Program Name

Diploma in Engineering (Textile Chemistry)

Program Code
618335

Department of Textile Chemistry

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

Programme Name: Diploma in Textile Chemistry (DTC)

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 oftextiles processing.

PSO3 Apply creative, managerial and technical skills for careers and to prepare individual with knowledge for entrepreneurship.

PSO4 Apply knowledge of applied science, technology and engineering to serve the problem of textile processing engineering.

Bloom's Taxonomy Levels: 1. Remember 2. Understand 3. Application 4. Analysis 5. Evaluation 6. Creation

Teaching & Examination Scheme (2023-2024)

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination			
						Theory		Practical	
		L	Tu	P	Total	Duration (Hrs)	Marks	T.W/Viva	Total
First Semester of First Year DTC : Semester - I									
APH3115	Physics	4	-	-	4	3	100	-	100
APH3115L	Physics - T.W., Practical & Viva	-	-	4	4	-	-	100	100
AMT3115	Mathematics	4	-	-	4	3	100	-	100
ACH3114	Chemistry – I	4	-	-	4	3	100	-	100
ACH3114L	Chemistry – I - T.W., Practical & Viva	-	-	6	6	-	-	100	100
TXC3103	Technology of Fibre – I	4	-	-	4	3	100	-	100
TXC3103L	Technology of Fibre – I T.W., Practical & Viva	-	-	4	4	-	-	100	100
TXE3104	Textile Manufacture	2	-	-	2	2	50	-	50
TXE3104L	Textile Manufacture - T.W., Practical & Viva	-	-	4	4	-	-	50	50
Total of First Semester of First Year DTC (Semester - I)		18	-	18	36	-	450	350	800
Second Semester of First Year DTC : Semester - II									
ACH3208	Chemistry – II	4	-	-	4	3	100	-	100
ACH3208L	Chemistry – II - T.W., Practical & Viva	-	-	6	6	-	-	100	100
ENG3211	English	4	-	-	4	3	100	-	100
MEC3224	Machine Drawing	3	-	-	3	3	100	-	100
MEC3224L	Machine Drawing - T.W., Practical & Viva	-	-	4	4	-	-	50	50
TXC3205	Technology of Dyeing – I	4	-	-	4	3	100	-	100
TXC3205L	Technology of Dyeing - I T.W., Practical & Viva	-	-	6	6	-	-	100	100
Total of Second Semester of First Year DTC (Semester - II)		15	-	16	31	-	400	250	650
Total of DTC - I		33		34	67		850	600	1450

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination			
						Theory		Practical	
		L	Tu	P	Total	Duration (Hrs)	Marks	T.W/Viva	Total
First Semester of Second Year DTC : Semester - III									
ACH3304	Chemistry – III	4	-	-	4	3	100	-	100
ACH3304L	Chemistry – III - T.W., Practical & Viva	-	-	6	6	-	-	100	100
TXC3307	Technology of Dyeing – II	4	-	-	4	3	100	-	100
TXC3307L	Technology of Dyeing – II T.W., Practical & Viva	-	-	6	6	-	-	100	100
TXC3308	Technology of Fibre – II	4	-	-	4	3	100	-	100
TXC3308L	Technology of Fibre – II T.W., Practical & Viva	-	-	4	4	-	-	100	100
CBM3302	Factory Act & Management	3	-	-	3	3	100	-	100
TXC3309	Technology of Bleaching – I	2	-	-	2	2	50	-	50
Total of First Semester of Second Year DTC (Semester - III)		17	-	16	33	-	450	300	750
Second Semester of Second Year DTC : Semester - IV									
ACH3402	Chemistry – IV	4	-	-	4	3	100	-	100
ACH3402L	Chemistry – IV - T.W., Practical & Viva	-	-	6	6	-	-	100	100
MEC3416	Mechanical Engineering	4	-	-	4	3	100	-	100
TXC3411	Technology of Printing – I	4	-	-	4	3	100	-	100
TXC3411L	Technology of Printing – I T.W., Practical & Viva	-	-	6	6	-	-	100	100
TXC3412	Technology of Bleaching – II	2	-	-	2	2	50	-	50
TXC3409L	Matching - T.W., Practical & Viva	-	-	6	6	-	-	100	100
Total of Second Semester of Second Year DTC (Semester - IV)		14	-	18	32	-	350	300	650
Total of DTC - II		35		34	69		800	600	1400

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination			
						Theory		Practical	
		L	Tu	P	Total	Duration (Hrs)	Marks	T.W/Viva	Total
First Semester of Third Year DTC : Semester - V									
TXC3507	Chemistry & Application of Textile Auxiliaries	2	-	-	2	2	50	-	50
ACH3502	Industrial Chemistry	4	-	-	4	3	100	-	100
TXC3508	Technology of Printing – II	4	-	-	4	3	100	-	100
TXC3508L	Technology of Printing – II TW/Pr/Viva	-	-	6	6	-	-	100	100
TXC3509	Technology of Dyeing – III	4	-	-	4	3	100	-	100
TXC3509L	Technology of Dyeing – III TW/Pr/Viva	-	-	6	6	-	-	100	100
TXC3510	Processing Machinery – I (Bleaching & Dyeing)	4	-	-	4	3	100	-	100
Total of First Semester of Third Year DTC (Semester - V)		18	-	12	30	-	450	200	650
Second Semester of Third Year DTC : Semester - VI									
ACH3605	Physical Chemistry	4	-	-	4	3	100	-	100
ACH3605L	Physical Chemistry TW/Pr/Viva	-	-	4	4	-	-	100	100
TXC3611	Processing Machinery –II (Printing & Finishing)	4	-	-	4	3	100	-	100
TXC3612	Technology of Mercerizing & Finishing	4	-	-	4	3	100	-	100
TXC3613	Colour Chemistry	4	-	-	4	3	100	-	100
TXC3614	Testing & Process Control	2	-	-	2	3	50	-	50
TXC3615L	Testing & Matching TW/Pr/Viva	-	-	8	8	2	-	100	100
Total of Second Semester of Third Year DTC (Semester - VI)		18	-	12	30	-	450	200	650
Total of DTC - III		36	-	24	60	-	900	400	1300
Total of DTC		100	-	92	192	-	2550	1600	4150

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **APH3115: Physics**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision: 2012	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Course Outcome (CO) APH3115

CO 1 Learning the fundamentals of Physics
CO 2 Understanding concepts of classical Physics
CO 3 Understand Properties of fluid
CO 4 Learning the concepts of Oscillations and heat
CO 5 Understanding of Electromagnetic spectrum and properties
CO 6 Understanding of modern Physics and introductory semiconductor physics and nuclear physics

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	GENERAL PHYSICS: Units and Dimensional Analysis; Significant Figures, Errors;Scalars and Vectors; Dot product, Cross product;Review of Rectilinear motion; Motion in Two-Dimensions; Projectile Motion; Relative Velocity;Review of Newton's Laws of Motion; Momentum and Conservation of Momentum; Law of Gravity; Force of Friction (Static, Dynamic, and Rolling); Incline Plane; Uses and Limitations of Friction; Viscous force, Coefficient of Viscosity; Stokes' Law; Elasticity and Hooke's Law;Work: Unit of Work, Power, Energy, Potential Energy and Kinetic Energy; Conservation of Energy; Rotational Motion: Kinematics of Angular Motion; Angular variables; Relation between Linear and Angular Variables; Dynamics of Angular Motion: Torque; Work done by a Torque; Center of Mass; Moment of Inertia; and Rolling Motion.	16	25	1,2,3,4	1,2	4	Emp, SD	G	G, ES, HV, PE

	FLUID: Pressure; Archimedes Principle; Bernoulli's Principle; Surface Tension. Density of Solids, Liquids, and Fiber.								
2	OSCILATIONS AND WAVES : Simple Harmonic Motion; Damped and Forced Oscillator; Resonance; Waves: Wavelength, Period, and Frequency; Longitudinal and Transverse Waves; Traveling and Standing Waves; Idea of Superposition of Waves; Examples of Mechanical Waves; Sound, Ultrasonic. HEAT :Review: Zeroth Law of Thermodynamics; Temperature and Scales of Temperature;; Linear Expansion; Thermal Conductivity; applications to Fiber; Temperature Sensors; Introduction to the Laws of Thermodynamics (First and Second); Heat; Specific Heat, Latent Heat; Measurement of Specific Heat and Latent Heat; Thermoelectricity (Qualitatively): Seebeck Effect, Peltier Effect; Thomson Effect; Thermocouple as a Temperature Sensor.	14	25	2,3,5	2,3	4	Emp, SD	G	G, ES, HV, PE
3	ELECTROMAGNETISM :Electrostatics- Coulomb's Law; Electric Field and Potential; Idea of Capacitance and Dielec Applications in Textile Physics; Current and Resistance; Kirchhoff's Law; Ohm's Law; Ohmic and Non-Ohmic Dev Magnetostatics: Magnetic field due to Electric Current flow a straight conductor and a circular coil; Solenoid; analogy w Bar Magnet; Faraday's Law: Concept of Flux; Self-inductic Mutual induction. OPTICS : Electromagnetic Radiation; Review of Reflection and Refraction (Mirror, Lens, Prism); Refractive Index of Textile Materials; Microscope, Telescope;Elementary ideas of Interference and Diffraction; Single-slit and Double-slit; applications in Textile. Polarization of Light.	15	25	1,2,3,5	4,5	4	Emp, SD	G	G, ES, HV, PE
4	OPTICS : (cont) Elementary color science: additive color mixture, dominant wavelength and purity, subtractive method of color mixing, color of paints and inks MODERN PHYSICS :Modern Physics: basics idea of Quantization (problem of black body radiation, Planck), photoelectric effect and its application, Bohr model of Atom, De-Broglie wavelength, X-rays, Lasers; Semiconductors: p-n diodes, thermistor as a Temperature sensor.	15	25	2,3,4,5,6	5,6	4	Emp, SD	G	G, ES, HV, PE
Reference Books									
1.	Engineering Physics by R. K. Gaur and S. L. Gupta								
2.	Applied Physics by Prof. B G Bhandarkar								
3.	Applied Physics for Polytechnics by Prakash Manikpure								
4.	Fundamental of Physics by R. Resnick, D Halliday and J Walker								
5.	Fundamental of Physics Vol. I and II by H. C. Verma								

6.	Physics XI & XII (Gujarat Board)

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**I**	~~**Core**~~ **/** ~~**Elective /**~~ **Foundation** **APH3115L: Physics - Practical**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**

Mode of Transaction	Term work, Practical and viva

Course Outcome (CO) APH3115L

CO 1 Learning the fundamentals of Physics

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	Error analysis, Units and dimensions	06	10	1,2	1	4	Emp, SD	G	G, ES, HV, PE
2	Vernier Calipers	06	10	2	1	4	Emp, SD	G	G, ES, HV, PE
3	Micrometer screw	06	10	2,3	1	4	Emp, SD	G	G, ES, HV, PE
4	Density of fiber	06	10	3,4	1	4	Emp, SD	G	G, ES, HV, PE
5	Focal length of Concave mirror	06	10	2,3	1	4	Emp, SD	G	G, ES, HV, PE
6	Focal length of Convex mirror	06	10	2,3	1	4	Emp, SD	G	G, ES, HV, PE
7	Verification of Ohm's Law	06	10	3,4	1	4	Emp, SD	G	G, ES, HV, PE
8	Velocity of sound by Resonance tube	06	10	2	1	4	Emp, SD	G	G, ES, HV, PE
9	Laws of refraction using Glass slab	06	10	2	1	4	Emp, SD	G	G, ES, HV, PE
10	Angle of Prism	06	10	2,3	1	4	Emp, SD	G	G, ES, HV, PE

Reference Books

1.	Engineering Physics by R. K. Gaur and S. L. Gupta
2.	Applied Physics by Prof. B G Bhandarkar
3.	Applied Physics for Polytechnics by Prakash Manikpure
4.	Fundamental of Physics by R. Resnick, D Halliday and J Walker
5.	Fundamental of Physics Vol. I and II by H. C. Verma
6.	Physics XI & XII (Gujarat Board)

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2020-21**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	**Core / ~~Elective / Foundation~~** **AMT3115: Mathematics**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Course Outcome (CO) AMT3115

CO 1 To give exposure of basic topics of Mathematics like matrices,determinants, trigonometry, geometry and introductory calculus.

CO 2 Matrices and determinants will be useful for them when they will be dealing with engineering applications based on system of linear equations and system of differential equations

CO 3 Trigonometry is useful in various higher engineering mathematics applications

CO 4 Co-ordinate geometry is useful to determine equation ofbasic shapes in plane, which has further applications in calculus.

CO 5 Elementary calculus isuseful for basicprocesseslike tocomputelimits, derivativesandintegrals

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	AlgebraDeterminants: Definition and properties, solution of simultaneous linear equations using Cramer's rule.Matrices: Definitions and elementary operations.	15	25	1,2,3,4,5	1,2	4	SD	G	PE
2	Trigonometry: Trigonometric ratios of allied angles, addition formulae, inverse functions, trigonometric equations, properties of triangle.	15	25	1,2,3,4,5	1,3	4	SD	G	PE
3	Co-Ordinate Geometry Point, straight line, circle, parabola, hyperbola, ellipse.	15	25	1,2,3,4,5	1,4	4	SD	G	PE
4	Differential Calculus Limits, first and higher order derivatives, rules for differentiation, chain rule, integrals, substitution method, integration by parts, method of partial fractions.	15	25	1,2,3,4,5	1,5	4	SD	G	PE

Reference Books

1. N. N. Shah : Algebra
2. Loney. : Trigonometry Loney.
3. C. C. Shah : University Mathematics

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3114: Chemistry – I**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision: 2009	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) ACH3114

CO 1 Basic introduction of Chemistry, branches of chemistry, application of chemistry in specific branch.
CO 2 Introduction to chemistry: Elements, Compounds and mixtures, Physical and chemical changes
CO 3 Understand & learn:General Laws of Gases
CO 4 Learn: Atomic and molecular weight, Equivalent weight, Solution and solubility, Normality, molarity and molality
CO 5 Study aboutAcids, Bases and Salts: General characteristics, Methods of preparation and types.
CO 6 Study Water: Sources and impurities in water, Temporary and permanent hardness and removal of hardness.
CO 7 Learn about Structure of Atom: Rutherford model, Bohr's model, Quantum numbers, Electronic configuration.
CO 8 Study: Hydrogen & oxygen in detail and their compounds..
CO 9 Study: Sodium & Chlorine in detail and their compounds.

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 chemistry: Elements, Compounds and mixtures, Physical and chemical changes, Symbols, Formulas, Valency and equations. Stoichiometry of chemical reactions.	06	13	1, 2	1,2	4	Emp	G	ES
2.	Basic concepts of elements and compounds: Atomic and molecular weight, Equivalent weight, Solution and solubility, Normality, molarity and molality.	07	14	1,2,3,4	1,3	4	Emp	G	ES
3.	General Law's of Gases: Boyle's Law, Charle's Law, Gaylussac's Law, General gas equation, Avogadro's Law, Graham's Law and Diffusion, Dalton's Law and Partial pressure	05	10	1,2,3	1,4	4	Emp	G	ES

4.	Acids, Bases and Salts: General characteristics, Methods of preparation, Arrhenius theory, Bronsted Lowry theory, Oxidation and Reduction.	06	13	1,2,3	1,5	4	Emp	G	ES
5.	Water: Sources and impurities in water, Temporary and permanent hardness, Clark's method for removal of hardness, Water of crystallization, deliquescence and efflorescence	06	13	1,2,3,6	1,6	4	Emp	G	ES
6.	Structure of Atom: Rutherford model, Bohr's model, Quantum numbers, Electronic configuration	05	10	1,2,3,6	1,7	4	Emp	G	ES
7.	Hydrogen and Oxygen: Preparation, Properties, Uses, Important compounds	07	14	1,2,3	1,8	4	Emp	G	ES
8.	Sodium and Chlorine: Preparation, Properties, Uses, Important compounds	06	13	1,2,5	1,9	4	Emp	G	ES

Reference Books

1.	Fundamental of Inorganic Chemistry – P. L. Soni
2.	Inorganic Chemistry – Gehani, Bhagwat and Parekh
3.	Engineering Chemistry – Jain & Jain, Dhanpatrai Publishing House

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	~~**Core**~~ / ~~**Elective /**~~ **Foundation** **ACH3114L: Chemistry - IPractical**	**Credits / Hours per week**	**06**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision: 2009	**Maximum Marks / Grade**	**100**
Mode of Transaction		Term work, Practical and viva		

Course Outcome (CO) ACH3114L

CO 1 To determine the strength and the normality of an unknown analyte by performing a acid-base titration.

CO 2 To explore the basic chemistry in dry and aqueous medium, solubility product, common-ion effect, group chemistry etc. of some common inorganic salts (both cations and anions)

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.	To determine the strength and normality of HCl solution using a standard solution of NaOH.	9	10	1,2,4	1	4	Emp	G	ES
2.	To determine the strength and normality of HNO_3 solution using a standard solution of NaOH.	9	10	1,2,4	1	4	Emp	G	ES
3.	To determine the strengths and normalities of Oxalic acid & NaOHsolution using a standard solution of KOH.	9	10	1,2,4	1	4	Emp	G	ES
4.	To determine the strengths and normalities of $Ca(OH)_2$& H_2SO_4 solution using a standard solution of HCl.	9	10	1,2,4	1	4	Emp	G	ES
5.	Elementary qualitative analysis of an unknown inorganic salt solution involving detection of single cation and single anion including followed ions: **Cations**: Pb^{2+}, Cu^{2+}, Fe^{+2}, NH_4^+, Ca^{2+}, Ba^{2+}, Mg^{2+} **Anions**: Cl^-, Br^-, NO_3^- , SO_4^{2-}	36	60	2,3,4	2	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} ed, Prentice Hall) 2000.
2. Inorganic qualitative analysis by Prof R C Shah

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3103: Technology of Fibre – I**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision: 2021	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) TXC3103

CO 1 Learning the basic concept of the textile fibres.
CO 2 Understanding the properties of the textile fibres.
CO 3 Learning methods of identification of textile fibres.
CO 4 Learning the manufacturing process of natural cellulosic fibres.
CO 5 Learning the manufacturing process of natural protein fibres.
CO 6 Understanding the morphology of the various natural fibres.
CO 7 Understanding chemical composition of various natural fibres.
CO 8 Learning about the various bast fibres.
CO 9 Learning various methods of retting of bast fibres.
CO 10 Learning the manufacturing process of regenerated cellulosic fibres.
CO 11 Understanding the structure of regenerated cellulosic fibres
CO 12 Learning the various properties of natural fibres & regenerated cellulosic 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.	**Introduction of Fibre:** ● History of Textile fibres. ● Definition of various terms of textile fibres. ● Classification of textile fibres. ● Natural & added impurities in textile fibres. ● Essential & desirable properties of textile fibres.	08	13	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Physical and chemical identification of fibres.								
2.	**Cotton Fibres:** ● Introduction of cellulosic fibers. ● Growth and Morphology of cotton fiber. ● Chemical Composition of cotton fiber. ● Manufacturing of cotton Fibre. ● Chemical reaction of cotton fiber ● Physical, Chemical and Biological properties and uses of various Natural Fibres.	14	24	1,2,3,4,5	4,6,7,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
	Natural Protein Fibers: ● Introduction of the various natural protein fibers. ● Origin and Morphology of wool fiber. ● Chemical Composition of wool fiber. ● Morphology of wool Fiber. ● Production of Silk fiber. ● Life cycle of silk worm. ● Chemical Composition of silk fiber. ● Other minor animal fibers. ● Physical properties, Chemical properties and uses of natural protein fibres	14	23	1,2,3,4,5	5,6,7,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Bast Fibres:** ● Introduction of Bast fibres. ● Chemical composition of different bast fibres. ● Retting of bast fibres. ● Occurrence, morphology, constitution, physical properties, chemical properties and uses of Bast fibres.	10	17	1,2,3,4,5	8,9,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Regenerated Cellulosic Fibres:** ● Introduction of Regenerated cellulosic fibres. ● Manufacturing process of Viscose rayon fibre. ● Manufacturing process of Polynosic fibres. ● Manufacturing process of Cuprammonium rayon fibre. ● Manufacturing process of Acetate rayon fibre.	14	23	1,2,3,4,5	10,11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Physical properties, Chemical Properties, End used & morphology of regenerated cellulosic fibres.								

Reference Books

1.	Textile Fibres, Vol. I – Prof. V.A. Shenai
2.	Handbook of Text. Fibres. Vol.I, – J. Gordon Cook
3.	Textile Fibres. Vol.II – Editor : Dr. V.K. Kothari
4.	Textile Fibres – H.V. Shreenivasa Murthy
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.	A Text Book of Fiber Science and Technology – S. P. Mishra, New age International Publisher

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**I**	**Core / ~~Elective / Foundation~~** **TXC3103L: Technology of Fibre - I Practical**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision: 2021	**Maximum Marks / Grade**	**100**

Mode of Transaction	Term work, Practical and viva

Course Outcome (CO) TXC3103L

CO 1 Learning the basic concept of the textile fibres.
CO 2 Understanding the properties of the textile fibres.
CO 3 Learning methods of identification 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 Natural fibres by physical, chemical & burning tests.	40	67	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Study microscopic structure of different natural fibre using microscope.	20	33	1,2,3,4,5	1,2,3	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 1st 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

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	**Core / ~~Elective / Foundation~~** **TXE3104: Textile Manufacture**	**Credits / Hours per week**	**02**
Semester	**I**	Year of Introduction: 2008 Year of Revision:	**Maximum Marks / Grade**	**50**
Mode of Transaction	Lecture			

Course Outcome (CO) TXE3104

CO 1 Summarize the yarn manufacturing processes, parameters and terms.

CO 2 Paraphrase the fabric manufacturing processes, parameters and terms.

CO 3 Explain the preparatory processes to fabric manufacture and chemical processing of fabrics

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	**Spinning** 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.	6	22	1,2,3,4	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	**Yarn Preparatory** Classification of yarn preparatory processes – Flowcharts of yarn preparatory processes – Like, Winding, Warping, Sizing, Drawing and Denting and Pirn Winding - Different types of yarn packages - Classification of yarn and its faults, sizing concept.	8	26	1,2,3,4	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3	**Weaving** 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.	8	26	1,2,3,4	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4	**Basic Weaves**	8	26	1,2,3,4,5,6	3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	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. **Fabric faults** Fabric faults in brief								

References:

1.	Fibre to Fabric: - Corbman Barnard P.,McGraw hill international Edition
2.	Textile Fibres H.V.S. Murthy,The Textile Association of India
3.	Textile Yarns: B. C. Goswami, Wiley India
4.	Spun yarn technology: Eric Oxtoby, Butterworths
5.	The Motivate series “Textiles”: - A. Wynne, Macmillan
6.	Watson’s Textile design and colour: - J. Grosicki, Woodhead Publishing Ltd.
7.	Woven fabric production- I: - NCUTE, Ncute Publication

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	**Core / ~~Elective / Foundation~~** **TXE3104L: Textile Manufacture - Practical**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction: 2008 Year of Revision:	**Maximum Marks / Grade**	**50**
Mode of Transaction	Laboratory Experiments, discussion, drawing, term work and viva		

Course Outcome (CO) TXE3104L

CO 1 Summarize the yarn manufacturing processes, parameters and terms.
CO 2 Paraphrase the fabric manufacturing processes, parameters and terms.
CO 3 Explain the preparatory processes to fabric manufacture and chemical processing of fabrics

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 spinning. Outline of spinning laboratory. Collection of different fibre samples	5	8.33	1,2	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Passage of material through Blow room and Card with flowcharts. Study of different beaters of Blow room	5	8.33	1,2,3,4	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Passage of material through Draw frame and Speed frame with flowcharts	5	8.333	1,2,3,4	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Passage of material through lap former and Comber with flowcharts	5	8.33	1,2,3,4	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Passage of material through Ring frame and Rotor with flow charts	5	8.33	1,2,3,4	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Concept of Modern Spinning lines	5	8.33	1,2,3	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Passage of material through warp and weft preparatory machines. Study of different winding packages. Understanding of different yarn faults and collections of its samples	5	8.33	1,2,3,4	3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	Flow chart of garment manufacturing process and garment designing.	5	8.33	1,2,3,4	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

9.	Passage of material through weaving machine. Understanding of motions of loom	5	8.33	1,2,3,4	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
10.	Collection of different types of yarn and fabrics. Sample making on loom.	5	8.33	1,2,3,4,5,6	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
11.	Passage of material through knitting machine. Brief explanation of knitted structure.	5	8.33	1,2,3,4	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
12.	Passage of material through braiding machine and non-woven machine	5	8.33	1,2,3,4	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

References:

1.	Fibre to Fabric: - Corbman Barnard P.,McGraw hill international Edition
2.	Textile Fibres H.V.S. Murthy,The Textile Association of India
3.	Textile Yarns: B. C. Goswami, Wiley India
4.	Spun yarn technology: Eric Oxtoby, Butterworths
5.	The Motivate series “Textiles”: - A. Wynne, Macmillan
6.	Watson’s Textile design and colour: - J. Grosicki, Woodhead Publishing Ltd.
7.	Woven fabric production- I: - NCUTE, Ncute Publication

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3208: Chemistry – II**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:2009	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Course Outcome (CO) ACH3208

CO 1 Introduction to basic concepts of Organic Chemistry to understand the structure, Nomenclature, Physical, Chemical properties, classification of organic molecules/compounds.

CO 2 Learn about the methods of preparation of organic compounds.

CO 3 Learn about chemical reactions of organic compounds under the different conditions and mechanisms involved in it.

CO 4 Applications & Uses of Organic compounds.

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 Organic chemistry: Difference between organic and inorganic compounds; Covalent, Sigma and Pi bonds; Characterization of carbon atom; Nomenclature of Organic compounds; isomerism, Different types of isomerism.	06	13	1, 2	1	4	Emp	G	ES
2.	Chemistry of Aliphatic compounds I: Alkanes: Preparation, properties and uses.	07	14	1,2,3,4	1,2	4	Emp	G	ES
3.	Chemistry of Aliphatic compounds II: Alkenes: Preparation, properties and uses; Alkynes: Preparation, properties and uses.	05	10	1,2,3	1,2	4	Emp	G	ES
4.	Chemistry of Aliphatic compounds III: Alkyl halides: Preparation, properties and uses.	06	13	1,2,3	1,2	4	Emp	G	ES
5.	Chemistry of Aromatic compounds I: Introduction to aromatic compounds; Benzene and its homologues; Preparation, properties and uses.	06	13	1,2,3,6	1,2	4	Emp	G	ES
6.	Chemistry of Aromatic compounds I: Introduction to aromatic compounds; Benzene and its homologues; Preparation, properties and uses.	05	10	1,2,3,6	2	4	Emp	G	ES
7.	Chemistry of Aromatic compounds III: Introduction to aromatic nitro compounds; Various	07	14	1,2,3	3,4	4	Emp	G	ES

	reagents used for nitration and factors affecting nitration; Nitro benzene: Preparation, properties and uses.								
8.	Chemistry of Aromatic compounds IV: Introduction and classification of phenols: Dow, Raschig and Cumene process for the manufacture of phenol; Properties and uses of phenol.	06	13	2,3,5	3,4	4	Emp	G	ES
Reference Books									
1.	Text Book of Organic Chemistry for B. Sc. Students: P. L. Soni								
2.	Organic Chemistry: Morrison and Boyd								
3.	Text Book of Organic Chemistry: Bahl and Bahl								

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**I**	~~**Core**~~ **/** ~~**Elective /**~~ **Foundation** **ACH3208L: Chemistry - IIPractical**	**Credits / Hours per week**	**06**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:2009	**Maximum Marks / Grade**	**100**

Mode of Transaction	Term work, Practical and viva

Course Outcome (CO) ACH3208L

CO 1 To explore the basic chemistry in dry and aqueous medium, solubility product, common ion effect and group chemistry involved etc. of an unknown inorganic salt (both cations and anions)

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.	Elementary qualitative analysis of an unknown inorganic salt involving detection of single cation and single anion including followed ions: **Cations**: Pb^{2+}, Cu^{2+}, Ni^{2+}, Zn^{2+}, Mn^{2+}, Ca^{2+}, Sr^{2+}, Ba^{2+}, NH_4^+ ,Al^{+3}, Mg^{+2} ,K^+ **Anions**: CO_3^{2-}, Cl^-, Br^-, I^-, NO_3^- , SO_4^{2-}	72	100	1,2,4	1	4	Emp	G	ES

Reference Books

1.	Text Book of Organic Chemistry for B. Sc. Students: P. L. Soni
2.	Organic Chemistry: Morrison and Boyd
3.	Text Book of Organic Chemistry: Bahl and Bahl

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2020-21**
Diploma in Textile Chemistry : Regular Programme			
Year	**II**	~~**Core**~~ / ~~**Elective**~~ / **Foundation** **ENG3211: English (Communication Skill)**	**Credits / Hours per week**	**3/ 2L+2P**
Semester	**I**	Year of Introduction:2020 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100+50=150**
Mode of Transaction	Lectures			

Course Outcome (CO) ENG3211

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, Personality Development. Newsletters, technical article and business letters.	10	40	1,2,3	3,4	3,4	SD	G	ES

	Technical Reports, characteristics, Importance, objectives, categories of report, format structure of reports, types of reports, importanceof plagiarism check.								
4.	Group Discussion and work place communication: Qualities needed for effective group discussion. Email etiquettes, Telephone Etiquettes, Role and responsibility of engineer, Work culture in jobs. Work place, rights and responsibilities	04	15	1,2,4	4	3,4	SD	G	ES
5.	Interviews and meetings: Types of interview, General preparation for interview, Gathering information about the company, knowing about the role/job position, Types of interviewing questions, Non-verbal communication to win the interview. Meeting and Conferences: Planning a meeting (Agenda and notice), Conducting a meeting, Post meeting actions (Minutes), Planning & Conducting a Conference (anchoring and Report writing), and Video/webconferences	04	15	1,2,3	3,4	3,4	SD	G	ES
T.W./Pr.	Term work / Practicals shall be based on above syllabus.								
Reference Books									
1.	G. S. B. K Babu Rao, “Business Communication and Soft Skill”, Himalaya Publishing house (1st Edition)								
2.	Raman Sharma, “Technical Communications”, Oxford Publication, London, 2004								
3.	R. Sharma, K. Mohan, “Business Correspondence and Report Writing”, TMH New Delhi 2002.								
4.	S. Kumar, P. Lata, “Communication Skills”, New Delhi, Oxford University Press, 2011								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**I**	**~~Core~~ / ~~Elective~~ / Foundation** **MEC3224: Machine Drawing**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) MEC3224

CO 1 Use the drawing instruments effectively and how to use the dimensioning methods.
CO 2 Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills.
CO 3 Observe, analyze and correlate two-dimensional (Orthographic view) and three dimensional (Isometric view)
CO 4 Create freehand sketches of basic machine components
CO 5 Student's ability to perform basic sketching techniques will improve
CO 6 Students will be able to draw free hand sketching of multiple views from pictorial objects
CO 7 Develop the graphical skills for communication of concepts, ideas and design of engineering products through freehand sketches
CO 8 Understand the importance graphics & technical drawings in engineering through freehand sketches.

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.	Types of lines, letterings and dimensioning as per IS-SP-46, 1988.	08	20	1,2,6	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Orthographic projections: First angle projection only.	08	20	3,4,6	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Types of Sectional views, Sectional views of single objects.	08	20	2,3,5,6	3,6	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Practices of freehand proportionate sketches of following machine parts: a) Screw threads: nomenclature, types and application, ISO metric screw thread designate scheme, conventional representation of threads b) Types of nuts and bolts: their drawing as per rough – rule dimensions, applications;	15	40	1,2,4,5,6	4,5,7,8	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	special purpose nuts c) Studs, set-screw d) Illustration of method of prevention of rotation of bolts, locking arrangement for nuts, foundation bolts e) Piping symbols f) Keys: their types; cotter-joint; pin-joint g) Riveted joints, welded joints, their types h) Muff coupling, flanged coupling								
Reference Books									
1.	N. D. Bhatt Machine Drawing Charotar Pub. House								
2.	Siddheswar Machine Drawing Tata McGraw Hill								
3.	P. J. Shah Engineering Drawing C. Jamnadas& Co.								

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2019-20**

Diploma in Textile Chemistry: Regular Programme				
Year	**I**	~~**Core**~~ **/** ~~**Elective /**~~ **Foundation** **MEC3224L: Machine Drawing- Practical**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**50**

Mode of Transaction	Term work, Practical and viva

Course Outcome (CO) MEC3224

CO 1 Use the drawing instruments effectively and how to use the dimensioning methods.
CO 2 Students are able to use the drafting instruments properly and improve their lettering and dimensioning skills.
CO 3 Observe, analyze and correlate two-dimensional (Orthographic view) and three dimensional (Isometric view)
CO 4 Create freehand sketches of basic machine components
CO 5 Student's ability to perform basic sketching techniques will improve
CO 6 Students will be able to draw free hand sketching of multiple views from pictorial objects
CO 7 Develop the graphical skills for communication of concepts, ideas and design of engineering products through freehand sketches
CO 8 Understand the importance graphics & technical drawings in engineering through freehand sketches.

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.	Types of lines, letterings and dimensioning as per IS-SP-46, 1988.	10	20	1,2,6	1,2	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Orthographic projections: First angle projection only.	10	20	3,4,6	3	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Types of Sectional views, Sectional views of single objects.	10	20	2,3,5,6	3,6	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Free hand sketches	22	40	1,2,4,5,6	4,5,7,8	4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1. N. D. Bhatt Machine Drawing Charotar Pub. House
2. Siddheswar Machine Drawing Tata McGraw Hill
3. P. J. Shah Engineering Drawing C. Jamnadas& Co.

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme				
Year	**I**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC 3205: Technology of Dyeing – I**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) TXC 3205

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 direct dye on different fibers.
CO 5 Understanding the chemistry of direct dye.
CO 6 Learning the dyeing of sulphure dye on different fibers.
CO 7 Understanding the chemistry of sulphure dye.
CO 8 Learning the dyeing of basic dye on different fibers.
CO 9 Understanding the chemistry of basic dye.
CO10 Learning the dyeing of acid dye on different fibers.
CO11 Understanding the chemistry of acid dye.
CO12 Learning the dyeing of metal complex dye on different fibers.
CO13 Understanding the chemistry of metal complex dye.
CO14 Learning the fastness properties of dyeing and its after treatment
CO15 Learning stripping of various dyes from natural fabrics.

Unit No.	**Topic/Unit**	**Contact Hours**	**Weightage (%)**	**BT Level**	**CO**	**PSO**	**Elements of** Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	**Relevance to** Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	**Relation to** Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	**Introduction of Dyeing:** ● History & Introduction of Dyeing. ● Definition of Dye, colour & pigment. ● Classification of colour matter. ● General terms & parameters of dyeing.	08	13	1,2,3	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Nomenclature of dyes ● General mechanism of dyeing of textile fibers								
2.	**Dyeing with Direct Dye:** ● Properties of Direct dye. ● Classification of Direct dye. ● Application on Cotton fiber by different methods. ● Factor affecting the dyeing. ● Application on other cellulosic materials ● Application on Non-cellulosic materials ● After treatment of direct dyed materials. ● Correction and Stripping of direct dyed materials.	12	20	1,2,3,4,5	4,5,14,15	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Dyeing with Sulphure Dye:** ● Properties of sulphur dye. ● Classification of sulphur dye. ● Application of sulphur dye on cotton by different methods. ● Reducing and oxidizing agents used in sulphur dyeing. ● Problems and remedies in sulphur dyeing. ● Stripping of sulphur dyeing.	12	20	1,2,3,4,5	6,7,14,15	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Dyeing with Basic Dye:** ● Properties of Basic dye. ● Classification of basic dyes. ● Dyeing of cellulosic fiber. ● Dyeing of natural protein fiber. ● Striping of basic dye.	08	13	1,2,3,4,5	8,9,14,15	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	**Dyeing with Acid Dye:** ● Properties of Acid dye. ● Classification of Acid dye. ● Basic mechanism of acid dye natural on protein fiber ● Application of acid dye on wool and silk. ● Influence of dyeing parameter on wool and silk.	12	20	1,2,3,4,5	10,11, 14,15	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Stripping of acid dye.								
6.	**Dyeing with Metal Complex Dye:** ● Properties of metal complex dye. ● Classification of metal complex dye. ● Mechanism of metal complex dye on wool and silk ● Application of metal complex dye on wool and silk. ● Stripping of metal complex dye.	08	14	1,2,3,4,5	12,13 14,15	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books	
1.	Technology of Textile Processing Vol. 2: Chemistry of Dyes and Principles of Dyeing: Prof. V. A. Shenai
2.	Technology of Textile Processing Vol. 6:Technology of Dyeing: Prof. V. A. Shenai
3.	Chemical Technology of Fibrous material: F. Sadov
4.	Dyeing and Chemical Technology of Textile fibers: E. R. Trotman
5.	Handbook of Textiles & Industrial Dyeing: Edited by M. Clark
6.	Chemical Technology in Colouration of Textile Vol – I by S. R. Karmakar, Colour Publication Pvt Ltd, Mumbai.
7.	Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.
8.	Bleaching, Mercersing and Dyeing of Cotton materials by R. S. Prayag.

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **I**	**Core / ~~Elective / Foundation~~** **TXC3205L: Technology of Dyeing - I Practical**	**Credits / Hours per week**	**06**
Semester **II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Term work, Practical and viva		

Course Outcome (CO) TXC3205L

CO 1 Understanding effect of different parameters on dyeing of natural cellulosic fabrics with various dye stuffs.

CO 2 Understanding effect of different parameters on dyeing of natural protein fabrics with various dye stuffs.

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 natural cellulosic fibers with various dyes by different method of application (Based on syllabus)	60	67	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Dyeing of natural protein fibers with various dyes by different method of application (Based on syllabus)	30	33	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 Colouration of Textile Vol – I by S. R. Karmakar, Colour Publication Pvt Ltd, Mumbai.
2. Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.
3. Bleaching, Mercersing and Dyeing of Cotton materials by R. S. Prayag.

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3304: Chemistry – III**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:2009	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Course Outcome (CO) ACH3304

CO 1 To learn important laws chemical combinations.
CO 2 To study kinetic theory of gases & its applications.
CO 3 To learn the importance of chemical equilibrium and LeChatelier's principle & its applications in detail.
CO 4 To understand periodic Table and understand the properties relationship in elements

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.	Laws of Chemical Combination; Law of Conservation of Mass, Law of Constant Proportions; Law of Multiple Proportions; Law of Reciprocal Proportions; Law of Gaseous Volumes	06	13	1,2	1	4	Emp	G	ES
2.	Kinetic theory of Gases: Kinetic Gas Equation, Anomalous behaviour of real gases, vanderwaal's equation.	07	14	1,2	1	4	Emp	G	ES
3.	Chemical equilibrium: Law of Mass Action; Le Chatelier's principle; Salt hydrolysis	05	10	1,2,3	2	4	Emp	G	ES
4.	Periodic Table: Periodic Properties of elements; Quantum numbers and electronic configuration of d and f block elements; Ionization potential, electron affinity and electron negativity	06	13	1,2	2	4	Emp	G	ES
5.	Silver and Copper: Preparation; Properties; Uses; Important compounds	06	13	1,2,4	3	4	Emp	G	ES
6.	Inert gases: Preparation; Properties; Uses; Important compounds	05	10	1,2,3	3	4	Emp	G	ES
7.	Water for Industry: Disadvantages of hard water (Domestic and Industrial); Lime soda Process for removal of hardness of water; Zeolite method for removal of hardness of water; Ion exchange method for removal of hardness of water	07	14	1,2,4	4	4	Emp	G	ES
8.	Sulphuric, Nitric, Hydrochloride acid, acid: Manufacturing process; Properties; Uses.	06	13	2,3,4	4	4	Emp	G	ES

Reference Books	
1.	Engineering Chemistry – Jain and Jain; Dhanpatrai Publishing House
2.	Industrial Chemistry – B K Sharma; Goel Publishing House
3.	Essential of Physical Chemistry – B S Bahl, Arun Bahl and G D Tuli; S Chand & Co. Ltd.
4.	Principles of Physical Chemistry – B R Puri, L R Sharma, M S Pathania; Shobanlal Nagin Chand & Co.

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	~~**Core**~~ **/** ~~**Elective /**~~ **Foundation** **ACH3304L: Chemistry - IIIPractical**	**Credits / Hours per week**	**06**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:2009	**Maximum Marks / Grade**	**100**
Mode of Transaction		Term work, Practical and viva		

Course Outcome (CO) ACH3304L

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®/ Global (G) developmental 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 $FeSO_4.7H_2O$ solutions using a standard solution of Oxalic acid.	08	12	1,2,4	1	4	Emp	G	ES
2.	To determine the strengths and normalities of $KMnO_4$ and $FeSO_4(NH_4)_2SO_4.6H_2O$ solutions using a standard solution of Oxalic acid.	08	12	1,2,4	1	4	Emp	G	ES
3.	To determine the strengths and normalities of $KMnO_4$ and H_2O_2 solutions using a standard solution of Oxalic acid.	08	11	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.	08	11	1,2,4	1	4	Emp	G	ES
5.	To determine the strength and normality of I_2 solution against a standard solution of $Na_2S_2O_3$.	08	11	1,2,4	1	4	Emp	G	ES
6.	To determine the strengths and normalities of I_2 and $CuSO_4.5H_2O$ solutions using a standard solution of $Na_2S_2O_3$.	08	11	1,2,4	1	4	Emp	G	ES
7.	To determine the strengths and normalities of I_2 and Na_3AsO_3 solutions using a standard solution of $Na_2S_2O_3$.	08	11	1,2,4	1	4	Emp	G	ES
8.	To determine the strength and normality of $CaOCl_2$ solution against a standard solution of $Na_2S_2O_3$.	08	11	1,2,4	1	4	Emp	G	ES
9.	To determine the strength and normality of $SnCl_2.2H_2O$ solution against a standard solution of $Na_2S_2O_3$.	08	11	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} ed, Prentice Hall) 2000.

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3307: Technology of Dyeing – II**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) TXC3307

CO 1 Learning dyeing of cotton with azoic colour.
CO 2 Learning properties of naphthol & coupling component.
CO 3 Understanding chemistry azoic dyeing on cotton fabric.
CO 4 Learning different method of vat dye on cotton fabric.
CO 5 Learning properties of vat dyes.
CO 6 Understanding chemistry of vat dyeing.
CO 7 Learning different methods of solubilized vat dye.
CO 8 Understanding chemistry of solubilize vat dyeing.
CO 9 Leaning about different oxidation & mineral colour.
CO10 Understanding chemistry of oxidation & mineral colour.
CO11 Learning stripping of various dyes from cotton fabrics.
CO12 Learning of developments in 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.	**Azoic colour:** ● Introduction of Azoic colour. ● Introduction & classification of different types of naphthol and fast salt & bases. ● Substantivity of naphthols. ● Properties, chemical structure, classification and methods of application of azoic colour. ● correction and stripping of azoic colours.	20	34	1,2,3,4,5	1,2,3,11	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Limitation of azoic colour. ● After treatments to improve the various fastness characteristics of Azoic colours								
2.	**Vat dyes & solubilize vat dyes.:** ● Properties, chemical structure, classification and methods of application of vat dye. ● correction and stripping of vat dye ● Properties, chemical structure, classification and methods of application of solubilized vat dye. ● correction and stripping of solubilised vat dye ● After treatments to improve the various fastness characteristics of vat & Solubilized dyes. ● Recent advancement in vat and Indigosol dyes and its application	20	33	1,2,3,4,5	4,5,6,7,8,11 12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Oxidation & Mineral colours:** ● Properties, chemical structure, classification and methods of application of oxidation colours. ● correction and stripping of oxidation colour ● Properties, chemical structure, classification and methods of application of metallic pigments like mineral khaki, chrome yellow. ● correction and stripping of mineral colour. ● Development in oxidation and mineral colour.	20	34	1,2,3,4,5	9,10,11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Technology of Textile Processing Vol. 2: Chemistry of Dyes and Principles of Dyeing: Prof. V. A. Shenai
2.	Technology of Textile Processing Vol. 6:Technology of Dyeing: Prof. V. A. Shenai
3.	Chemical Technology of Fibrous material: F. Sadov
4.	Dyeing and Chemical Technology of Textile fibers: E. R. Trotman
5.	Handbook of Textiles & Industrial Dyeing: Edited by M. Clark

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3307L: Technology of Dyeing – II Practical**	**Credits / Hours per week**	**06**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Term work, Practical and Viva		

Course Outcome (CO) TXC3307L

CO 1 Learning dyeing of cotton with azoic colour.
CO 2 Understanding chemistry azoic dyeing on cotton fabric.
CO 3 Learning different method of vat dye on cotton fabric.
CO 4 Understanding chemistry of vat dyeing.
CO 5 Learning different methods of solubilized vat dye.
CO 6 Understanding chemistry of solubilize vat dyeing.
CO 7 Leaning application of different oxidation & mineral colour.

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 cotton with azoic colour.	24	27	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Dyeing of cotton with vat dye by different method.	30	33	1,2,3,4,5	3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Dyeing of cotton with solubilized vat dye by different methods.	18	20	1,2,3,4,5	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Dyeing of cotton with oxidation and mineral colour	18	20	1,2,3,4,5	7	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.

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3308: Technology of Fibre – II**	**Credits / Hours per week**	**04**
Semester **I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures		

Course Outcome (CO) TXC3308

CO 1 Learning the basic concept of the various man-made textile fibres.
CO 2 Understanding the properties of the various man-made textile fibres.
CO 3 Learning methods of identification of various man-made textile fibres.
CO 4 Learning basic concept of polymerization.
CO 5 Understanding properties of polymer to make fibre forming polymer.
CO 6 Learning about various man-made synthetic fibres.
CO 7 Learning about different spinning techniques.
CO 8 Learning synthesis of different monomers for different synthetic fibres.
CO 9 Understanding manufacturing & properties of various synthetic fibres.
CO 10 Learning post spinning process of textile fibres.
CO 11 Learning about use of textile fibres as technical textiles.
CO 12 Understanding importance of technical 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.	**Introduction of Man-made synthetic Fibre:** ● Brief introduction & history of various synthetic fibres. ● Classification of synthetic fibres. ● Important characteristics required in a polymer to make it fibers forming.	18	30	1,2,3,4,5	1,2,3,4,5	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Brief introduction to the determination of molecular weights, crystalline and amorphous regions, and orientation of textile fibers								
2.	**Manufacturing of synthetic fibres:** ● Introduction of the various spinning methods for manufacturing of synthetic fibres. ● Introduction & Classification of Man-made Fibres. ● Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses of Polyester Fibre. ● Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Nylon – 6 & Nylon – 6,6 Fibres. ● Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Acrylic Fibres. ● Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Polypropylene Fibres. ● Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses Polyethylene Fibres. ● Synthesis of raw material, Manufacturing Process, Structure, Physical & Chemical properties and End uses of various vinyl fibres. ● Various post spinning process employed for various synthetic fibres.	28	50	1,2,3,4,5	6,7,8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Fibres in Technical Textiles:** ● Introduction of technical textiles, Technical fiber, yarns and fabrics. ● Brief introduction to the method of producing textured yarns. ● Non-woven fabrics. ● Geo-textiles, Medical Textiles, Protective Textiles. ● various carbon fibers, electrometric fibres and other textile fibres and fabrics ● A brief introduction to smart textiles and technical textiles	20	20	1,2,3,4,5	11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									

1.	Textile Fibres, Vol. I – Prof. V.A. Shenai
2.	Handbook of Text. Fibres. Vol.I, II & III – J. Gordon Cook
3.	Textile Fibres. Vol.II – Editor : Dr. V.K. Kothari
4.	Textile Fibres – H.V. Shreenivasamurthy
5.	Chemical Tech. of Fibrous materials – F. sadov
6.	Production of Synthetic Fibers: A. A. Vaidya

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **II**	**Core / ~~Elective / Foundation~~** **TXC3308L: Technology of Fibre - II Practical**	**Credits / Hours per week**	**04**
Semester **I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Term work, Practical and viva		

Course Outcome (CO) TXC3308L

CO 1 Learning the basic concept of the various man-made textile fibres.
CO 2 Understanding the properties of the various man-made textile fibres.
CO 3 Learning methods of identification of various man-made 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 man-made fibres by physical, chemical & burning tests.	16	27	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Analysis of different Blended Fabric (Forward method & Reverse Method)	16	27	1,2,3,4,5	1,2,3	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	1,2,3	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	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Study microscopic structure of different natural fibre using microscope.	12	20	1,2,3,4,5	1,2,3	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 1st 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

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **II**	**Core / Elective / Foundation** **CBM3302: FACTORY ACT MANAGEMENT**	**Credits / Hours per week**	**03**
Semester **I**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures		

Course Outcome (CO) CBM3302

CO1 Understanding the concept of Management
CO2 Learn about the forms of Business Organization
CO3 Learn Financial Management concept
CO4 Understand the Enterprise Management
CO5 Understand basis of Marketing Management
CO6 Understand Legal Aspect – Trade Union Act, Minimum Wages Act-Basic

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 Sustainab (ES), Human Values (HV) Professional Ethics (PE
1	Management: Definition, Managerial roles and skills, Fayol's principles. External Environment of Business Communication: Meaning, Process Motivation: Meaning, Theories	10	22.22	1,2,3,4	1	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Forms of Business Organization: Industrial Proprietorship, Joint stock company, Their merits and demerits, Office management, Organization structures.	07	15.55	1,2,3,4	2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3	Financial Management: Source of Finance, Long term, Medium term, Short term role, Functions and services of stock exchange	07	15.55	1,2,3,4	3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4	Enterprise management: Setting up a small scale nterprise. Institutional assistance and related managerial problems Production planning Purchase procedure and Inventory Management	07	15.55	1,2,3,4	4	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5	Marketing Management and Human Resource Management: Definition, core concept,E-Commerce HRM Definition, Training and Development, Selection and Recruitment.	07	15.55	1,2,3,4	5	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	Concept of Industrial relations								
6	Legal Aspects: Objectives and applications of factory Act – Health Welfare and Safety Measures Trade Union Acts: Objective and Registration of a Trade Union Payment of Wages Act: Objectives and other important features	07	15.55	1,2,3,4	6	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Fundamental of Business Organization and Management – Y. K. Bhushan								
2.	Management – James A. F. Stoner. R. Edward Freeman								
3.	Essential of Management – Harold Koontz, Heinz Wehrion								
4	Marketing Management – Philip Kotler								
5	Production of Operation Management – Chunawala& Patel								
6	Entrepreneurship – David H. Holt								
7	Elements of Mercantile law – N. D. Kapoor								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC 3309: Technology of Bleaching - I**	**Credits / Hours per week**	**02**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**50**
Mode of Transaction	Lectures			

Course Outcome (CO) TXC 3309

CO 1 Learning about sizing of textile fibres.
CO 2 Understanding importance of sizing.
CO 3 Learning about different sizing ingredients.
CO 4 Understanding working principle of sizing machine.
CO 5 Learning pre-treatment processing of natural cellulosic fibres.
CO 6 Learning different chemicals used in pre-treatments of natural cellulosic fibres.
CO 7 Understanding chemistry of pre-treatments of natural cellulosic fibres.
CO 8 Learning pre-treatment processing of natural protein fibres.
CO 9 Learning different chemicals used in pre-treatments of natural protein fibres.
CO10 Understanding chemistry of pre-treatments of natural protein fibres.
CO11 Learning pre-treatment processing of bast fibres.
CO12 Learning different chemicals used in pre-treatments of bast fibres.
CO13 Understanding chemistry of pre-treatments of bast 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.	**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.	04	13	1,2,3,4,5	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

2.	**Sizing of Textiles.** ● Introduction of the Sizing process. ● Object of sizing. ● Properties of sized yarn. ● Different ingredients used in size paste. ● Method of application of size paste. ● Machinery used in Sizing process. ● Advantages & disadvantages of sizing. ● Evaluation of Sizing agents.	04	13	1,2,3,4,5	1,2,3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Pre-treatment of cotton fibers:** ● Concept and object of Desizing, Scouring & Beaching. ● Classification of Desizing methods. ● Chemistry of desizing and various application methods of desizing. ● Classification of Scouring agent. ● Chemistry of scouring and various application methods of scouring. ● Classification of Bleaching agents. ● Chemistry of bleaching and various application methods of bleaching.	10	34	1,2,3,4,5	5,6,7	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Pre-treatment of Natural Protein Fibres:** ● Impurities present in wool and silk. ● Different methods of scouring of wool. ● Scouring of raw wool, wool yarn and wool fabric. ● Bleaching of wool by various bleaching agent. ● Carbonizing and Chloribation of Wool. ● Degumming of silk by various methods. ● Bleaching of silk by various bleaching agent.	08	27	1,2,3,4,5	8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	**Pre-treatment of Bast Fibers:** ● Chemical composition of bast fibers. ● Retting of bast fibers ● Degumming or Scouring of bast fibers	04	13	1,2,3,4,5	11,12,13	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	• Bleaching of bast fibers.								
Reference Books									
1.	Technology of Textile Processing Vol. 3: Technology of Bleaching & Mercerization by Prof. V.A. Shenai								
2.	Chemical Technology of Fibrous material: F. Sadov								
3.	Chemical Technology in the Pre-treatment processes of Textiles by S. R. Karmakar								
4.	Textile Bleaching – J.T. Marsh								
5.	Textile Scouring & Bleaching – E.R. Trotman								
6.	Technology of Bleaching & Dyeing of Textile Fibres –Chakravarthy								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	~~**Core**~~ / ~~**Elective**~~ / **Foundation** **ACH3402: Chemistry – IV**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:2014	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) ACH3402

CO 1 Understanding the brief about organic chemistry & organic compounds
CO 2 Learn about the separation & purification techniques of Organic compounds.
CO 3 Learn about detection & estimation methods of Elements like N,S,X .
CO 4 Learn and Understand the properties, preparation methods & chemical reactions of alcohols.
CO 5 Learn and Understand the properties, preparation methods & chemical reactions of Heterocyclic compounds.
CO 6 Learn and Understand the properties, preparation methods & chemical reactions of aromatic Amino compounds
CO 7 Learn and Understand the properties, preparation methods & chemical reactions of aldehyde & ketones.
CO 8 Learn and Understand the properties, preparation methods & chemical reactions of Aromatic carboxylic acids.
CO 9 Learn and Understand the properties, preparation methods & applications, types of Polymers and classification of polymerization methods.

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.	Purification of Organic Compounds, Purification of Solids by Crystallization, Sublimation, Extraction with solvents; Purifications of Liquids by Simple Distillation, Vacuum Distillation, Steam Distillation	06	13	1, 2	1,2	4	Emp	G	ES
2.	Detection and Estimation of Elements: Lassaigne's test for the detection of N, S and Halogens; Estimation of C, H, N and Halogens	07	14	2,3	1,3	4	Emp	G	ES
3.	Alcohols: General methods of preparation, Properties and Uses	05	10	2,3,4	1,4	4	Emp	G	ES
4.	Heterocyclic Compounds: General methods of preparation, Properties and Uses of Furan, Thiophene and Pyrrol	06	13	2,3,6	1,5	4	Emp	G	ES
5.	Aromatic Amino Compounds and Diazonium Salts: General methods of preparation, Properties and Uses	06	13	1,3,4	1,6	4	Emp	G	ES
6.	Aromatic Aldehydes and Ketones: General methods of preparation, Properties and Uses	05	10	1,2,3	1,7	4	Emp	G	ES

7.	Aromatic Carboxylic Acids: General methods of preparation, Properties and Uses	07	14	1,2,4,5	1,8	4	Emp	G	ES
8.	Polymers: Introduction, Classification, Types of Polymerization, Examples and Uses	06	13	2,3,5,6	1,9	4	Emp	G	ES
Reference Books									
1.	Text Book of Organic Chemistry for B. Sc. Students: P. L. Soni								
2.	Organic Chemistry: Morrison and Boyd								
3.	Text Book of Organic Chemistry: Bahl and Bahl								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3402L: Chemistry – IV Practical**	**Credits / Hours per week**	**06**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:2014	**Maximum Marks / Grade**	**100**
Mode of Transaction		Term work, Practical and viva		

Course Outcome (CO) ACH3402L

CO 1 To learn the concepts of qualitative analysis for identification of organic compounds. Elemental analysis and theory involved in it. To learn the identification tests for different functional groups. Learn to check Melting point & Boiling point of given organic substance.

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 following organic compounds qualitatively).** Urea, Thiourea, Benzoic acid, Cinnamic acid, P-hydroxy benzoic acid, Aniline, P-Toluidine, Beta Naphthol, Benzaldehyde, Acetone, Ethyl acetate, Naphthalene, Acetanilide, M-Dinitrobenzene, Chlorobenzene	72	100	1,2,5	1,2	4	Emp	G	ES

Reference Books

1. Practical organic chemistry by Vogel
2. Identification of organic compounds by R C Shah (Local publications)

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **MEC3416: Mechanical Engineering**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Course Outcome (CO) MEC3416

CO 1 Identify elements and their functions of steam and properties of steam.
CO 2 Develop the mathematical skills for steam properties example.
CO 3 To understand the construction and working principles of steam boiler
CO 4 To understand the construction and working principles of fire tube and water tube boilers.
CO 5 To understand the construction and working principles of steam boiler's mounting and accessories.
CO 6 To understand the construction and working principles of steam engine
CO 7 To understand the construction and working principles of 2 stroke and 4 stroke I. C. engines using petrol and diesel.
CO 8 The knowledge of different types of reciprocating internal combustion engines (ICE), their typical design features and performance characteristics.
CO 9 Design a possible gear train and determine the speeds of simple, compound and epicyclic gear trains.
CO 10 The knowledge of the various machine elements that are typically used in power transmissions: belt drives, chain drives, gears, shaft to hold all the elements together

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.	Properties of steam: Introduction, Formation of Steam at constant pressure, Sensible heating of water, Latent Heat, Total heat, D.F wet steam, Sup. Steam, Specific volume, use of steam tables, Ext. work, Evaporation, Internal latent heat, I. L. of steam – problems.	08	12	1,2,3	1,2	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Steam Boiler: Classification, Shell or Tank Boilers, Cornish & Lancashire, Construction of Boiler Shell & Furnace tube, Fire tube Boilers, Simple vertical Cochran,	08	14	1,2,3,4	3	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	Locomotive Boilers, Water tube boilers – Babcock & Wilcox Boilers. Comparison between f. t. & w. t boilers.								
3.	Boiler mountings & Accessories: Different types of Safety Valves, Water level indicator, Steam pressure gauge, Fusible plug, Feed check valves, Blow off valve, Injector, Economizer, Air heater, Super heater steam separator.	08	18	2,3,5,6	4,5	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Steam Engines: Introduction, Classification, Parts, working, Hypothetical indication diagram – mean off, pressure, actual indicator diagram, method of calculate cylinder volume I.H.P., B.H.P.,F.T.P., efficiencies of steam engine mechanical, thermal, overall, Examples.	08	18	1,2,4,6	6	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	I.C. Engines: Classification, Otto, Diesel, Dual Combustion Engines, 2-stroke and 4-stroke Engines, Power of I. C. engine, I. H. P., B. H. P., Mech. & Thermal problems.	10	18	2,3,5,6	7,8	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Transmission of Power: Types of drives, Groups and Individual Drives, Their merits and demerits, Belt, Chain and Gear Drive. Calculation of Pulley sizes and gear trains for speed reduction. Types of Bearings.	10	20	1,2,3,5,6	9,10	3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Nag, P. K., 'ENGINEERING THERMODYNAMICS'								
2.	Hegde,R. K., 'Power Plant Engineering,								
3.	Khurmi,R.S.& Gupta, J.K., 'Theory of Machines								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC 3411: Technology of Printing – I**	**Credits / Hours per week**	**04**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures			

Course Outcome (CO) TXC 3411

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.

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. ● Difference between dyeing & 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. ● Classification &Properties of different thickeners.	16	27	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Printing paste ingredients. ● Formulation and properties of printing pastes								
2.	**Styles of Printing:** ● Direct style of printing. ● Discharge style of printing. ● Resist style of printing. ● Crimp style of printing. ● Batik style of printing. ● Tie- n – Dye (Bandhani) style of printing. ● Development in style of printing.	14	23	1,2,3,4,5	4,5	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Methods of printing:** ● Block printing method. ● Roller printing method. ● Screen printing method. ● Stencil printing. ● Developments in methods of printing	14	23	1,2,3,4,5	6,7,8	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Printing of cotton fabric:** ● Printing of cotton fabric in different style with various dyes such as → Direct dye. → Basic dye. → Sulphure dye. → Azoic colour. → Oxidation colour. → Rapidfast, Rapidogen &rapidozole colours. Aftertreatment of printed fabric. Advancement in printing of cotton fabric.	16	27	1,2,3,4,5	9,10	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

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC 3411L: Technology of Printing – I Practical**	**Credits / Hours per week**	**06**
Semester **II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Term work, Practical and viva		

Course Outcome (CO) TXC 3411L

CO 1 Learning printing of cotton with various dyes.
CO 2 Understand the preparation of printing paste
CO 3 Leaning the different methods of printing
CO 4 Learning the different style of printing
CO 5 Understanding the defects in printing and its remedy.
CO 6 Leaning the printing of natural protein fabrics.

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Printing of cotton fabric using different dye by direct style printing.	36	40	1,2,3,4,5	1,2,3,4,5	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Printing of natural protein fabric using different dye by direct style printing.	36	40	1,2,3,4,5	2,3,4,5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Special styles of printing on cellulosic fabric.	18	20	1,2,3,4,5	1,2,3,4,5,6	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
4. Textile Printing by R. S. Prayag

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC 3412: Technology of Bleaching - II**	**Credits / Hours per week**	**02**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**50**
Mode of Transaction		Lectures		

Course Outcome (CO) TXC 3412

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 Learning the OBA treatment.
CO 8 Understanding the chemistry of OBA.
CO 9 Learning the application of OBA.
CO10 Learning the het setting of synthetic fibres.
CO11 Understanding the mechanism of heat setting.
CO 12 Learning the assessment of heat setting.
CO 13 Learning about the energy and water conservation in pretreatment processes.

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.	04	13	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	**Pre-treatment of Man-made fibre fabrics.**	06	20	1,2,3,4,5	3,4,7,8,9	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. ● Application of optical brightening agents.								
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.	06	20	1,2,3,4,5	5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Heat Setting treatment:** ● Introduction, definition & need of heat setting. ● Mechanism of het setting. ● Types of the heat setting. ● Parameters of the heat setting. ● Effect of heat setting on different properties of textile fibre. ● Methods of the heat setting. ● Heat setting of different synthetic fibres and their blendes. ● Assessment the degree of heat setting.	08	27	1,2,3,4,5	10,11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	**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. ● Waste water treatment from pre-treatments.	06	20	1,2,3,4,5	13	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

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**II**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC 3409L: Matching**	**Credits / Hours per week**	**06**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**

Mode of Transaction	Term work, Practical & Viva

Course Outcome (CO) TXC 3409L

CO 1 Understanding manual matching of dyed sample and able to match unknown dye sample by manually.

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.	36	40	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Preparation of Secondary shades of Direct dye.	36	40	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Manual matching of unknown shade	18	20	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Book:

1.	Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.
2.	Laboratory Manual for Dyeing & Textile Chemistry by J.M. Matthews.

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The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3502: Industrial Chemistry**	**Credits / Hours per week**	**04**
Semester	**I**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Course Outcome (CO) ACH3502

CO 1 Introduction to Petroleum, Classification, refining processes and uses of different fractions obtained in refining
CO 2 To understand about Cracking process and types, Knocking in Engines, Octane number.
CO 3 To impart knowledge about Fats, Oils and their Physical and chemical properties, and their analysis
CO 4 To educate students about Environmental Pollution causes and measures to control.
CO 5 To understand the basics of Detergents, their types and their mechanism of actions.
CO 6 To learn about Polymers, classifications, and their uses.
CO 7 To learn about Esters and Ethers of Cellulose, com. starch and uses.
CO 8 To get knowledge of preparation and properties of some important Inorganic 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.	Petroleum Industries: Crude Oil; Occurrence and theories of Origin; Classification; Refining by Bubble Tower; Refined Fractions and their uses	06	13	2,3,4	1	4	Emp	G	ES
2.	Cracking of Heavy Oil: Knocking; Octane and Cetane number; Types of Cracking; thermal and catalytic cracking; cracking processes with flow-sheet diagram	07	14	1,2,3	2	4	Emp	G	ES
3.	Fats, Oils and Waxes; Distinction between fats and oils; Properties; Classification; Manufacturing processes; Analysis	05	10	1,2,3	3	4	Emp	G	ES
4.	Environmental Pollution: Introduction, Classification, Water pollution	06	13	2,3,4	4	4	Emp	G	ES
5.	Detergents: Classification; Anionic detergents: Properties and uses; Cationic detergents: Properties and uses; Non-ionic detergents: Properties and uses.	06	13	2,3,4	5	4	Emp	G	ES

6.	Polymers: Classification of polymers; Thermoplastic resins: Properties and uses; Thermosetting resins: Properties and uses.	05	10	2,3,4,5	6	4	Emp	G	ES
7.	Cellulose and Starch: Esters and Ethers of cellulose; Manufacture of rayon; Preparation of Corn starch; Uses of Starch	07	14	2,3,4,5	7	4	Emp	G	ES
8.	Preparation of some inorganic materials: Sodium Chloride; Sodium Hydrosulphide; Sodium Perborate; Peracetic acid	06	13	2,3,4,6	8	4	Emp	G	ES
Reference Books									
1.	Engineering Chemistry – Jain and Jain; Dhanpatrai Publishing House								
2.	Industrial Chemistry – B K Sharma; Goel Publishing House								

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3507: Chemistry & Application of Textile Auxiliaries**	**Credits**	**--**
Semester	**I**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**50**
Mode of Transaction		Lectures		

Teaching Scheme: Lecturer: 02hrs/week Tutorial: -- Practical: -- Total: 02hrs/week	**Examination Scheme:** Theory: 50 Marks Practical: -- Total: 50 Marks

Course Outcome (CO) TXC3507

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.	04	13	1,2,3	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Requirement of textile auxiliaries. ● 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.	06	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 like desizing, scouring, bleaching, & Mercerization of various kinds of textile fibre.	06	20	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 & Finishing 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. ● 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.	08	27	1,2,3,4,5	8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	**Evaluation of Textile Auxiliaries:**	06	20	1,2,3,4,5,6	11,12	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	Qualitative & quantitative evaluation of important textile auxiliaries used in various wet processing of textiles .								

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

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3508: Technology of Printing – II**	**Credits**	**--**
Semester	**I**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures& Practical		

Teaching Scheme:
Lecturer: 04 hrs/week
Tutorial: --
Practical: 06 hrs/week
Total: 10 hrs/week

Examination Scheme:
Theory: 100 Marks
Practical: 100 Marks
Total: 200 Marks

Course Outcome (CO)TXC3508

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 printing of blend fabrics.
CO 6 Understanding faults in printing and its remedies.
CO 7 Learning special styles of printing for man-made fabrics.
CO 8 Learning energy conservation in printing process.
CO 9 Learning development in printing.

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 solubilized vat dyes on cotton fabrics indifferent styles. ● Printing reactive dyes on cotton fabrics in different styles.	20	33	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE
2.	**Printing of synthetic fibres:**	25	42	1,2,3,4,5	3,4,5,6	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	● 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. ● Printing of blended fabrics. ● Faults in Printing and its remedies.								
3.	**Advances in Printing:** ● Special printing process such as transfer printing burnt out printing, metal printing & flock printing. ● Brief introduction to velvet printing, carpet printing &foam printing. ● Garment printing. ● Pigment Printing ● Digital Printing. ● Economy and energy saving in printing of textiles	15	25	1,2,3,4,5	7,8,9	1,2,3	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE
Practical; T.W	The Practical and Termwork will be based on above theory subject.								
Reference Books									
1.	Tech. of Printing, Vol. V - Dr. V.A. Shenai								
2.	Principles of Cotton Printing – D. G. Kale								
3.	Textile Printing – Miles								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3508L: Technology of Printing – II Practical**	**Credits / Hours per week**	**06**
Semester	**I**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Term work, Practical and viva			

Course Outcome (CO) TXC3508L

CO 1 Learning printing of cotton fabric with different dyes.
CO 2 Understanding chemistry of printing of different dyes on cotton fabric.
CO 3 Learning printing of man-made fabric with different dyes.
CO 4 Understanding chemistry of printing of different dyes on synthetic fabric.
CO 5 Learning printing of blend fabrics.
CO 6 Learning machinery used for printing.
CO 7 Understanding the working principle of different machines.
CO 8 Learning different machine used for colour development.
CO 9 Understanding faults in printing and its remedies.
CO10 Learning special styles of printing for man-made fabrics.

Unit No.	**Topic/Unit**	**Contact Hours**	**Weightage (%)**	**BT Level**	**CO**	**PSO**	**Elements of** Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	**Relevance to** Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	**Relation to** Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Printing of cotton fabric with vat dye by different style of printing.	12	13	1,2,3,4,5	1,2,6,7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Printing of cotton fabric with solubillised vat dye by different style of printing.	12	13	1,2,3,4,5	1,2,6,7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Printing of cotton fabric with reactive dye by different style of printing.	18	20	1,2,3,4,5	1,2,6,7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Printing of polyester fabric with different dye by different style of printing.	18	20	1,2,3,4,5	3,4,6,7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Printing of nylon fabric with different dye by different style of printing.	12	13	1,2,3,4,5	3,4,6,7,8,9	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Printing of blended fabric using various combination of dye by different style of printing	12	13	1,2,3,4,5	5,6,7,8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Transfer style of printing on synthetic fabric.	06	08	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 Printing by R. S. Prayag
2. Textile Printing by W. Clarke

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3509: Technology of Dyeing – III**	**Credits**	**--**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Teaching Scheme:
Lecturer: 04hrs/week
Tutorial: --
Practical: 06hrs/week
Total: 10hrs/week

Examination Scheme:
Theory: 100 Marks
Practical: 100 Marks
Total: 200 Marks

Course Outcome (CO) TXC3509

CO 1 Learning about application of reactive dyes on various textile fibres.
CO 2 Learning the chemical structure of different types of reactive dyes.
CO 3 Understanding mechanism of reactive dyes.
CO 4 Learning different method of application of reactive dye on cellulosic fibres.
CO 5 Learning about application of disperse dye on various textile fibres.
CO 6 Learning chemical structure of different types of disperse dye.
CO 7 Understanding mechanism of disperse dye on polyester fabric.
CO 8 Learning different method of application of disperse dye on polyester fabrics.
CO 9 Learning the dyeing of nylon fabric and understanding its mechanism.
CO10 Learning the dyeing of acrylic fabric and understanding its mechanism.
CO11 Learning dyeing of blended fabric.
CO12 Learning dyeing of nylon & acrylic fibres.
CO13 Learning the advances in dyeing technology.
CO14 Understanding energy conservation dyeing industry.

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 with Reactive dye:** ● Introduction of reactive dye: ● Properties of reactive dyes. ● Classification & structure of reactive dyes. ● Mechanism of reactive dyes.	20	33	1,2,3,4,5	1,2,3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Dyeing of cellulosic fabric with reactive dyes. ● Different parameters of reactive dyes. ● Different application methods of reactive dyes. ● Dyeing of wool & silk with reactive dyes. ● correction and stripping of Reactive dye. ● After treatments to improve the various fastness characteristics of reactive dyes.								
2.	**Dyeing with Disperse dye:** ● Introduction of disperse dyes. ● Properties of disperse dye. ● Classification & structure of disperse dye. ● Different application method of disperse dye on polyester fabric. ● Carrier used in dyeing of polyester fabric. ● Mechanism of polyester dyeing with disperse dye. ● Dyeing of nylon & acrylic fibre with disperse dye. ● correction and stripping of Disperse dye ● After treatments to improve the various fastness characteristics of Disperse dyes	20	33	1,2,3,4,5	5,6,7,8	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Dyeing of Nylon and Acrylic Fiber:** ● Dyeing of nylon with acid, metal complex and disperse dye by various methods. ● Dyeing of acrylic with disperse and cationic dye by various methods.	10	17	1,2,3,4,5	9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Advances in Dyeing:** ● Dyeing of unions and blended fabrics ● Recent development in dyeing of synthetic and blended fibres. ● Introduction to foam dyeing ● Pigment Dyeing ● Dyeing texturised fibers ● Recent development in dyeing processes ● Economy and energy saving in dye house	10	17	1,2,3,4,5	11,12,13,14	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Practical; T.W	The Practical and Termwork will be based on above theory subject.								

Reference Books	
1.	Technology of Textile Processing Vol. 6:Technology of Dyeing: Prof. V. A. Shenai
2.	Chemical Technology of Fibrous material: F. Sadov
3.	Dyeing and Chemical Technology of Textile fibers: E. R. Trotman
4.	Handbook of Textiles & Industrial Dyeing: Edited by M. Clark
5.	Textile Chemistry Vol III by R.H. Peters
6.	Chemical Processing of Synthetic Fibres & Blends by Datye& Vaidya

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3509L: Technology of Dyeing – III**	**Credits / Hours per week**	**06**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**

Mode of Transaction	Term work, Practical and viva

Course Outcome (CO) TXC3509L

CO 1 Learning about application of reactive dyes on various textile fibres.
CO 2 Learning different method of application of reactive dye on cellulosic fibres.
CO 3 Learning about application of disperse dye on various textile fibres.
CO 4 Learning different method of application of disperse dye on polyester fabrics.
CO 5 Learning dyeing of nylon & acrylic fibres.
CO 6 Learning dyeing of blended 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.	Dyeing of cotton with receive dye by different methods.	18	20	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Dyeing of protein fibers with reactive 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.	Dyeing of polyester fabric with disperse dye by different methods	18	20	1,2,3,4,5	3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Dyeing nylon using various dyes by different methods.	18	20	1,2,3,4,5	5	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Dyeing acrylic using various dyes by different methods.	12	13	1,2,3,4,5	5	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Dyeing of various blended fabric by different combination of dyes.	12	14	1,2,3,4,5	6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1. Bleaching, Mercersing and Dyeing of Cotton materials by R. S. Prayag.
2. Chemical Technology in Colouration of Textile Vol – I by S. R. Karmakar, Colour Publication Pvt Ltd, Mumbai.
3. Fundamentals and practices in Colouration of Textile by J. N. Chakraborty, Woodhead Publishing India.

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme

Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3510: Processing Machinery – I (Bleaching & Dyeing)**	**Credits**	**--**
Semester	**I**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**

Mode of Transaction	Lectures

Teaching Scheme: Lecturer: 04hrs/week Tutorial: -- Practical: -- Total: 04hrs/week	**Examination Scheme:** Theory: 100 Marks Practical: -- Total: 100 Marks

Course Outcome (CO) TXC3510

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 pre-treatment 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	1,2,3,4,5	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. ● Developments in pre-treatment machineries.	20	33	1,2,3,4,5	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	1,2,3,4,5	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								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **III**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3605: Physical Chemistry**	**Credits / Hours per week**	**04**
Semester **II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Lectures		

Course Outcome (CO) ACH3605

CO 1 To understand about the basics of phase diagram and their application in one component system
CO 2 To learn about rate of reactions and to study Chemical Kinetics of Zero and first order reactions with example
CO 3 To learn about process of Adsorption and its applications in catalysis.
CO 4 To learn fundamentals of Electrochemistry and Conductance, Resistance, Specific Conductance
CO 5 To learn the concepts of thermodynamics with the concepts of energy in the form of chemical bonds in Thermo chemistry
CO 6 To learn about Vapor Pressure and law of Dilute Solution and Types of Colloidal systems and their properties and applications

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1.	Phase rule: Terms used in Gibbs phase rule, Derivation, Application of phase rule to one component system.	06	13	1, 2,3,	1	4	Emp	G	ES
2.	Chemical Kinetics: Molecularity and order of reaction, zero order and first order reactions with examples.	06	12	1,2,3	2	4	Emp	G	ES
3.	Adsorption: Introduction, physical and chemical adsorption, Langmuir and Freundlich adsorption isotherm, Applications.	06	13	1,2,3	3	4	Emp	G	ES
4.	Electrochemistry: Faraday's law of electrolysis, resistance and conductance of solution, specific Conductance	06	12	1,2	4	4	Emp	G	ES
5.	Catalysis: Introduction, Positive and negative catalysis, Homogeneous and Heterogeneous catalysis, Theory of catalysis.	06	13	1,2,3	3	4	Emp	G	ES
6.	Thermo Chemistry: Enthalpy of combustion of reaction, etc.; Heat of neutralization, Hesse's law.	06	12	1,2,3	5	4	Emp	G	ES
7.	Dilute Solution: Vapour pressure, Raoult's law of lowering of vapour pressure, elevation in B. P. and Depression in freezing point.	06	13	4, 5	6	4	Emp	G	ES
8.	Colloids: Types of Colloids, Preparation, Optical and	06	12	1,2,3,5	6	4	Emp	G	ES

	electrical properties, Applications.								
Reference Books									
1.	Text Book of Physical Chemistry – Bahl and Tuli								
2.	Text Book of Physical Chemistry – Soni and Dharmendra								
3.	Text Book of Physical Chemistry – A. J. Mee								
4.	Text Book of Physical Chemistry – Daniels and Alberty								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year **III**	~~**Core**~~ **/** ~~**Elective**~~ **/ Foundation** **ACH3605L: Physical Chemistry - Practical**	**Credits / Hours per week**	**04**
Semester **II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction	Term work, Practical & Viva		

Course Outcome (CO) ACH3605L

CO 1 To understand hydrolysis and strength of strong acids.

CO 2 To understandadsorption phenomena of an organic acid on charcoal.

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.	To investigate the hydrolysis of an ester in presence of acid (HCl).	12	16	1, 2,4	1	4	Emp	G	ES
2.	To investigate the hydrolysis of an ester in presence of H_2SO_4.	12	16	1,2,4	1	4	Emp	G	ES
3.	To investigate the hydrolysis of an ester in presence of U-HCl.	12	17	1,2,3,4	1	4	Emp	G	ES
4.	To study the adsorption of the given organic acid on charcoal.	12	17	1,2,4	2	4	Emp	G	ES

Reference Books

1. Text Book of Physical Chemistry – Bahl and Tuli
2. Elements of Physical Chemistry- Puri, Sharma and Pathania

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3611: Processing Machinery – II(Printing & Finishing)**	**Credits**	**--**
Semester	**II**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Teaching Scheme: Lecturer: 04hrs/week Tutorial: -- Practical: -- Total: 04hrs/week	**Examination Scheme:** Theory: 100 Marks Practical: -- Total: 100 Marks

Course Outcome (CO) TXC3611

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.	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

	● Transfer printing machine. ● Different machinery employed in development of printed colour. ● Developments in printing machinery								
2.	**Finishing Machinery:** ● Definition, Importance and classification of Textile Finishing ● Ancillary equipment employed in textile finishing. ● Starching ● Resin and Speciality Chemical Finishing ● Damping and conditioning ● Calenders ● Machinery for Anti-Shrink Finish on Cotton ● Mechanical Finish for Worsted and Woollens:	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								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3612: Technology of Mercerising& Finishing**	**Credits**	**--**
Semester	**II**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Teaching Scheme:
Lecturer: 04hrs/week
Tutorial: --
Practical: --
Total: 04hrs/week

Examination Scheme:
Theory: 100 Marks
Practical: --
Total: 100 Marks

Course Outcome (CO) TXC3612

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.

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 ● Mercerization of cotton and other cellulosic fibers. ● Novel techniques of mercerization.	20	33	1,2,3,4,5	1,2,3,4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Machinery used for mercerization.								
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.	08	13	1,2,3,4,5	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.	16	27	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.	16	27	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.	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

Syllabus of Courses

	The Maharaja Sayajirao University of Baroda **Faculty of Technology and Engineering** **Department of Textile Chemistry**	**Academic Year**	**2023-24**

Diploma in Textile Chemistry: Regular Programme				
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3613: Colour Chemistry**	**Credits**	**--**
Semester	**II**	Year of Introduction: 1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Lectures		

Teaching Scheme: Lecturer: 04hrs/week Tutorial: -- Practical: -- Total: 04hrs/week	**Examination Scheme:** Theory: 100 Marks Practical: -- Total: 100 Marks

Course Outcome (CO) TXC3613

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.
CO11 Learning about computer colour matching systems.
CO12 Understanding importance of CCMS in Textile 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®/ 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. ● Colour and its perception. ● Different colour theories.	16	26	1,2,3,4,5	1,2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Metamerism								
2.	**Chemistry of the Intermediates:** ● Introduction of the intermediates. ● Introduction of the different unit processes. ● Synthesis of various intermediates. ● Chemistry & properties and preparation of the intermediates. ● Synthesis of the various class of dye stuffs.	16	27	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
3.	**Structure of dyes:** ● Colour and chemical constitution. ● Chemical structure of the dyes. ● Substantivity of dyes. ● Chemistry and properties of the dyes. ● Action of light on dyes and dyed fabrics.	16	27	1,2,3,4,5,6	8,9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Computer colour matching systems:** ● Introduction of CCMS. ● Importance of CCMS. ● Working of colour measuring instrument. ● Advantages of CCMS. ● Recent development in CCMS.	12	20	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.	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

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3614: Testing & Process Control**	**Credits**	**--**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**50**
Mode of Transaction		Lectures		

Teaching Scheme:
Lecturer: 02hrs/week
Tutorial: --
Practical: --
Total: 02hrs/week

Examination Scheme:
Theory: 50 Marks
Practical: --
Total: 50 Marks

Course Outcome (CO)TXC3614

CO 1 Learning about importance of quality & process control of textile wet processing.
CO 2 Learning importance of quality & process control.
CO 3 Understanding testing of textile fibres.
CO 4 Leaning about quality control in pre-treatment processes.
CO 5 Learning about degradation of cellulose.
CO 6 Understanding testing methods of degradation.
CO 7 Learning about quality control in dyeing & printing.
CO 8 Understanding the determination of fastness properties of textiles.
CO 9 Learning about quality control in finishing treatment of textiles.
CO10 Understanding the various testing methods for finished 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.	**Introduction of Quality Control.** ● Define quality control & process control. ● Introduction of quality control & process control with suitable illustration/examples. ● Total quality management.	06	20	1,2,3,4,5	1,2,3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Significance & importance of Quality control & process control in textile wet processing. ● Quality control of incoming materials. ● Qualitative & quantitative assessment of textile fibres.								
2.	**Quality control in Pre-treatment Processes.** ● Process control in Desizing, Scouring, Bleaching &Mercerizaion. ● Degradation of cellulose during various pre-treatment processing. ● Determination of degradation of cellulose by various tests.	08	26	1,2,3,4,5	4,5,6	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	**Quality control in colouration:** ● Quality & process control in dyeing. ● Quality & Process control in Printing. ● Testing of dyed & printed textiles. ● Determination of various fastness properties of dyed & printed fabrics.	08	27	1,2,3,4,5	7,8	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	**Quality control in Finishing:** ● Quality & process control in finishing. ● Testing of finished fabrics. ● Testing of water repellent finishing. ● Determination of shrinkage of finished textiles. ● Determination of tensile properties of textiles.	08	27	1,2,3,4,5	9,10	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Quality control and testing management by Dr. V.K. Kothari								
2.	Principle of textile testing by J.E. Booth								
3.	Physical testing of textiles by B.P. Sarulle								

Syllabus of Courses

The Maharaja Sayajirao University of Baroda **Faculty Technology and Engineering** **Department of Textile Chemistry**		**Academic Year**	**2023-24**
Diploma in Textile Chemistry: Regular Programme			
Year	**III**	**Core / ~~Elective~~ / ~~Foundation~~** **TXC3615L: Testing & Matching**	**Credits**	**--**
Semester	**II**	Year of Introduction:1949 Year of Syllabus Revision:	**Maximum Marks / Grade**	**100**
Mode of Transaction		Term work, Practical & Viva		

Teaching Scheme:
Lecturer: --
Tutorial: --
Practical: 06hrs/week
Total: 06hrs/week

Examination Scheme:
Theory: --
Practical: 100 Marks
Total: 100 Marks

Course Outcome (CO) TXCXXXXL
CO 1 Students are able to identify class of unknown dye stuff powder.
CO 2 Students are able to identify class of unknown dye present on fibre.
CO 3 Learning the different analysis of dye stuffs.
CO 4 Students are able to find out the purity of dye stuffs.

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 Dyes in powder form	30	33	1,2,3,4,5	1	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Identification of various Dye on Fibre.	30	33	1,2,3,4,5	2	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Analysis of Dye stuff.	18	20	1,2,3,4,5	3	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Measurement of %purity of Dye stuffs.	12	14	1,2,3,4,5	4	1,2,3	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Book:

1. Textile dyestuffs identification of application classes of dyestuffs in substance Indian Standard IS-13361:1992
2. Laboratory Manual for Dyeing & Textile Chemistry by J.M. Matthews.
3. Textile Dyes by N. N. Mahapatra, Woodhead Publishing India.