in Si and Ge and its consequences, the energy gap, the conductivity of intrinsic							Emp, Ent	N, R, G	ES, PE

	semiconductors, carrier densities in n and p type semiconductors								
5.	Minority and majority carrier densities in semiconductors, drift current and diffusion current, continuity equation for minority carriers.						Emp, Ent	N, R, G	ES, PE
6.	Fibre optics, principles of fibre, structure and classification of optical fibres, The numerical aperture, fibre optics communication system, Advantages of optical fibre communication, applications and use.						Emp, Ent	N, R, G	ES, PE
7.	Principles of electrostatics and magnetostatics: Polarization, the field of a polarized object, the electric displacement, linear dielectrics, the vector potential, the field of a magnetized object, the auxiliary field						Emp, Ent	N, R, G	ES, PE
8.	Maxwell's equations inside matter, boundary conditions, Poynting's theorem, Maxwell's stress tensor, conservation of momentum	15	25	1,2,4	1,2	4	Emp, Ent	N, R, G	ES, PE
9.	monochromatic plane waves in vacuum, energy and momentum of EM waves, propagation through linear media, electromagnetic waves in conductors (the modified wave equation, monochromatic plane waves in conducting media)						Emp, Ent	N, R, G	ES, PE
10.	Electron optics: Motion in electric field, force acting on a charged particle, the analogy between the motion of charged particles in electromagnetic fields and propagation of light beam in transparent media, centered electron systems, the basic equation of electron optics for axially symmetric fields, focusing in axially symmetric fields, the Helmholtz- Lagrange equation, the thin lens, electron multiplier	15	25	1,2,4	1,2	4	Emp, Ent	N, R, G	ES, PE
11.	Motion in a magnetic field, motion in uniform magnetic field, axially symmetric magnetic fields, short coil focusing, the electron microscope, focusing in crossed electric and magnetic fields, strong focusing. Mass spectroscopy and electromagnetic separation of isotopes.						Emp, Ent	N, R, G	ES, PE

Reference Books

1.	Electrical engineering materials: A.J.Dekker, Prentice Hall.
2.	Motion of charged particles in electric and magnetic fields: L.A.Artsimovich and S.Y.Lukyanov, Mir Publishers.
3.	Concepts of modern Physics: A.Beiser, Tata McGraw Hill.
4.	Semiconductor Physics and devices: D.A.Neamen, Tata McGraw Hill.
5.	Introduction to Electrodynamics: D.J.Griffiths, Prentice Hall of India

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B.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation APH1210LCS: Applied Physics – II Practical				Credits / Hours per week		1.5 / 03			
Semester	II	Year of Introduction:2016 Year of Syllabus Revision: 2021; 2022				Maximum Marks / Grade		50			
Mode of Transaction		Term work, Practical & Viva									
Course Outcome (CO) APH1210LCS CO 1 Understanding the electronics CO 2 Understanding the diffraction of light CO 3 Methods to understand the statistical physics CO 4 Understanding of advances in instrumentation CO 5 Understanding of spectroscopy											
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.	e/m by Thomson Method: Determining the value of charge to mass ratio (e/m) of an electron by Thompson Method			06	10	1,2	1	4	Emp, Ent	N, R, G	ES, PE
2.	RC time constant: To determine the capacitive (RC) time constant of given RC Circuit			06	10	2,3	1	4	Emp, Ent	N, R, G	ES, PE
3.	Circular Coil: To study the variation of magnetic field along the axis of a circular coil carrying steady current			06	10	2,3	1	4	Emp, Ent	N, R, G	ES, PE
4.	Relaxation Time: To determine the relaxation time of electrons in different metals			06	10	3,4	1	4	Emp, Ent	N, R, G	ES, PE
5.	Frank Hertz Experiment: Perform a variant of the historic Frank Hertz Experiment to demonstrate the existence of discrete electronic energy levels in argon to determine the minimum excitation energy of argon			06	10	2,3	1,4	4	Emp, Ent	N, R, G	ES, PE

6.	Hall Effect: Determination of hall coefficient, resistivity, carrier concentration and mobility of semiconductor materials	06	10	2,3	1,4	4	Emp, Ent	N, R, G	ES, PE
7.	Four Probe Method: To determine energy band gap of given material using four probe method	06	10	3,4	1	4	Emp, Ent	N, R, G	ES, PE
8.	Zener Diode: Draw the I-V characteristics of Zener diode and study Zener diode as a voltage regulator	06	10	2,3,4	1	4	Emp, Ent	N, R, G	ES, PE
9.	Slit width measurement using diffraction: To determine the width of slit using diffraction He-Ne LASER output	06	10	2,3,4	2,5	4	Emp, Ent	N, R, G	ES, PE
10.	Statistical Board: (1) To study the decay process of a system of dices using Statistical Board (2) To study the normal distribution in the Statistical fluctuations.	06	10	2,3,4	3	4	Emp, Ent	N, R, G	ES, PE

Reference Books

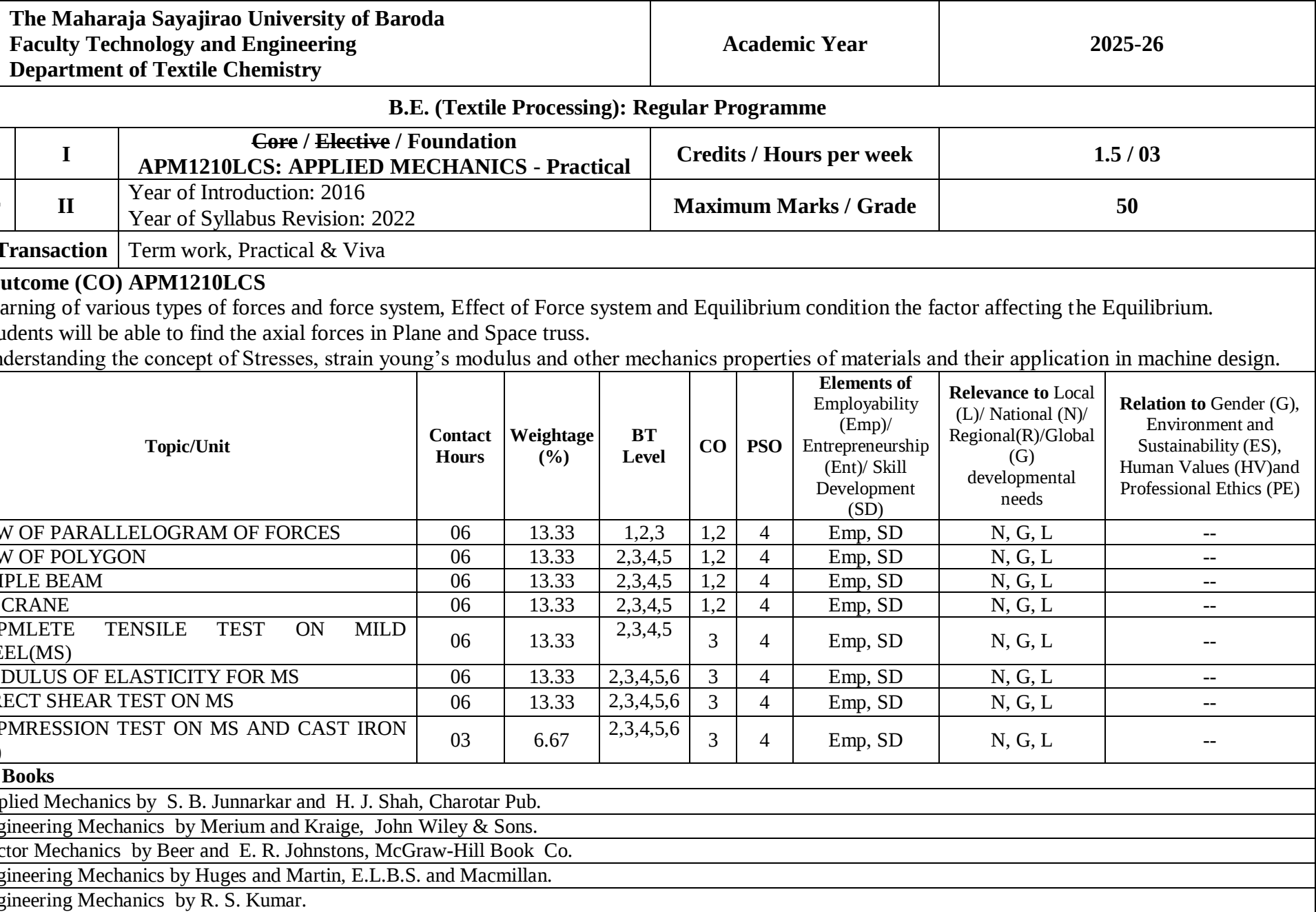
1.	Electrical engineering materials: A.J.Dekker, Prentice Hall.
2.	Motion of charged particles in electric and magnetic fields: L.A.Artsimovich and S.Y.Lukyanov, Mir Publishers.
3.	Concepts of modern Physics: A.Beiser, Tata McGraw Hill.
4.	Semiconductor Physics and devices: D.A.Neamen, Tata McGraw Hill.
5.	Introduction to Electrodynamics: D.J.Griffiths, Prentice Hall of India

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B.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation APM1210CS: APPLIED MECHANICS				Credits / Hours per week		04 / 04			
Semester	II	Year of Introduction: 2016 Year of Syllabus Revision: 2022				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) APM1210CS											
CO1 Learning of various types of forces and force system, Effect of Force system and Equilibrium condition the factor affecting the Equilibrium.											
CO2 Students will be able to find the axial forces in Plane and Space truss.											
CO3 Learning of the Center of Gravity and Moment of Inertia of any type of the section of the body.											
CO4 Understanding basics of theory of machine.											
CO5 Analysis and design of toothed wheels and its application.											
CO6 Understanding the kinetics and kinematics of a body, D'Alembert's principle, work, power and energy, Impulse and momentum etc.											
CO7 Learning the application of the concept of friction and static conditions of equilibrium in solution of problems of ladder friction, screw jack.											
CO8 Understanding the concept of Stresses, strain young's modulus and other mechanics properties of materials and their application in machine design.											
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	Mechanics Force and motion of translation: Newton's laws of motion, force, Linear acceleration, D'Almbert's principle, Impulse and Impulse force, Conservation of momentum, Work and Powers, Energy, Conservation of Energy, Motion up a rough inclined planes. Force and Motion of Rotation: Couples and angular acceleration, Angular momentum, Moment of Inertia, Work done, Kinetic energy of rotation, wheel rolling down on inclined plane, Truck rolling down on inclined plane, Flywheels. Rigid bodies in motion: Motion along a level track, Motion on round track, Super-elevation.			18	30	1,2,3,4	1,2	3,4	Emp, SD	N, G, L	--

2	Theory of Machines Friction: Equilibrium on rough inclined plane, The wedge, The screw lifting machines, Basic machines, The differential principle, Pulley block, Linear law, Efficiency. Belt and rope drives: Belt drive, Velocity Ratio, Compound belt drive, Length of belt, Transmission of power, Centrifugal tension, Rope drive, Toothed Gearing, Train of Wheels, Simple and Compound, Design of wheel trains, Epicyclic gearing, Speed reduction, Gear, Differential gear.	18	30	1,2,3,4,5,6	4,5,6,7	3,4	Emp, SD	N, G, L	--
3	Graphic Statics Coplanar forces and couples: Coplanar forces acting at a point, Force polygon, Resultant of forces and a couple, Equilibrium of coplanar forces, Funicular polygon, Parallel force, Centre of gravity and moment of inertia, Reaction at different type of supports, Principles of virtual work. Static of simple frames: Equilibrium of framework, Perfect frame with any type of loading, Cantilever trusses and Space frames. Strength and Elasticity of Materials: Simple stress and strain, Hook's law, Elastic limit, Ultimate stress, Factor of Safety, Lateral strain, Poisson's ratio, stress concentration idea, Temperature stress, Elastic modulli relation.	24	40	1,2,3,4,5,6	1,2,3,7	3,4	Emp, SD	N, G, L	--

Reference Books

1.	Applied Mechanics by S. B. Junnarkar and H. J. Shah, Charotar Pub.
2.	Engineering Mechanics by Merium and Kraige, John Wiley & Sons.
3.	Vector Mechanics by Beer and E. R. Johnstons, McGraw-Hill Book Co.
4.	Engineering Mechanics by Huges and Martin, E.L.B.S. and Macmillan.
5.	Engineering Mechanics by R. S. Kumar.



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B.E. (Textile Processing): Regular Programme										
Year	I	Core / Elective / Foundation MEC1216CS: Thermodynamics				Credits / Hours per week		04 / 04		
Semester	II	Year of Introduction:2016 Year of Syllabus Revision: 2022				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) MEC1216CS CO 1 Understand basic terms used in thermodynamics. CO 2 Understand laws of thermodynamics and its applications. CO 3 Comprehend the concept and applications of energy, entropy and exergy. CO 4 Understand various gas and vapor power cycles. CO 5 Understand the properties of gas mixtures										
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.	BASIC CONCEPTS & DEFINITIONS: Classical (Equilibrium) and Statistical thermodynamics – macroscopic and microscopic Points of view, thermodynamics system, surroundings, system boundary, control And control volume – thermodynamic properties, processes and cycles, thermal Equilibrium, quasi-static process – pure substance, continuum concept. Matter-its phases of occurrence in matter, working medium/substance/agent-its Definition, its phases/form used in our thermodynamics, Definition of various Equilibrium – mechanical, thermal, chemical – thermodynamics presentation of Thermodynamic processes and cycles on 2 property plots.		10	17	1,2,3	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	TEMPERATURE: Zeroth law of thermodynamics – reproducible reference points – ideal gas Temperature and ideal gas thermometer.		5	8	1,2,3	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	ENERGY INTERACTIONS: Thermodynamic – definitions of work and heat – displacement of p-dV work and other types of work		10	17	2,3,4	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	interactions – net work done by a system, free expansion with Zero work done. Work interaction, a path function, Energy – its definitions, various Forms of its occurrence in various fields-mechanical, electrical, electronics, chemical, atomic, nuclear, thermal, the units of energy measurements and their equivalents.								
4.	FIRST LAW ANALYSIS: Statements of first law of thermodynamics for a closed system undergoing a cycle and a change of state – consequence of first law – heat is 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, isobatic, 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, Diffuser, throttling devices, pumps, compressors, turbine and heat exchanger –General form of energy equation.	10	17	2,4	2,3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	SECOND LAW ANALYSIS: Thermodynamic definition of heat engine, direct and reverse heat engine, diagrammatic representation of heat engine, performance parameters of direct and reverse heat engine – statement of second law of thermodynamics-Kelvin-Plank and Celsius statement –equivalence of the statements – perpetual motion machine of the Second kind – Concept of reversibility, reversible process and reversible cycle – Conditions of reversibility – irreversibility – factors that render a process irreversible-concept of reversible heat transfer process – examples – Carnot Reversible cycle – Carnot theorem and its consequences – definition of thermodynamic (Absolute) temperature scale using the concept of reversible engines. Inequality of Claussius – definition of entropy as property – temperature – entropy diagram – entropy change during irreversible adiabatic process – reversible adiabatic process – entropy principle – application of entropy principle – change of entropy during processes undergone by ideal gas, Concept of available work & non-available Work	10	17	2,4	2,3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	EQUATION OF STATE FOR REAL GASES AND FLUIDS: Ideal gas equation – Van-der-waal equation of state, Berthelot equation of state, Dieterict equation of state, Beattie-Bridgeman equation of state, virtual expansion etc.,	5	8	2,4,6	4,5	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	Amagat isotherms-compressibility factor – compressibility chart.								
7.	THERMODYNAMIC RELATIONS: Maxwell relation, T-dS relations, specific heat relations, Joule-Thompson coefficient and their relation, Clausius-Clapeyron equation.	5	8	2,4,6	4,5	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	PROPERTIES OF PURE SUBSTANCE: p-V-T, surfaces, p-V, p-T, t-S and h-S diagrams of pure substances, use of steam tables and charts.	5	8	2,4,6	4,5	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Engineering Thermodynamics by P.K. Nag, McGraw-Hill Education								
2.	Fundamentals of Thermodynamics by Borgnakke & Sonntag, 7th Ed. Wiley India (P) Ltd								
3.	Thermodynamics – An Engineering Approach by Yunus Cengel & Boles, McGraw-Hill Education								
4.	Engineering Thermodynamics by Krieth, CRC Press								

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B.E. (Textile Processing): Regular Programme													
Year	II	Core / Elective / Foundation ACH1204CS: Chemistry - II					Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction:2017 Year of Syllabus Revision: 2023					Maximum Marks / Grade		100				
Mode of Transaction		Lectures											
Course Outcome (CO) ACH1204CS													
CO1 To study the types and characteristic of the different types of chemical bonds Conformation and Stereochemistry of some organic compounds & To study the physical properties and molecular structures and chemical reactivity. Dynamics and nature of Ionic Reaction.													
CO2 To study the reaction energies and equilibrium, reaction rates and Transition State Theory.													
CO3 To study the Reactive Organic Intermediates in Organic Reaction- Formation, Stability and Applications.													
CO4 To study the Nucleophilic Substitution. Nucleophilic Addition. Elimination Reaction. Electrophonic Addition at Multiple Bonds. Electrophonic Substitution in Aromatic Compounds. Heterocyclic Compounds. Molecular Rearrangements. Oxidation and Reduction. Radical Reaction. Polymerization Reaction. Literature of Organic Chemistry													
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.	Characteristic of the Chemical Bonds. Conjugated Bonds. Shapes of Molecules Conformation and Stereochemistry. Physical Properties and Molecular Structures. Chemical Reactivity and Molecular Structure. Dynamics of Organic Reaction – Nature of Ionic Reaction.					16	30	1,2,3,4	1	4	Emp	G	ES, HV
2.	Reaction Energies and Equilibrium, Reaction Rates and Transition State Theory, Laboratory Study of Reaction.					08	20	1,2	2	4	Emp	G	ES, HV
3.	Intermediates in Organic Reaction- Their Formation, Stability Reaction.					12	25	1,2,3	3	4	Emp	G	ES, HV

4.	Nucleophilic Substitution. Nucleophilic Addition. Elimination Reaction. Electrophonic Addition at Multiple Bonds. Electrophonic Substitution in Aromatic Compounds. Heterocyclic Compounds. Molecular Rearrangements. Oxidation and Reduction. Radical Reaction. Polymerization Reaction. Literature of Organic Chemistry.	12	25	2,3,4	4	4	Emp	G	ES, HV
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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.	Textbook of Organic Chemistry for B.Sc. Students: P. L. Soni.

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
BE Textile Processing: Regular Programme											
Year	II	Core / Elective / Foundation BEC1319CS: Element of Economics				Credits / Hours per week		02 / 02			
Semester	I	Year of Introduction:2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		50			
Mode of Transaction		Lectures									
Course Outcome (CO) BEC1319CS CO1 Understanding the meaning and scope of economics CO2 Learn about the application of demand and supply to real life problems CO3 Learn about application of production and cost concepts and how they are applied CO4 Understand the General market structure CO5 Understand basics of Investment analysis CO6 Applications of macro economics to real life situations											
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 Economics			7	23	1,2	1	3,4	Emp	G	ES, HV
2.	Demand and Supply Analysis			8	27	2,3,4	2	3,4	Emp	G	ES, HV
3.	Production Analysis			7	23	2,3,4	3	3,4	Emp	G	ES, HV
4.	Cost Analysis			8	27	2,3,4	3	3,4	Emp	G	ES, HV
Reference Books											
1	Economics by Paul. A Samuelson										
2	Advanced Economic Theory by H.L Ahuja										
3	Micro Economics for Management Students by Ravindra Dholakia and Ajay Oza										

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B.E. (Textile Processing): Regular Programme											
Year	II	Core / Elective / Foundation CHL1306CS: Chemical Industry & Process Calculation			Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction:2017 Year of Syllabus Revision: 2023			Maximum Marks / Grade		100				
Mode of Transaction		Lectures									
Course Outcome (CO) CHL1306CS											
CO1 Understanding of the scenario of chemical industry and the various unit operations and processes involved											
CO2 Knowing the various methods for the estimation of properties associated with chemical species											
CO3 Sound knowledge of mass balance for non-reactive and reactive systems											
CO4 Sound knowledge of energy balance for non-reactive and reactive systems											
CO5 To know the Indian and Global scenario of Chemical Industries											
CO6 Understand manufacturing processes for paper & pulp and cement											
CO7 Understand manufacturing processes and engineering aspects for selected industrial gases and fertilizers											
CO8 Understand manufacturing processes and engineering aspects for inorganic acids and chlor-alkali											
CO9 Understand the selection process of energy from coal burning process and analyzing the proximity and ultimate analysis											
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.	FUELS, COMBUSTION AND UTILITIES: Proximate and ultimate analysis of Coal, Calorific value of fuels, Specifications for fuel oils, types of gaseous fuels, combustion of solid, liquid and gaseous fuels, Control combustion. Treatment of water for various industrial uses, Introduction to different utilities.			5	11	1,2,3	1,2,3,9	4	Emp, SD	L, N, R, G	ES
2.	CHEMICAL PROCESS: Salient features of basic chemical industry, present status of chemical industry in India. Outlines of the manufacture of basic inorganic chemicals such as Sulphuric acid, Caustic Soda, Soda Ash, Ammonia and Nitric acid (with an emphasis on Raw materials and product specifications).			18	40	1,2,3	1,5,6,7,8	4	Emp, SD	L, N, R, G	ES

	Outlines of the manufacture of olefins, acetylene, benzene and alkyl benzenes. Manufacture of intermediates such as acetaldehyde, acetic acid, acrylonitrile, Ethylene oxide, phenol, phthalic anhydride, vinyl chloride and fatty acids.								
3.	PROCESS CALCULATIONS: Systems of units, stoichiometry and composition relations, Material balances, The use of ideal gas law and vapour pressure, solubility and heat capacity data, Humidity and solvent recovery. Thermochemistry and energy balances. Material and energy balances for a typical process	22	49	1,2,3,4	1,2,3,4	4	Emp, SD	L, N, R, G	ES
Reference Books									
1	D.M. Himmelblau and J. B. Riggs: Basic Principles and Calculations in Chemical Engineering, 8th Ed, Prentice Hall								
2	Thakore and Bhatt: Stoichiometry, 4th Ed, Tata McGraw-Hill								
3	R.N. Shreve, 'Chemical Process Industries', 5th Ed, McGraw-Hill, 1997								
4	C. Dryden, 'Outline of Chemical Technology', 3rd Ed, TMH, 1974								

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BE Textile Processing: Regular Programme										
Year	II	Core / Elective / Foundation ELE1330CS: Electrical Engineering				Credits / Hours per week		04 / 04		
Semester	I	Year of Introduction:2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) ELE1330CS CO 1 Explain fundamental concepts to solve DC and AC circuits. BT 2 CO 2 Analyze simple DC and AC circuits using fundamental concepts CO 3 Interpret constructional features, working and characteristics of DC Machines. CO 4 Explain constructional features and working of AC machines.										
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.	Electric currents & their effects. Ohm's: law, resistance. Insulators, conductors, units.		03	5	1	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Self inductance, mutual inductance, capacitance, motion of a conductor in a magnetic field. A.C. Circuits - sinusoidal and current, R.M.S. value. Simple A.C. Circuits containing inductance, capacitance and resistance in series. Power in Circuits.		08	20	2,3	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Three phase system of voltages and currents. Star and delta connections. Power in three phase circuits.		04	5	2,3	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	D.C. Generators -principle of working, types of generator; their characteristics.		08	20	2,3	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	D.C. Motors - principles of working, types of motors and their characteristics, starting method and speed control.		07	20	2,3	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Transformer - principle of working.		04	5	2,3	4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	A.C. Alternators - principles of working.		04	5	2,3	4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry			Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme											
Year	II	Core / Elective / Foundation ENG1320CS & ENG1320LCS: Communication Skills			Credits / Hours per week		02 / 02 Th 0.5 / 01 Pr				
Semester	I	Year of Introduction:2017 Year of Syllabus Revision: 2018; 2021; 2023			Maximum Marks / Grade		100+50=150				
Mode of Transaction		Lectures									
Course Outcome (CO) ENG1320CS & ENG1320LCS CO1 To know the process of communication and its components. CO2 To improve the language skills i.e. Listening Skills, Speaking Skills, Reading Skills and Writing Skills (LSRW). CO3 To effectively conduct meetings and conferences CO4 To enhance phonetic competence, comprehension skills, presentation skills, group discussion skills etc. CO5 To build confidence for communicating in English and create interest for the life-long learning of English language											
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.	Communication skills: Process of communication, Flows of Communication in organization, Barriers to communication (Formal Flow – Upward, Downward, lateral and diagonal, Strategies to improve Organizational Communication, Effectiveness in Managerial Communication, and importance of technical communication, Non verbal communication.			04	15	1,2	1	3,4	SD	G	ES
2.	Listening Ability, Hearing and Listening, Types of Listening, Barriers to EffectiveListening, Traits of a Good Listener.			04	15	1,2,3	2	3,4	SD	G	ES
3.	Presentation Skills and Writing skills: Effective Presentation strategies: Purpose, analyzing the audience and locale, organizing the content, Oral presentation, Graphic presentation, Presentation aids,			10	40	1,2,3	3,4	3,4	SD	G	ES

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		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme												
Year	II	Core / Elective / Foundation TXC1310CS: Technology of Bleaching - I				Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction: 2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		100				
Mode of Transaction		Lectures										
Course Outcome (CO) TXC1310CS CO 1 Learning the pre-treatment processes of various natural textile fibres. CO 2 Understand the chemical composition of natural textile fibres. CO 3 Learning the pre-treatment processes of cotton fibre CO 4 Understand the chemistry of desizing. CO 5 Understand the chemistry of scouring. CO 6 Understand the chemistry of bleaching CO 7 Learning the pretreatment process of wool fabrics CO 8 Learning the pretreatment process of silk fabrics CO 9 Understand the chemistry of wool & silk fibre. CO10 Learning the retting process for bast fibre. CO11 Learnig the different quality measure testing of treated samples. CO12 Understanding the different evaluation methods of pre-treatments												
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 of Pre-treatments: Basic introduction and importance of various pre-treatments. Various impurities present in different natural fibers. Sequences of pre-treatments of various natural fibers.				08	13	1,2,3	1.2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Pre-treatment of Cotton Fiber: Concept and object of Desizing, Scouring & Beaching. Classification of Desizing methods. Chemistry of desizing and various application methods of desizing.				16	27	1,2,3,4,5	3,4,5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

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		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme												
Year	II	Core / Elective / Foundation TXC1311CS: Chemistry of Fibres				Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction: 2016 Year of Syllabus Revision: 2021; 2023				Maximum Marks / Grade		100				
Mode of Transaction		Lectures										
Course Outcome (CO) TXC1311CS												
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.												
CO11 Learning the new generation of textile fibre												
CO 12 Learning the advancement in the manufacturing process of high performance fibers as technical textiles												
CO 13 Understanding the basic of non woven												
CO 14 Understanding the basic of knitting technology												
Unit No.	Topic/Unit				Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurshi p (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Introduction of the Textile Fibres: ● Definition of Textile Fibres. ● Classification of the Textile Fibres. ● Essential & Desirable properties of Textile Fibres.				10	16	1,2,3	1,2	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	● Requirement of fiber foaming polymers								
2.	Natural Fibres: ● Introduction of cellulosic fibers. ● Growth and Morphology of cotton fiber. ● Chemical Composition of cotton fibers. ● Introduction of the Bast fibers. ● Manufacturing of Bast fibers. ● Retting of Bast fibers. ● Physical properties, Chemical properties and uses of natural cellulosic fibres	10	17	1,2,3,4,5	2,3,4,5	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE
3.	Introduction of Natural Protein Fibers. ● Origin and Morphology of wool fiber. ● Chemical Composition of wool fiber. ● Production of Silk fiber. ● Chemical Composition of silk fiber. ● Other minor animal fibers. ● Physical properties, Chemical properties and uses of natural protein fibres	10	17	1,2,3,4,5	6,7	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE
4.	Regenerated Cellulosic Fibres: ● Introduction of regenerated fibers. hrs. ● Raw materials and outlines of different regenerate fiber such as Viscose rayon, ● Cupra-ammonium rayon, Acetate rayon, Lyocell, Tencel. ● Physical properties, Chemical properties and uses of regenerated fibres	10	17	6,7	8,9,10	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE
5.	Man-made Fibres: ● Introduction of Synthetic man-made fibers.	10	17	8,9,10	9,10,11,12	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	• Brief introduction of different spinning techniques. • Synthesis of Raw materials & Basic outline process of Polyester fibres • Synthesis of Raw materials & Basic outline process of Polyamide fibres • Synthesis of Raw materials & Basic outline process of Vinyl fibres • Synthesis of Raw materials & Basic outline process of Polyolefin fibres • Physical properties, Chemical properties and uses of synthetic fibres								
6.	High Performance Fibres: General methods of preparation of high-performance fibers such as Carbon fiber, Glass fiber, Ceramic Fiber. Brief introduction about the technical textiles. Brief introduction about the Non-woven textiles. Brief introduction about the Kintted textiles.	10	16	11,12,13 , 14					

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.	The Chemistry of Textile Fibers – R. R. Mather & R. G. Wardman, The Royal Society of Chemistry.
6.	Man-made fibres – By R.W. Moncrieff
7.	Text Book of Fiber Science and Technology – S. P. Mishra, New age International Publisher
8.	High Performance Fibers – J W S Hearle, Woodhead Publishing Limited.
9.	Handbook of Technical Textiles – A R Horrocks & S C Anand, Woodhead Publishing Limited

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme											
Year	II	Core / Elective / Foundation TXC1312LCS: Fibre Testing & Identification - Practical			Credits / Hours per week		02 / 04				
Semester	I	Year of Introduction:2017 Year of Syllabus Revision: 2023			Maximum Marks / Grade		50				
Mode of Transaction		Term work, Practical & Viva									
Course Outcome (CO) TXC1312LCS CO 1 Students are able to identify the unknown textile fibres. CO 2 Students are able to analyze the blend ratio of blended fabrics. CO 3 Students are able to measure different characteristics of yarn and fabrics. CO 4 Students are able to determine the moisture properties of textile 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) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Identification of various fibre (Natural as well as man-made) by physical, chemical & burning tests.			30	50	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Analysis of different Blended Fabric (Forward method & Reverse Method)			08	14	1,2,3,4,5	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	To study the different Characteristics of Fabric.			08	13	1,2,3,4,5	3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	To study the different Characteristics of Yarn.			08	13	1,2,3,4,5	3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Determination of Moisture Content & Moisture Regain of different textile fibres.			06	10	1,2,3,4,5	4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books:											
1.	Identification of Textile Fibers by M. M. Houck Woodhead Publishing.										
2.	Indian Standard Methods for Identification of Textile Fiber 1 st edition IS 667:1981										
3.	A Textbook of Fiber Science and Technology – S. P. Mishra, New age International Publisher										
4.	Textile Fibres, Vol. I – Prof. V.A. Shenai										

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme												
Year	II	Core / Elective / Foundation ACH1406CS: Chemistry - III				Credits / Hours per week		04 / 04				
Semester	II	Year of Introduction:2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		100				
Mode of Transaction		Lectures										
Course Outcome (CO) ACH1406CS												
CO 1 To study the basic concepts of Catalysis, types of Catalysis, and their mechanism of actions and applications												
CO 2 To learn about the basics of phase equilibrium and its application to two and three component systems												
CO 3 To learn about the surface phenomenon of Adsorption, various Adsorption Isotherms and applications												
CO 4 To learn about basics of different acid-base indicators, theories of indicators and Debye-Huckel theory of strong electrolytes												
CO 5 To understand Laws of Thermodynamics and Heat capacity, Entropy, Free energy changes in chemical reactions												
CO 6 To understand the concepts of reaction rates and able to know about order and molecularity of reactions with examples.												
CO 7 To understand the Laws of Photochemistry, various photo-physical processes and to calculate quantum efficiency.												
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.	Catalysis: Types of Catalysis, Main characteristics and theories of Catalysis, Heterogeneous and Homogeneous Catalytic reactions with examples, Catalyst poison, Promoters , Inhibitors.				06	13	1, 2,3,	1	4	Emp	G	ES
2.	Phase Studies : Two component System, Classification Application of Phase rule in two and three component systems.				05	12	1,2,3	2	4	Emp	G	ES
3.	Adsorption: Types of Adsorption, Freundlich and Langmuir Isotherms, BET theory of multimolecular layer, Applications of Adsorption.				05	12	1,2,3	3	4	Emp	G	ES

4.	Acid- Base indicators: Suitable choice of indicators, Theory of Indicators, Debye and Huckel theory of strong electrolytes.	06	12	1,2	4	4	Emp	G	ES
5.	Thermodynamics-I: Basic concepts of heat work and energy, Equations of state, heat capacities.	06	12	1,2	5	4	Emp	G	ES
6.	Thermodynamics-II: Properties of thermodynamic, Statistical treatment of heat capacity and entropy, Free energy and chemical potentials. Fugacity and Activity. The equilibrium constant and free energy changes in chemical Reaction.	07	14	1,2,3	5	4	Emp	G	ES
7.	Chemical Kinetics - Principles of chemical kinetics, rate equations for simple and complex reactions, theory of reaction, rates, chain reactions ,Heterogeneous reactions.	07	14	1,2,3	6	4	Emp	G	ES
8.	Photochemistry- Lambert and Beer law, The law of photochemical equivalence and its applications.	06	12	2,4,5	7	4	Emp	G	ES

Reference Books

1.	Engineering Chemistry: Jain and Jain, Dhanpat Rai 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.

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme										
Year		II		Core / Elective / Foundation MEC1414CS: Generation & Transmission of Mechanical Power			Credits / Hours per week		04 / 04	
Semester		II		Year of Introduction:2017 Year of Syllabus Revision:2023			Maximum Marks / Grade		100	
Mode of Transaction			Lectures							
Course Outcome (CO) MEC1414CS CO 1 To study brief of thermodynamics and power cycle like otto and diesel. CO 2 To study gas turbine plant. CO 3 To study steam power plant. CO 4 To study direct energy conversion methods. CO 5 To study transmission of motion and power.										
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.	Brief introduction to laws of thermodynamics: Introduction to air cycles: Otto, Diesel, Dual.	12	23	1,2,3, 4	1	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
2.	Brayton Cycle, Calculation of work done and efficiency	04	08	1,2,3, 4	2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
3.	Properties of steam and its importance. Use of Steam table. Elementary discussion of Rankine cycle i.e. steam Power plant. Work done and efficiency of Rankine cycle. Other types of Power engines and plants like diesel and petrol engines.	12	23	1,2,3, 4	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
4.	Direct energy conversion: Study of fuel cell, MHD, Thermoelectric generation and their limitations.	12	23	1,2	4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
5.	Transmission of Power: Types of bearings. Types of drives, Belt chain and gear drive	12	23	2,3,4	5	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE	
Reference Books										
1.	Elements of Mechanical Engineering by Sadhu Singh									
2.	P K NAG : 'Engineering Thermodynamics'									
3.	R K Rajput : 'Engineering Thermodynamics'									

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme									
Year	II	Core / Elective / Foundation MEC1414LCS: Generation & Transmission of Mechanical Power - Practical				Credits / Hours per week		01 / 02	
Semester	II	Year of Introduction:2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		50	
Mode of Transaction		Term work, Practical & Viva							
Course Outcome (CO) MEC1414LCS CO 1 To study brief of thermodynamics and power cycle like otto and diesel. CO 2 To study gas turbine plant. CO 3 To study steam power plant. CO 4 To study transmission of motion and power.									
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) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	To study IC engine.	08	31	1,2,3,4,5,6	1	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	To study Brayton cycle.	06	23	1,2,3,4,5,6	2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	To study Rankine cycle.	06	23	1,2,3,4,5,6	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	To study Transmission of motion and Power	06	23	1,2,3,4,5,6	4	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Elements of Mechanical Engineering by Sadhu Singh								
2.	P K NAG : ‘Engineering Thermodynamics’								
3.	R K Rajput : ‘Engineering Thermodynamics’								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	II	Core / Elective / Foundation TXC1405CS: Technology of Bleaching - II				Credits / Hours per week		04 / 04			
Semester	II	Year of Introduction: 2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC1405CS											
CO 1 Learning the pre-treatment processes of regenerated cellulosic fibres.											
CO 2 Understanding the chemistry of the regenerated cellulosic fibres.											
CO 3 Learning the pre-treatment processes of man-made fibres.											
CO 4 Understand the different faults and their remedies.											
CO 5 Learning the pre-treatment process of blended fibre fabrics.											
CO 6 Understanding the chemistry of blended fibre fabrics.											
CO 7 Learnig the concept of enegy saving in pretreatments											
CO 8 Understing the waster waster treatment process.											
CO 9 Learning the OBA treatment.											
CO10 Understanding the chemistry of OBA.											
CO11 Learning the application of OBA.											
CO 12 Learning the heat setting of synthetic fibres.											
CO 13 Understanding the mechanism of heat setting.											
CO 14 Learning the assessment of heat setting.											
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 of Man-made regenerated cellulosic fibre fabrics: Desizing, Scouring, bleaching and other pre-treatment processes of viscose rayon, polynosic & cellulose acetate etc fibers in details.			08	13	1,2,3	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Pre-treatment of Man-made fibre fabrics:			12	20	1,2,3,4,5	3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	Desizing, Scouring, bleaching and other pre-treatment processes of Polyester, Polyamide, Polypropylene, Polyvinyl alcohol etc fibers in details. Faults in bleaching process and its remedies.								
3.	Pre-treatment of Blended fibre fabrics: Desizing of various blended fibre fabric containing cellulosic fibre. Scouring of various blended fibre fabric. Bleaching of various blended fibre fabrics. Setting treatment of various blended fibre fabric containing wool fibre.	10	17	1,2,3,4,5	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Energy & Water conservation in textile pre-treatments: Single stage pre-treatment processing of textiles. Unconventional pre-treatment processes. Water computation in pre-treatment of textiles. Pollution aspects in pre-treatment of textiles. Wastewater treatment from pre-treatments.	10	17	1,2,3,4,5	7,8	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
	Optical Brightening agents: Introduction of the OBA Chemistry and mechanism of the OBA Application of OBA on Natural and synthetic fibres. Factors influencing the function of OBA.	08	13	1,2,3,4,5	9,10,11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Heat Setting treatment: Introduction, definition & need of heat setting. Mechanism of heat setting, Types of the heat setting. Parameters of the heat setting, Methods of the heat setting. Effect of heat setting on different properties of textile fibre. Heat setting of different synthetic fibres and their blends. Assessment the degree of heat setting.	12	20	1,2,3,4,5	12,13,14	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Bleaching – J.T. Marsh
2.	Textile Scouring & Bleaching – E.R. Trotman
3.	Technology of Bleaching, Vol.III – Dr. V.A.Shenai
4.	Technology of Bleaching & Dyeing of Textile Fibres –Chakravarthy
5.	Textile Chemistry, Vol.II – R.H. Peters

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	II	Core / Elective / Foundation TXC1406CS: Technology of Dyeing - I				Credits / Hours per week		04 / 04			
Semester	II	Year of Introduction: 2017 Year of Syllabus Revision: 2023				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC1406CS											
CO 1 Learning of the basic principle of dyeing.											
CO 2 Understanding the principle of dyeing.											
CO 3 Learning the basic terminology of the dyeing.											
CO 4 Learning the dyeing of cellulosic fibres with different dye stuffs.											
CO 5 Understanding the chemistry of different dyes on cotton fabric.											
CO 6 Learning the fastness properties of dyeing and its after treatment											
CO 7 Learning the dyeing of wool with different dyes.											
CO 8 Learning the dyeing of silk with different dyes.											
CO 9 Understanding the chemistry of wool & silk dyeing.											
CO10 Learning the dyeing of regenerated cellulosic fibres with different dyes.											
CO11 Understanding the chemistry of regenerated cellulosic fibres with different dyes.											
CO12 Learnig the dyeing of fabric with oxidation colour, mineral colour and pigments.											
CO13 Understanding the chemistry of oxidation colour, mineral colour and pigments.											
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 of Dyeing: Definition & History of Dyes & Dyeing. Classification of Dyes. Principle of Dyeing. General terms of dyeing. General Considerations of the application of different classes of dyes to important textile fibres			10	17	1,2,3	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

2.	Dyeing of Natural Cellulosic Fibres: Chemistry, Classification & application of direct, reactive, basic, sulphur, vat, solubilized vat, indigo azoic colour on cotton fabric. Effect of different parameters of dyeing on cotton fabric. Dyeing of different bast fibres with of direct, reactive, basic, sulphur, vat, solubilized vat, indigo azoic colour etc. After treatment of dyeing to improve the fastness properties of the dyeing.	16	27	1,2,3,4,5,6	4,5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Dyeing of Natural Protein Fibres: Chemistry, Classification, Mechanism & application of acid, basic, pre-metallised acid, chrome, direct, reactive, azoic and vat dyes on wool fabric. Chemistry, Classification, Mechanism & application of acid, basic, pre-metallised acid, chrome, direct, reactive, azoic and vat dyes on Silk fabric. Effect of different parameters of dyeing on wool and silk fabric.	14	23	1,2,3,4,5,6	7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
	Dyeing of regenerated Fibres: Dyeing of viscose rayon with direct, basic, sulphur, azoic, vat and solubilized vat dyes. Dyeing of cupraammonium rayon with direct, basic, sulphur, azoic, vat and solubilized vat dyes. Dyeing of acetate (di and tri-acetate) rayon with disperse dyes, logwood black, azoic colours and vat dyes.	12	20	1,2,3,4,5,6	10,11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Oxidation & Mineral Colour: Chemistry & application of different oxidation colour on textile fiber. Chemistry & application of different mineral colour on textile fiber. Pigment Dyeing, Dyeing of Denim, Garment Dyeing.	08	13	1,2,3,4,5,6	12,13	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Technology of Dyeing, Vol. VI – Dr. V.A. Shenai
2.	Chemistry of Dyes and Principles of Dyeing, Vol.II – Dr. V.A. Shenai
3.	Dyeing and Chemical Technology of Textile Fibres – E.R. Trotman
4.	Dyeing of Silk – Dr. V.A. Shenai
5.	Technology of Bleaching & Dyeing of Textile Fibres, Vol.II – Chakraverthy

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2020-21	
B.E. (Textile Processing): Regular Programme									
Year	II	Core / Elective / Foundation TXC1408LCS: Dye House – I Practical				Credits / Hours per week		02 / 04	
Semester	II	Year of Introduction: 2023 Year of Syllabus Revision: 2023				Maximum Marks / Grade		100	
Mode of Transaction		Term work, Practical & Viva							
Course Outcome (CO) TXC1408LCS CO 1 Understanding pre-treatment processes of natural cellulosic fibres. CO 2 Application of different dyes on cellulosic textiles.									
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 processing of natural fibers.	20	33	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Dyeing of natural fabric using various dyes by different methods.	40	67	1,2,3,4,5	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books:									
1.	Chemical Technology in the Pre-treatment Processes of Textiles by S. R. Karmakar, Elsevier								
2.	Bleaching, Mercersing and Dyeing of Cotton materials by R. S. Prayag.								
3.	Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	II	Core / Elective / Foundation TXE1415CS: Textile Manufacture				Credits / Hours per week		04 / 04		
Semester	II	Year of Introduction: 2018 Year of Syllabus Revision: 2019; 2023				Maximum Marks / Grade		100		
Mode of Transaction		Lectures and Tutorials								
Course Outcome (CO) TXE1415CS CO1 Summarize different textile fibres and fundamental spinning operations. CO2 Paraphrase fundamentals of different yarn preparatory processes CO3 Describe fabric manufacturing techniques and their fundamentals CO4 Explain concept of basic weaves like Plain, Twill and Satin and Classification of fabrics CO5 Identify different Fabric faults in brief										
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	Classification of textile fibres-Introduction to spinning-fundamental spinning operations-objectives and flowcharts of cotton spinning systems-Different yarn manufacturing techniques-yarn numbering system- impurities and their cleaning in natural fibres.		15	25	1,2	1	1,2,3	EMP, SD	R, N, G	PE
2	Classification of yarn preparatory processes – Flowcharts of yarn preparatory processes – Like, Winding, Warping, Sizing, Drawing and Dentering and Pirn Winding – Different types of yarn packages – Classification of yarn and its faults, sizing concept.		15	25	1,2	2	1,2,3	EMP, SD	R, N, G	PE
3	Introduction to weaving - Brief introduction to different fabric manufacturing techniques - Passage of warp through plain power loom - Introduction of various weaving motions like primary, secondary and tertiary motions - Explanation of primary motions in detail.		12	20	1,2,4	3	1,2,3	EMP, SD	R, N, G	PE

4	Concept of basic weaves like Plain, Twill and Satin - Classification of fabrics - methods of fabric manufacture, type of finish, raw material used, end uses, etc.- basic constructional parameters.	09	15	1,2,4	4	1,2,3	EMP, SD	R, N, G	PE
5	Fabric faults in brief - Bad selvedge, Broken ends or warp, Broken picks or weft, Loose warp, Loose weft or snarl, Double end, Tight end, Float of warp, Wrong end Colour, Missing pick, Double pick, Weft bar, Oil spot, Temple mark, Reed mark, Slub, Thick and thin place etc.	09	15	1,2,4	5	1,2,3	EMP, SD	R, N, G	PE

Reference Books

1.	P. Corbman Barnard, 'Fibre to Fabric', McGraw-Hill, 1983
2.	H.V.S. Murthy, 'Textile Fibres', WPI Publishing, 2016
3.	B. C. Goswami, 'Textile Yarns', Wiley, 1977
4.	Eric Oxtoby, 'Spun yarn technology', Butterworth & Co Ltd, 1987
5.	A. Wynne, 'The Motivate series "Textiles"', Macmillan, 1997
6.	J. Grosicki 'Watson's Textile design and colour' WPI Publishing, 2004
7.	Woven fabric production- I, Ncute, WPI Publishing, 2012

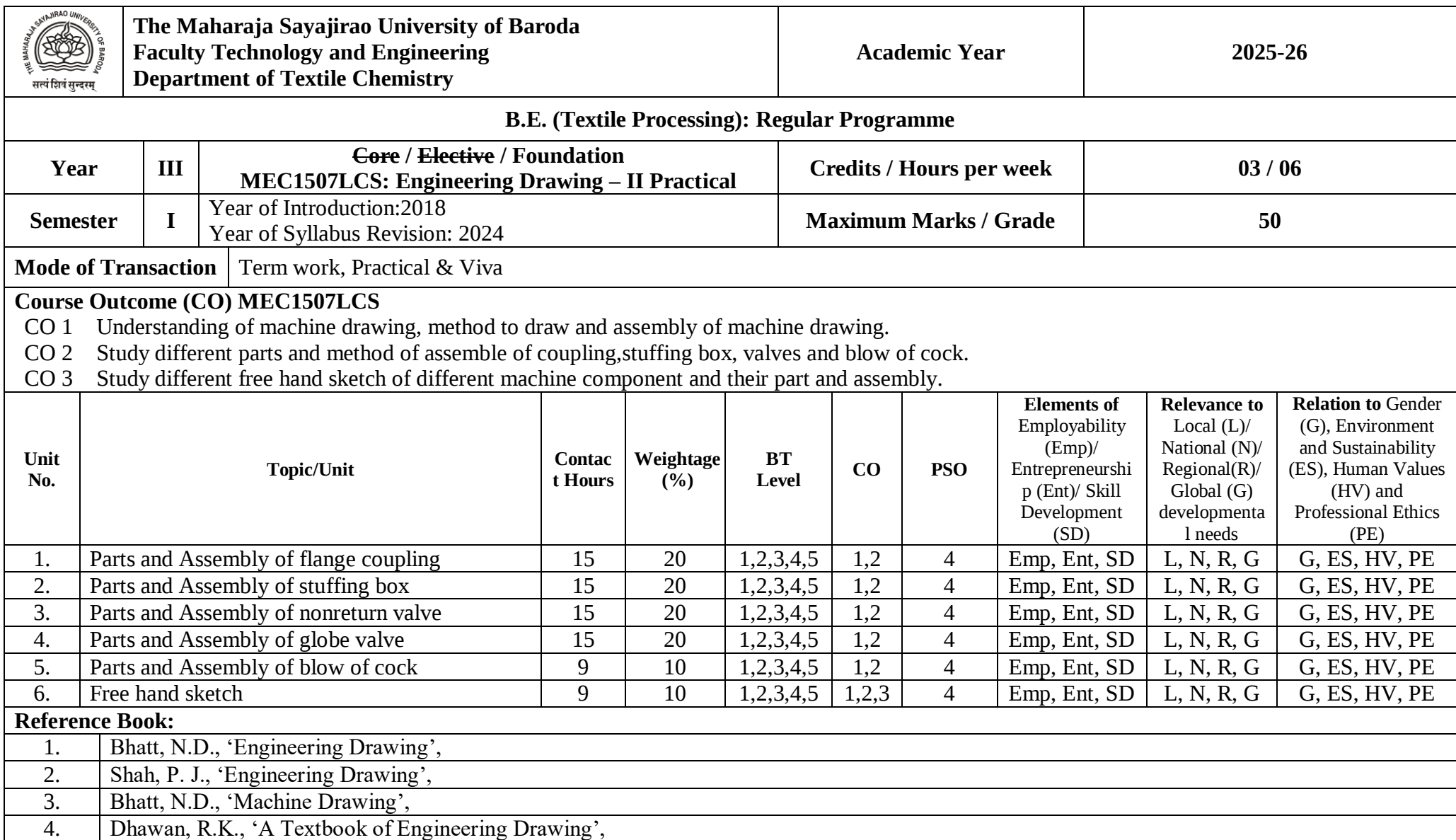
		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Engineering				Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme									
Year	II	Core / Elective / Foundation FTE1401CS: Universal Human Values – II				Hours per week (L-T-P) & Credit 02-01-00, 03 Credits			
Semester	II	Year of Introduction: 2025 Year of Syllabus Revision: --				Maximum Marks / Grade 100			
Mode of Transaction		Lectures, Tutorials							
Course Outcome (CO) FTE1401CS CO1: Understand and analyze the self, and surroundings i.e. family, society and nature CO2: Understand the responsibility in life and to handle problems with sustainable solutions while keeping human relationships and human nature in mind. CO3: Improvement in critical ability CO4: Improvement in commitment towards human values, human relationship and human society									
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 Value Education	9	20	1,2,3	1,2	3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Harmony in the Human Being	9	20	1,2,3	2,3				
3	Harmony in the Family and Society	9	20	1,2,3	2,3				
4	Harmony in the Nature/Existence	9	20	1,2,3	3,4				
5	Implications of the Holistic Understanding	9	20	1,2,3	3,4				
Reference Books:									
1.	A foundation course in Human Values and Professional Ethics by R R Gaur, R. Ashthana and G P Bagaria, 2 nd and 3 rd Edition (2019 and 2023).								
2.	Universal Human Values and Professional Ethics by Dr. Saroj Kumar, Prof. Sheenu Nayyer, Thakur Publication Pvt Ltd, (2020)								

3	Rediscovering India - by Dharampal
4	Human Values, A.N. Tripathi, New Age Intl. Publishers, New Delhi, 2004.
5	The Story of My Experiments with Truth - by Mohandas Karamchand Gandhi
6	Slow is Beautiful - Cecile Andrews
7	Economy of Permanence - J C Kumarappa
8	Bharat Mein Angreji Raj – Pandit Sunderlal
9	JeevanVidya: EkParichaya, A Nagaraj, JeevanVidyaPrakashan, Amarkantak, 1999
10	Hind Swaraj or Indian Home Rule - by Mohandas K. Gandhi
11	India Wins Freedom - Maulana Abdul Kalam Azad
12	Vivekananda - Romain Rolland
13	Gandhi - Romain Rolland
14	Online Universal Human Values material of AICTE.

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	III	Core / Elective / Foundation TXC1505CS: Chemistry & Application of Textile Auxiliaries				Credits / Hours per week		04 / 04			
Semester	I	Year of Introduction: 2023 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC1505CS CO 1 Learning various auxiliaries used in textile wet processing. CO 2 Understanding necessity of the textile auxiliaries. CO 3 Learning various surface active agents. CO 4 Understanding chemistry and application of surfactants. CO 5 Learning textile auxiliaries used in preparatory processes. CO 6 Learning textile auxiliaries used in pretreatment processes CO 7 Understanding application of preparatory and pretreatment auxiliaries. CO 8 Learning textile auxiliaries used in dyeing processes. CO 9 Learning textile auxiliaries used in printing processes. CO10 Learning textile auxiliaries used in finishing processes. CO11 Understanding application of dyeing, printing & finishing auxiliaries. CO12 Learning methods of qualitative & quantitative evaluation of textile auxiliaries. CO13 Understanding analysis of various textile auxiliaries.											
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 of Textile Auxiliaries: History & introduction of textile auxiliaries. Classification of textile auxiliaries. Function of textile auxiliaries. Requirement of textile auxiliaries.			08	13	1,2,3	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	Advantage and disadvantages of textile auxiliaries.								
2.	Surface active agents: Introduction and classification of surfactant, Chemistry of the surfactant. Preparation, properties, chemistry & application of Anionic surfactant. Preparation, properties, chemistry & application of Cationic surfactant. Preparation, properties, chemistry & application of Non-ionic surfactant. Preparation, properties, chemistry & application of Amphoteric surfactant	12	20	1,2,3,4,5	3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Textile auxiliaries used in Preparatory & Pre-treatment process: Textile auxiliaries used in preparatory process such as Spinning, Weaving, Sizing. Textile auxiliaries used in pre-treatment process such as Desizing, Scouring, Bleaching, Mercerization of various kinds of textile fibre	10	17	1,2,3,4,5	5,6,7	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Textile auxiliaries used in coloration process: Dyeing auxiliaries such as wetting agents, dispersing agents, sequestering agents, Stripping agents, migration inhibitors, leveling agents, dye-fixing agents, exhausting agents, etc. Printing auxiliaries such as thickeners, hydrotropic substances, catalysts, after washing agents, hygroscopic substances, anti-foaming agents, oxidizing & reducing agents, complexing agent, etc.	10	17	1,2,3,4,5	8,9,11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Textile auxiliaries used in Finishing process: Finishing auxiliaries such as stiffening agents, cross linking agents, softeners, water repellents, flame proofing agents, anti-static agents, soil release agents, anti-pilling agents, moth & mildew proofing agents, etc. Optical brightening agents/Fluorescent brightening agents.	10	17	1,2,3,4,5,6	10, 11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

6.	Evaluation of Textile auxiliaries: Qualitative & quantitative evaluation of textile auxiliaries used in different wet processing of textiles.	10	16	1,2,3,4,5,6	12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Technology of Textile Processing Vol. 5: Chemistry of Textile Auxiliaries: Prof. V. A. Shenai								
2.	Evaluation of Textile Chemicals – Dr. V.A. Shenai								
3.	Textile Auxiliaries & Finishing Chemicals –A.A. Vaidya & S.S. Trivedi								
4.	Chemical Testing of Textiles – Hall								



		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme													
Year	III	Core / Elective / Foundation MME1507CS : Material Technology					Credits / Hours per week		04 / 04				
Semester	I	Year of Introduction:2018 Year of Syllabus Revision: 2024					Maximum Marks / Grade		100				
Mode of Transaction		Lecture											
Course Outcome (CO) MME1507CS													
CO 1 To understand the effect of temperature on Mechanical properties and to learn failure of materials.													
CO 2 To learn the various types of heat treatment applied to steel and its application													
CO 3 To learn and understand the various types of material Eg. Polymer, composite, ceramic etc.													
CO 4 To Understand corrosion mechanism and its prevention													
CO 5 To Learn Criteria for the selection of engineering materials for construction													
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	Effect of temperature on mechanical properties of materials, Strengthening mechanism of materials. Failure: Ductile and brittle failure.					6	24	1,2	1	4	SD	G	ES
2	Heat treatment: Annealing, normalizing, hardening and tempering of steels, Applications of steel in chemical industries.					4	16	1,2,3	2	4	SD	G	ES
3	Polymer materials: Elastomers and plastomers. Polymers as substitute for metals, Ceramic materials and refractories, Inorganic glasses and their properties.					5	20	1,2,3	3	4	SD	G	ES
4	Composite materials: PMC, MMC and CMC, cement, concrete clay and wood					3	12	1,2,3	3	4	SD	G	ES
5	Corrosion: Forms, mechanisms, rate factors, inhibition, prevention and testing, corrosion behavior of some common metals and alloys,					5	20	1,2,3	4	4	SD	G	ES

	Metallic plastic and other some protective coatings.								
6	Criteria for the selection of engineering materials for construction.	2	8	1,2,3	5	4	SD	G	ES
Reference Books									
1.	William D Callister, Calister's Materials Science and Engineering (Adopted by R. Balasubramaniam)								
2.	Raghavan V (2007), Materials Science and Engineering – A first course, Prentice Hall India.								
3.	Vijendra singh, Physical Metallurgy, Standard Publishers Distributors.								
4.	Askland D.R. & P. P. Fullay (2007), The Science and Engineering of Materials – 4 th Cengage Learning Publishers 45.								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	III	Core / Elective / Foundation CHL1506CS: Chemical Engineering Operation				Credits / Hours per week		04 / 04			
Semester	I	Year of Introduction:2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) CHL1506CS											
CO 1 Understanding of the scenario of chemical industry and the various unit operations and processes involved											
CO 2 To understand the material handling techniques.											
CO 3 To perform various processes involved in chemical engineering operation.											
CO 4 To appreciate and comprehend significance of plant lay out design for optimum use of resources.											
CO 5 To understand the working and principle of different equipment’s used in chemical industries.											
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) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Definition of unit operations, Size reduction and analysis, Mixing, Selection of agitators, Filtration and centrifuging, Distillation, Absorption, Types of columns and their performance characteristics, Extraction, Adsorption, Humidification and dehumidification, Drying Crystallization.			45	100	1,2,3,4,5	1,2,3,4,5	3,4	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE
Reference Books											
1.	T. Banchemo, W. L. Badger, ‘Introduction to Chemical Engineering’, McGraw Hill, 1955										
2.	W.L. Mc Cabe, J.C. Smith, P. Harriot, 'Unit Operations of Chemical Engineering 7th Ed, McGraw Hill, 2006.										

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme									
Year	III	Core / Elective / Foundation CHL1506LCS: Chemical Engineering Operation - Practical				Credits / Hours per week		01 / 02	
Semester	I	Year of Introduction: 2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		50	
Mode of Transaction		Term work, Practical and viva							
Course Outcome (CO) CHL1506LCS CO 1 Understanding of the scenario of chemical industry and the various unit operations and processes involved CO 2 To understand the material handling techniques. CO 3 To understand the working and principle of different equipment's used in chemical industries.									
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.	Steam Distillation	10	14	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Fluidized Bed Dryer	10	14	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Ball mill	10	15	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Crystallization	10	14	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Vacuum Filtration	10	14	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Sieve Analysis	10	14	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Free Surface Evaporation	10	15	2,3,4,5	1,2,3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	T. Banchemo, W. L. Badger, 'Introduction to Chemical Engineering', McGraw Hill, 1955								
2.	W.L. McCabe, J.C. Smith, P. Harriot, 'Unit Operations of Chemical Engineering 7th Ed, McGraw Hill, 2006.								

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	III	Core / Elective / Foundation TXC1504CS: Technology of Printing – I				Credits / Hours per week		04		
Semester	I	Year of Introduction: 2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) TXC1504CS CO 1 Learning printing of textile fibres. CO 2 Learning different ingredients for preparation of printing paste. CO 3 Understanding importance of preparation of fabric for printing. CO 4 Learning different styles of printing. CO 5 Understanding mechanism of different style of printing. CO 6 Learning different methods of printing. CO 7 Understanding working principle of different printing methods. CO 8 Learning of conventional method of printing. CO 9 Learning printing of cotton with various dyes. CO10 Learning printing of cotton with pigment. CO11 Learning printing of wool and silk with various dyes										
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 of Printing: History & introduction of textile printing. Preparation of Fabrics for printing. Printing procedure covering dissolving of dyestuffs, preparation of printing paste. Thickening agents for printing of various fabrics. Selection of thickening agents and dyestuffs for printing. Printing paste ingredients.		08	13	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

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		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	III	Core / Elective / Foundation TXC1503CS : Technology of Dyeing – II				Credits / Hours per week		04		
Semester	I	Year of Introduction: 2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) TXC1503CS CO 1 Learning dyeing of polyamide fibre with different dyes. CO 2 Understanding mechanism of nylon dyeing. CO 3 Learning problem associated with nylon dyeing. CO 4 Learning various methods of polyester dyeing. CO 5 Understanding mechanism of polyester dyeing. CO 6 Learning problem associated with nylon dyeing. CO 7 Learning dyeing of acrylic fibre. CO 8 Understanding mechanism of acrylic dyeing. CO 9 Learning problems in acrylic dyeing. CO10 Learning dyeing of blended fabric. CO11 Understanding energy conservation in dye house. CO12 Learning development in dyeing process and dyeing machinery. CO13 Learning importance of machinery maintenance.										
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.	Dyeing of Polyamide Fibres: ● Basic introduction of polyamide fibre and dyes used for polyamide fibre. ● Sequence of processing with flow sheet for Polyamide Fibres Dyeing of polyamide fibres with disperse, acid chrome, premetallised, basic, direct, reactive, azoic, vat dyes ● Mechanism of acid dye on nylon.		12	20	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Barriness in dyeing of nylon and its remedy.								
2.	Dyeing of Polyester Fibre: ● Basic introduction of polyester fibre and dyes used for polyester fibre. ● Sequence of processing with flow sheet for Polyester fibre. ● Properties of disperse dye. ● Methods of dyeing polyester fibre. ● Carrier method. ● HTHP dyeing method. ● Thermosol dyeing method. ● Mechanism of dyeing. ● Different carrier used in dyeing. ● Fastness properties of the dyeing. ● Faults in polyester dyeing and its remedies.	14	23	1,2,3,4,5	4,5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Dyeing of Acrylic Fibre: ● Basic introduction of polyester fibre and dyes used for Acrylic fibre ● Sequences of processing with flow sheet for acrylic fibre. ● Dyeing of acrylic fibre with basic or cationic dye. ● Different parameters of cationic dye on acrylic fibre. ● Problem in dyeing of acrylic fibre and its remedie.	12	20	1,2,3,4,5	7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Dyeing of Blended fabric: ● Sequences of processing with flow sheet for different blended fabrics. ● Dyeing of different blended fabric by various dyeing systems.	12	20	1,2,3,4,5	10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Economy in Dyeing: ● Energy conservation in dyeing. ● Development in dyeing processes. ● Development in dyeing machinery. ● Maintenance in dyeing machinery.	10	17	1,2,3,4,5	11,12,13	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Dyeing of Wool, Silk and Man-made Fibres – R. S. Prayag
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2.	Technology of Dyeing, Vol. VI – Dr. V.A. Shenai
3.	Dyeing and Chemical Technology of Textile Fibres - E.R.Trotman
4.	Chemical Processing of Synthetic Fibres and Blends – K.V. Datye & A.A. Vaidya.
5.	Textile Chemistry, Vol.III – R.H. Peters

	The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	III	Core / Elective / Foundation TXC1502CS: Wet Processing Machinery (Bleaching & Dyeing)				Credits / Hours per week		04 / 04			
Semester	I	Year of Introduction: 2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC1502CS CO 1 Learning the machinery used for the mechanical cleaning of the textiles. CO 2 Understanding the construction and working principle of the various machines. CO 3 Leaning the machinery used in desizing, scouring & Bleaching. CO 4 Leaning the machinery used in pre-treatment of wool. CO 5 Learning the principle of dyeing machines. CO 6 Learning the dyeing machinery used for hank. CO 7 Learning the dyeing machinery used for yarn. CO 8 Learning the dyeing machinery used for fabric. CO 9 Understanding material of construction of the various machines. CO10 Learning developments in the machines.											
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 Machinery - I ● Introduction of pre0treatment machinery. ● Machinery employed for grey inspection. ● Machinery employed for stitching. ● Machinery employed for shearing & cropping. ● Machinery employed for singeing. (singeing of raw stock, sliver, yarn, fabric)			20	33	1,2,3	1,2,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Development in above machineries.								
2.	Pre-treatment Machinery - II ● Machinery employed for desizing of cotton in various forms such as raw stock, sliver, yarn, fabric. ● Machinery employed for scouring of cotton in various forms such as raw stock, sliver, yarn, fabric. ● Machinery employed for bleaching of cotton in various forms such as raw stock, sliver, yarn, fabric. ● Machinery employed for pre-treatment of wool in various forms such as raw stock, sliver, yarn, fabric.	20	33	1,2,3	3,4,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Dyeing Machinery: ● Classification of dyeing machines. ● Principle of dyeing machines. ● Material of construction of dyeing machines. ● Machinery employed for raw stock and slivers. ● Machinery employed for dyeing of hank. ● Machinery employed for dyeing of yarn. ● Machinery employed for dyeing of fabric. ● Developments in dyeing machines.	20	34	1,2,3	5,6,7,8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Technology of Textile Processing Vol. 6: Technology of Dyeing: Prof. V. A. Shenai								
2.	Textile Bleaching: J. T. Marsh								
3.	A guide to Textile Wet Processing Machinery by J.N. Shah								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	III	Core / Elective / Foundation TXC1506LCS : Dye House – II Practical				Credits / Hours per week		02 / 04		
Semester	I	Year of Introduction:2019 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100		
Mode of Transaction		Term work, Practical & Viva								
Course Outcome (CO) TXC1506LCS CO 1 Understanding the dyeing of synthetic fabrics. CO 2 Understanding the dyeing of blended fabrics. CO 3 Understanding printing of natural cellulosic textiles with various dye stuff. CO 4 Understanding printing of natural protein textiles with various dye stuff.										
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.	Dyeing of different Synthetic fabric with various dyes		20	33	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Dyeing of blended fabric by different methods		10	17	1,2,3,4,5	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Printing of natural fabric by different styles and methods using various dyes.		30	50	1,2,3,4,5	3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books:										
1.	Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.									
2.	Technology of Textile Processing Vol. 6: Technology of Dyeing: Prof. V. A. Shenai									
3.	Chemical Processing of Synthetic Fibres and Blends – K.V. Datye & A.A. Vaidya.									
4.	Textile Printing by R. S. Prayag									
5.	Textile Printing by W. Clarke									

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme									
Year	III	Core / Elective / Foundation TXC1601CS : Chemistry of Intermediates & Dyes				Credits / Hours per week		04 / 04	
Semester	II	Year of Introduction: 2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100	
Mode of Transaction		Lectures							
Course Outcome (CO) TXC1601CS CO 1 Learning the concept of colour. CO 2 Understanding the theory of colour CO 3 Learning the different unit processes for manufacturing of intermediates. CO 4 Understand the chemistry of unit process. CO 5 Understand the chemistry of intermediates. CO 6 Learning synthesis of various intermediates. CO 7 Learning synthesis of various dyestuffs. CO 8 Learning chemical constitution of colour CO 9 Understanding the chemistry of dyes. CO10 Understanding the properties of the dyes.									
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 of Dyes: ●Introduction of dye, colour and pigments. ●Classification of Dyes by various means. ●Different colour theories.	20	33	1,2,3	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Chemistry of the Intermediates: ●Introduction of the intermediates. ●Introduction of the different unit processes.	20	34	1,2,3,4,5,6	3,4,5,6,7	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Synthesis of various intermediates. ● Chemistry & properties of the intermediates. ● Synthesis of the various class of dye stuffs.								
3.	Structure of dyes: ● Colour and chemical constitution. ● Chemical structure of the dyes. ● Chemistry and properties of the dyes. ● Action of light on dyes and dyed fabrics.	20	33	1,2,3,4,5,6	8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Chemistry of Dyes and Principles of Dyeing, Vol. II – Dr. V.A. Shenai
2.	Introduction to the Chemistry of Dyestuff – Dr. V. A. Shenai
3.	Computer Colour Analysis – A.D. Sule
4.	Computer Colour Matching – H.S. Shah & R.S. Gandhi
5.	Synthetic Dyes – Gurdeep R. Chatwal
6.	Textbook of Dyes – M. G. Arora

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	III	Core / Elective / Foundation TXC1603CS: Man-made Fibre Production & Technology				Credits / Hours per week		04 / 04			
Semester	II	Year of Introduction: 2018 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC1603CS CO 1 Learning basic principle of fibre production technology. CO 2 Learning basic principle of polymerization. CO 3 Understanding spinning techniques for manufacturing of different man-made fibre. CO 4 Learning different post spinning techniques. CO 5 Learning manufacturing of various regenerated cellulosic fibre. CO 6 Understanding production technology of various regenerated cellulosic fibre. CO 7 Learning manufacturing of various synthetic fibres. CO 8 Understanding production technology of various synthetic fibre. CO 9 Learning manufacturing of carbon fibres. CO10 Learning manufacturing of aramid fibres CO11 Learning manufacturing of various poly olefin and vinyl fibres. CO12 Understanding production technology of various poly olefin and vinyl 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) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Man-made Fibre Production Technology ● Introduction of mam-made fibres. ● Classification of man-made fibres. ● Basic principle of the polymerization and different methods of polymerization. ● Different spinning techniques and its principle.			15	25	1,2,3	1,2,3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Post spinning operation like Drawing, Heat setting, Twisting & Texturisation.								
2.	Production of Regenerated cellulosic fibres: ● Production steps or manufacturing process and flow charts of regenerated cellulosic fibres.	15	25	1,2,3,4,5,6	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Production of synthetic fibres: ● Production technology in manufacturing of Polyester fibres. ● Production technology in manufacturing of Nylon-6 & Nylon-6,6 fibres. ● Modification in polyester, polyamide and acrylic fibres. ● Production technology in Carbon Fibres. ● Production technology in manufacturing of Aramid fibres such as Nomex & Kevlar.	15	25	1,2,3,4,5,6	7,8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Production of Poly olefin & Vinyl Fibres: ● Production technology in manufacturing of polypropylene fibres. ● Production technology in manufacturing of Acrylic Fibres. ● Modification in acrylic and polypropylene fibres. ● Production steps or manufacturing process and flow charts of vinyl fibres.	15	25	1,2,3,4,5,6	11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Fibres, Vol. II – 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 Material –F. Sadov
6.	Man-made Fibres – R.W.Moncrieff

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	III	Core / Elective / Foundation TXC1602CS: Fibre Structure & Theory of Dyeing				Credits / Hours per week		04 / 04		
Semester	II	Year of Introduction: 2019 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) TXC1602CS CO 1 Learning the fine structure of various textile fibres. CO 2 Understanding the method of investigation of fibre structure. CO 3 Understanding chemistry of fibre structure and their physical properties. CO 4 Learning polymerization of the various fibres. CO 5 Learning structure of polymers. CO 6 Understanding crystallinity & non-crystallinity of the polymers. CO 7 Learning kinetics of dyeing of various fibres. CO 8 Learning absorption-isotherms of dyeing. CO 9 Understanding theory of dyeing. CO10 Leaning thermodynamics of dyeing. CO11 Understanding various force responsible in dyeing systems. CO12 Understanding physical chemistry of dyeing.										
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.	Fibre Structure: ● Fine structure of various fibres. ● Fibre structure related to spinning & drawing of man-made fibre. ● Important physical methods for investing fibre structure.		15	25	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Relation of fibre structure & important physical properties of fibre such as density, moisture regain, elasticity etc								
2.	Fibre Forming Polymer: ● Important characteristics in polymer to make it fibre forming polymer. ● Determination of crystalline & non crystalline region & orientation of fibres. ● Determination of molecule weight of textile fibre. ● Swelling of textile fibre & solubilisation of fibres	15	25	1,2,3,4,5	4,5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Theory of Dyeing: ● Physical chemistry of dyeing of important textile fibres & factors affecting equilibrium. ● Absorption and Isotherms of dyeing. ● kinetic of dyeing. ● Nature of absorption isotherms	15	25	1,2,3,4,5	7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Physical Chemistry of Dyeing: ● Affinity of dyeing ● Heat of dyeing ● Entropy of dyeing ● Nature of dye fibre bonds	15	25	1,2,3,4,5	10,11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	The Theory of Colouration of Textiles – Allan Johnson
2.	The Theory and practice of Wool Dyeing – C.L. Bird
3.	Fibre Structure – J.W.S. Hearle & R.H. Peters
4.	Textile Fibre – Matthews
5.	Cellulosic Dyeing – J. shore
6.	Chemical Processing of Synthetic Fibres & Blends – K. V. Datye & A. A. Vaidhya
7.	Textile Chemistry. Vol I & III – R. H. Peters

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	III	Core / Elective / Foundation CHL1611CS: Instrumentation & Process Control Chemical Reaction Engineering				Credits / Hours per week		04 / 04			
Semester	II	Year of Introduction:2019 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) CHL1611CS											
CO 1 Understanding of different types of homogeneous reactions and the kinetics											
CO 2 To be able to derive rate expressions and determine rate constant using different approaches for constant and variable density systems											
CO 3 Understand the dependence of rate constant on temperature and order of reaction on temperature sensitivity											
CO 4 Understanding of multiple reactions in series and parallel and maximization of yield and selectivity											
CO 5 Understanding of reactions and reactor performance.											
CO 6 Understanding of instruments for the measurement of pressure, temperature, flow and liquid level and error analysis											
CO 7 Sound understanding of dynamics of first order systems											
CO 8 Preliminary understanding of advanced control systems and digital control systems											
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.	INSTRUMENTATION AND PROCESS CONTROL Control loop and its components, Instruments for measurement of typical process control variable such as, temperature, pressure, level, flow etc., Static characteristics of measuring instruments, Transmission, indication and record or process variables.			8	18	1,2,3	6,7,8	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Characteristics of on-off proportional, integral and derivative modes of control, Working Mechanism of typical pneumatic and electronic controller, Control valve selection. Dynamic behavior of processes showing capacity lag, transfer lag and distance-velocity lag.			8	18	1,2,3	6,7,8	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Closed – loop performance of feedback systems and choice of controller settings. Control system structure with typical example.			7	15	1,2,3	6,7,8	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

4.	<u>CHEMICAL REACTION ENGINEERING</u> Classification of industrial reactors, Kinetic interpretation of experimental data using batch and flow reactors for homogeneous reactions, Conversion and yield comparison in reactors, Heat effects in batch and backmix reactors, Choice of temperature programme, Influence of physical factors on heterogeneous reaction rates with emphasis on reactor, scale-up considerations for fluid-fluid and fluid-solid systems.	22	49	1,2,3,4	1,2,3,4,5	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1	Octave Levenspiel “Chemical Reaction Engineering”, 3rd Ed, John Wiley & Sons, 1999								
2	Coughanor ‘Process systems analysis and control’ 2nd Ed, McGraw-Hill, 1991.								
3	Donald P. Eckman “Industrial Instrumentation” 1 st Indian Edition, CBS Pulishers,2001								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	III	Core / Elective / Foundation TXC1604LC: Shade Matching - Practical				Credits / Hours per week		02 / 04			
Semester	II	Year of Introduction:2019 Year of Syllabus Revision: 2024				Maximum Marks / Grade		100			
Mode of Transaction		Term work, Practical & Viva									
Course Outcome (CO) TXC1604LCS											
CO 1 Understanding manual matching of dyed sample and able to match unknown dye sample by manually.											
CO 2 Understanding computer colour matching system and able to match unknown dye sample spectrophotometrically.											
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.	Preparation of Primary shades of Direct dye.			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Preparation of Secondary shades of Direct dye.			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Preparation of Tertiary shades of Direct dye.			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Preparation of Primary shades of Vat dye.			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Preparation of Secondary shades of Vat dye.			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Preparation of Tertiary shades of Vat dye.			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Manual matching of unknown shade			12	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	Matching of unknown shade using CCMS.			06	9	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books											
1.	Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.										
2.	Bleaching, Mercersing and Dyeing of Cotton materials by R. S. Prayag.										
3.	Instrumental Colour Measurements and Computer aided Colour Matching for Textiles by H.S. Shah & R.S. Gandhi										
4.	Computer Colour Analysis – Textile Applications by A.D. Sule										

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	IV	Core / Elective / Foundation BEC1701CS : Chemical Process Economics				Credits / Hours per week		02 / 02			
Semester	I	Year of Introduction:2019 Year of Syllabus Revision: 2025				Maximum Marks / Grade		50			
Mode of Transaction		Lectures									
Course Outcome (CO) BEC1701CS CO 1 Understanding the meaning and scope of economics CO 2 Learn about the application of demand and supply to real life problems CO 3 Learn about application of production and cost concepts and how they are applied CO 4 Understand the General market structure CO 5 Understand basics of Investment analysis CO 6 Applications of macro economics to real life situations											
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) developmenta l needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Production Analysis			6	20	2,3,4	1,2,3	3,4	Emp, Ent	G	HV, PE
2	Cost Analysis			6	20	2,3,4	1,2,3	3,4	Emp, Ent	G	HV, PE
3	Break Even Analysis			4	13	2,3,4	1,2,3	3,4	Emp, Ent	G	HV, PE
4	Market Structure			4	13	2,5	1,2,4	3,4	Emp, Ent	G	HV, PE
5	Investment Analysis			5	17	2,3,4	1,2,5	3,4	Emp, Ent	G	HV, PE
6	National Income			5	17	2,3,5	1,2,6	3,4	Emp, Ent	G	HV, PE
Reference Books											
1	Economics by Paul. A Samuelson										
2	Advanced Economic Theory by H.L Ahuja										
3	Micro Economics for Management Students by Ravindra Dholakia and Ajay Oza										

	The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26		
INDUSTRIAL MANAGEMENT: Regular Programme										
Year	IV	Core / Elective / Foundation CBM1701CS : INDUSTRIAL MANAGEMENT				Credits / Hours per week		02 / 02		
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision: 2025				Maximum Marks / Grade		50		
Mode of Transaction		Lectures								
Course Outcome (CO) CBM1701CS CO1 Understanding the concept of Industrial Management. CO2 Learn about the Functions of Management CO3 Learn effect of Location of Industry. CO4 Understand the Material Management. CO5 Understand basics of Inventory Control. CO6 Understand Human Resource Management										
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	Concept of Scientific Management in industry		03	10	1,2,3,4	1	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Functions of Management		03	10	1,2,3,4	2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3	Decision Making		03	10	1,2,3,4	2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4	Planning		03	10	1,2,3,4	2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5	Organizing		03	10	1,2,3,4	2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6	Directing & Control		03	10	1,2,3,4	2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7	Location of Industry		03	10	1,2,3,4	3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8	Material Management		03	10	1,2,3,4	4	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
9	Inventory Management		03	10	1,2,3,4	5	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
10	Human Resource Management: Selection, Incentives Welfare and Safety		03	10	1,2,3,4	6	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books										
1.	Principle of Management – L. M. Prasad									
2.	“Management” by Stoner J A and Freeman R E									
3.	Mintzberg, H. (1973). The Nature of Managerial Work. New York: Harper & Row.									

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	IV	Core / Elective / Foundation TXC1701CS : Technology of Printing – II				Credits / Hours per week		04 / 04		
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision: 2025				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) TXC1701CS CO 1 Learning printing of cotton fabric with different dyes. CO 2 Understanding chemistry of different dyes on cotton fabric. CO 3 Learning printing of man-made fabric with different dyes. CO 4 Understanding chemistry of different dyes on synthetic fabric. CO 5 Learning machinery used for printing. CO 6 Understanding the working principle of different machines. CO 7 Learning different machine used for colour development. CO 8 Understanding faults in printing and its remedies. CO 9 Learning special styles of printing for man-made fabrics. CO10 Learning printing of blended fabrics. CO11 Learning energy conservation in printing process.										
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 of Printing of Cellulosic fibres: ● Printing vat dyes on cotton fabrics in different styles. ● Printing indigo dyes on cotton fabrics in different styles. ● Printing indigosol dyes on cotton fabrics in different styles. ● Printing solubilized vat dyes on cotton fabrics indifferent styles.		15	25	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Printing reactive dyes on cotton fabrics in different styles. ● Printing Rapidogen, Rapidfast & Rapidozol on cotton fabrics in different styles.								
2.	Printing of synthetic fibres: ● Printing of polyester fabric with various dyes in different styles. ● Printing of polyamide fabric with various dyes in different styles. ● Printing of acrylic fabric with various dyes in different styles. ● Printing of acetate rayon fabric with various dyes in different styles.	15	25	1,2,3,4,5	3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Printing machinery: ● Block printing method. ● Machines used for printing, Steaming and other methods of print development. ● Preparation screen for printing. ● Printing process such as Roller screen, Rotary, Speckled, Polychromatic and transfer printing. ● After treatment of printing material ● Faults in printing and their prevention and correction.	15	25	1,2,3,4,5	5,6,7,8	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Advances in Printing: ● Special printing process such as transfer printing burnt out printing, Batik printing. ● Brief introduction to velvet and carpet printing, foam printing. ● Printing of blended fabrics with different dye system in different style. ● Economy and energy saving in printing of textiles	15	25	1,2,3,4,5	9,10,11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Tech. of Printing, Vol. V - Dr. V.A. Shenai
2.	Principles of Cotton Printing – D. G. Kale

3.	Textile Printing – Miles
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		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	IV	Core / Elective / Foundation TXC1702CS : Analysis of Testing of Textiles				Credits / Hours per week		04 / 04		
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision: 2025				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) TXC1702CS CO 1 Learning different testing of textiles. CO 2 Understanding the principle of testing. CO 3 Learning different statistical methods for analysis of results. CO 4 Qualitative and Quantitative analysis of fibres in textiles CO 5 Learning process control in wet processing of textiles. CO 6 Understanding quality control in wet processing of textiles. CO 7 Learning different physical testing of textiles. CO 8 Understanding the importance of physical testing. CO 9 Learning fastness properties of various dyed fabrics. CO10 Understanding testing of chemical treated textiles. CO11 Learning testing of woolen materials										
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 of Testing: • Objects of Testing. • Testing of raw materials and finished product. • Process control in Textiles. • various specifications, Sampling techniques and statistical analysis of the results. • Control on conditions of testing.		10	17	1,2,3,4,5	1,2,3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	• Qualitative and Quantitative analysis of fibres in textiles.								
2.	Process control in wet processing of textile: • Process control & quality control of pre-treatment processes. • Process control & quality control of dyeing processes. • Process control & quality control of printing processes. • Process control & quality control of finishing processes.	15	25	1,2,3,4,5	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Physical Testing of Textile: • Determination of physical properties such as density, permeability, moisture regain, abrasion resistance, breaking, bursting and tear strengths, thermoses insulation value, shrinkage of textile fibres.	15	25	1,2,3,4,5	7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Testing of Chemical treated Textiles: • Testing of dyed & printed materials for various fastness properties. • Analysis of resin finished materials for add-on, nitrogen contents, formaldehyde content, wrinkle recovery angle, durable press finished, chlorine retention, soil release, soil redeposit ion, pilling resistance, flame resistance, glow resistance, resistance to attack by micro-organisms etc. • Special test for woolens and synthetic fibres knitted textiles.	20	33	1,2,3,4,5	10,11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Evaluation of Textile Chemicals – Dr. V.A. Shenai
2.	Physical Properties of Textile Fibre – W.E.Morton & J.W.S. He
3.	Handbook of Textile Testing & Quality Control – Grover
4.	Chemical Testing of Textiles – Hall
5.	Textile Testing – J.H. Skinkle

		The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme									
Year	IV	Core / Elective / Foundation TXC1711CS : Technology of Finishing				Credits / Hours per week		04 / 04	
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision: 2025				Maximum Marks / Grade		100	
Mode of Transaction		Lectures							
Course Outcome (CO) TXC1711CS CO 1 Learning mercerization of cellulosic textiles. CO 2 Understanding chemistry of mercerization. CO 3 Learning machinery used for mercerization. CO 4 Understanding working principle of mercerization machinery. CO 5 Learning various finishing treatment of textiles. CO 6 Understanding chemistry of different finishing treatment. CO 7 Learning different machinery used for different mechanical finishing treatment. CO 8 Understanding working principle of different machinery. CO 9 Learning functional finishing of various textiles. CO10 Learning developments in finishing treatment.									
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.	Technology of Mecerization: ● Introduction of Mercerization. ● Definition & Object of Merxerization. ● Physical and chemical aspects of mercerization of cotton. ● Determination of the efficiency of mercerization and the factors affecting its efficiency ● Machinery used for mercerization.	20	33	1,2,3	1,2,3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

2.	Technology of Finishing: • Introduction & definition of Finishing. • Classification & importance of finishing. • Chemical & mechanical finishing of various textiles. • Temporary & durable finishing of textiles. • Conventional & special finishing of textiles.	10	17	1,2,3	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Finishing of Textiles: • Finishing agent like stiffeners, binders, wetting agent, softeners, optical brighteners, etc • Finishes based on swelling of cotton; anti-shrink finishes. • finishing for improving wrinkle resistance, wash and wear and durable press. • Soil release finish. • Finishing of woollen fabrics. • Machines used for finishing shearing, cropping, opening, damping, calendaring etc., • Drying of textile materials.	15	25	1,2,3,4,5	5,6,7,8	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Functional Finishing of Textiles: • Water proof & water repellent finishing. • Fire proof & fire-retardant finishing. • Finishes for improving the resistance of the textile fabrics to micro-organisms, weathering etc. • Finishes based on coating laminating. • Chemical modification and grafting of textiles. • Finishing of blended fibre fabrics. • Finishing of knitted and texturised goods. • Recent developments in finishing technology	15	25	1,2,3,4,5	6,7,8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Chemistry, Vol. II - R.H. Peters
2.	Tech. of Textile Finishing – Dr. V. A. Shenai

3.	Chemical Processing of Synthetic Fibres & Blends – K.V. Datye & A.A. Vaidya.
4.	Bleaching & Mercerisation. BTRA – Paper
5.	Mercerising – J.T. Marsh
6.	Textile Finishing –J.T. Marsh

	The Maharaja Sayajirao University of Baroda Faculty of Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26		
B.E. (Textile Processing): Regular Programme										
Year	IV	Core / Elective / Foundation TXC1712CS : Wet Processing Machinery (Printing & Finishing)				Credits / Hours per week		04 / 04		
Semester	I	Year of Introduction: 2019 Year of Syllabus Revision: 2025				Maximum Marks / Grade		100		
Mode of Transaction		Lectures								
Course Outcome (CO) TXC1712CS CO 1 Learning different machinery used for printing of textile fabrics. CO 2 Understanding working principle of printing machines. CO 3 Understanding principle of machine used for development of printed colour. CO 4 Learning techniques use for preparation of screen. CO 5 Learning development in printing machines. CO 6 Understanding faults in printing and able to correct it. CO 7 Learning different machinery used in finishing of different fibres. CO 8 Understanding working principle of different finishing machines. CO 9 Learning development in finishing machines.										
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.	Printing Machinery: ● Importance & Classification of printing machines. ● Block printing method. ● Stencil printing method. ● Roller printing machine. ● Screen printing machine. ● Transfer printing machine.		30	50	1,2,3,4,5	1,2,3,4,5	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Different machinery employed in development of printed colour. ● Faults in printing & their remedies. ● Developments in printing machinery								
2.	Finishing Machinery: ● Definition, Importance and classification of Textile Finishing ● Ancillary equipment employed in textile finishing such as → Starching → Resin and Speciality Chemical Finishing → Damping and conditioning → Calenders ● Machinery for Anti-Shrink Finish on Cotton ● Mechanical Finish for Worsted and Woollens ● Developments in finishing machinery	30	50	1,2,3,4,5	6,7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Technology of Textile Processing Vol. 4: Technology of Printing: Prof. V. A. Shenai								
2.	Textile Finishing: by J. T. Marsh								
3.	A guide to Textile Wet Processing Machinery by J.N. Shah								

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26	
B.E. (Textile Processing): Regular Programme									
Year	IV	Core / Elective / Foundation TXC1705LCS : Instrumental Methods of Analysis - Practical				Credits / Hours per week		02 / 04	
Semester	I	Year of Introduction:2019 Year of Syllabus Revision:2025				Maximum Marks / Grade		100	
Mode of Transaction		Term work, Practical & Viva							
Course Outcome (CO) TXC1705LCS									
CO 1 Understanding working principle of launder-o-meter and able to determine washing fastness of different dyeing.									
CO 2 Understanding working principle of perspirometer and able to determine perspiration fastness of different dyeing.									
CO 3 Understanding working principle of crockmeter and able to determine rubbing fastness of different dyeing.									
CO 4 Understanding working principle of fad-o-meter and able to determine light fastness of different dyeing.									
CO 5 Students are able to determine bleaching fastness of different dyeing.									
CO 6 Understanding use of gray scale for colour change & colour staining.									
CO 7 Understanding working principle of crease recovery tester and able to determine crease recovery angle of fabric.									
CO 8 Understanding working principle of stiffness tester and able to determine bending length of fabric.									
CO 9 Understanding working principle of spray tester and able to determine water repellency.									
CO10 Understanding working principle of spectrophotometer and able to measure different colour parameter and analyze pass fail system.									
CO11 Understanding working principle of wrap reel and able to measure count of textile fibre.									
CO12 Understanding working principle of shrinkage tester and able to measure shrinkage of fabric.									
CO13 Understanding working principle of GSM cutter and able to measure GSM of fabric.									
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.	Washing Fastness test of different dyed sample.	12	13	1,2,3,4,5	1,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Light Fastness test of different dyed sample.	12	13	1,2,3,4,5	4,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Rubbing fastness test of different dyed sample.	12	13	1,2,3,4,5	2,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Perspiration fastness test of different dyed sample.	12	13	1,2,3,4,5	3,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2025-26				
B.E. (Textile Processing): Regular Programme													
Year	IV	Core / Elective / Foundation TXC1801LCS: Project Work (Presentation & Viva)					Credits		10				
Semester	II	Year of Introduction:2019 Year of Syllabus Revision: 2025					Maximum Marks / Grade		200				
Mode of Transaction		Presentation Viva											
Course Outcome (CO) TXC1801LCS CO 1 Understanding the research methodology. CO 2 Developed new technology for research. CO 3 Developed the skill for research writing.													
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	Every student will be required to submit the project report in a typed standard form on a topic set by one or more teachers. The object of the project work is to test the ability of the student to tackle and investigational problems in his field of specialization. Every Student will be orally examined in the subject incorporated in his project report					105	100	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2025-26			
B.E. (Textile Processing): Regular Programme											
Year	IV	Core / Elective / Foundation TXC1802LCS: Internship (Presentation & Viva)				Credits / Hours per week		10			
Semester	II	Year of Introduction:2029 Year of Syllabus Revision: 2025				Maximum Marks / Grade		200			
Mode of Transaction		Presentation & Viva									
Course Outcome (CO) TXC1802LCS CO 1 Learning the actual processing of textile at bulk level. CO 2 Tackle to ongoing problems in textile processing CO 3 Developed the skill for report writing											
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	In Internship student will undergo practical training at textile industries for the period of VIII semester teaching. The object of the internship is to create awareness of actual industrial wet processing of textiles in industries. Student will be required to submit the training report in a typed standard form. Based on report submitted, the Student will be examined through presentation and viva.			105	100	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE