

Program Name

**Master of Engineering
(Textile Processing)**

Program Code
617272



Department of Textile Chemistry

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

Programme Name: M.E. (Textile Processing)

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 textiles processing.
- PSO3** Contribute in the economy of the country through research and development.
- PSO4** Apply research methods and theory to generate new textile processing techniques to solve discipline-specific problems
- PSO5** Ability to apply the fundamentals of mathematics, science, technology and engineering in process control, quality control and product development to textile processing engineering

Bloom's Taxonomy Levels:

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

Teaching & Examination Scheme (2021-2022)

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination Theory Marks : 30% IA & 70% UA			
		L	Tu	P	Total	Theory		Practical	Total
						Duration (Hrs)	Marks	T.W/Viva	
First Semester of M.E - I (T.P) - Part : I									
TXC2109	Fibre Science	4	-	-	4	3	100	-	100
TXC2109L	Fibre Science - T.W., Practical & Viva	-	-	6	6	-	-	100	100
TXC2110	Man Made Fibre	4	-	-	4	3	100	-	100
TXC2110L	Man Made Fibre - T.W., Practical & Viva	-	-	6	6	-	-	100	100
Elective – I									
TXC2107	Advance in Physical Chemistry of Coloration	4	-	-	4	3	100	-	100
TXC2111	Quality Control in Textile Processing	4	-	-	4	3	100	-	100
Elective – II									
TXC2108	Development in Textile Auxiliaries Chemical	4	-	-	4	3	100	-	100
TXC2112	Chemical Modification of Polymers & Fibres	4	-	-	4	3	100	-	100
Total of First Semester of M.E - I (T.P) - Part : I		16	-	12	28	-	400	200	600

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination Theory Marks : 30% IA & 70% UA			
		L	Tu	P	Total	Theory		Practical	Total
						Duration (Hrs)	Marks	T.W/Viva	
Second Semester of M.E. - I (T.P) - Part : II									
TXC2206	Advance Textile Chemistry	4	-	-	4	3	100	-	100
TXC2206L	Advance Textile Chemistry - T.W., Practical & Viva	-	-	6	6	-	-	100	100
TXC2208	Seminar	4	-	-	4	3	100	-	100
Elective – III									
AMT2225	Numerical & Statical Methods and Introduction to Computer	4	-	-	4	3	100	-	100
TXC2209	Energy & Water Conservation in Processing Industry	4	-	-	4	3	100	-	100
Elective – IV									
TXC2207	Advance in Textile Processing Machine	4	-	-	4	3	100	-	100
TXC2207L	Advance in Textile Processing Machine - T.W., Practical & Viva	-	-	6	6	-		100	100
TXC2210	Environment Problems in Processing	4	-		4	3	100	-	100
TXC2210L	Environment Problems in Processing - T.W., Practical & Viva	-	-	6	6	-		100	100
CBM2212	Organization & Management in Textile Industry	4	-		4	3	100	-	100
CBM2212L	Organization & Management in Textile Industry - T.W., Practical & Viva	-	-	6	6	-		100	100
Total of Second Semester of M.E. - I (T.P) - Part : II		16	-	12	28	-	400	200	600
Total of M.E. - I (TP)		32	-	24	56	-	800	400	1200

Subject Code	Subject Title	Scheme of Teaching (Contact Hrs/week)				Scheme of Examination			
		L	Tu	P	Total	Theory		Practical	Total
						Duration (Hrs)	Marks	T.W/Viva	
First & Second Semester of M.E - II (T.P) - Part : III & Part : IV									
TXC2402	Dissertation	-	-	24	24	-	-	300	300
Total of M.E. - II (TP)		-	-	24	24	-	-	300	300
Total of M.E. - (TP)		32	-	48	80	-	700	800	1500

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2107: Advances in Physical Chemistry of Colouration				Credits / Hours per week		04			
Semester	I	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2107 CO 1 Learning the dyeing mechanism of various fibres. CO 2 Understanding the chemical attachments of fibres with dyes. CO 3 Understanding various bonds formed in fibres with dyes in dyeing systems. CO 4 Learning physical behavior of various fibre in dyeing systems. CO 5 Understanding physico-chemical behavior of various dyeing systems. CO 6 Understanding the kinetics and thermodynamics of various dyeing systems. CO 7 Learning the physico-chemical behavior during printing. CO 8 Understanding rheology of printing paste. CO 9 Learning transfer printing of synthetic fabrics. CO10 Learning computer colour matching system. CO11 Understanding importance of CCMS. CO 12 Understanding implementation of CCMS in process house industries.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1.	Theory of Dyeing: • Dye fiber interacting (various bonds) • Mechanism of dyeing of polyester fibre with			16	27	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	disperse dye. • Mechanism of dyeing of acrylic fibre with cationic dye. • Mechanism of dyeing of wool with acid dye & metal complex dye. • Mechanism of dyeing of nylon with acid dye and metal complex dye.								
2.	Physical Chemistry of Dyeing: • Kinetics and thermodynamics of dyeing systems of various fibres with various dye class • Laws of Thermodynamics • Adsorption Isotherms. • Affinity of dyeing • Heat of dyeing • Entropy of dyeing	16	26	1,2,3,4,5	3,4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Physico-chemical aspect of Printing: • Physico-mechanical aspects of printing of textile fibres. • Print paste rheology. • Transfer printing of various synthetic fibres with various dye class. • Working principles & mechanism of transfer printing	16	27	1,2,3,4,5	6,7,8	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Computer Colour Matching System (CCMS): • Introduction of CCMS. • Need & Importance of CCMS. • Fundamental aspects of CCMS.	12	20	1,2,3,4,5	9,10,11	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	●Developments in CCMS								
Reference Books									
1.	A Glimpse on the Chemical Technology of textile fibers By R RChakraverty.								
2.	Colouration of Textiles By C L Bird								
3.	Physical Chemistry of ColourationByVickerstaff								
4.	Chemical Principle of Synthetic Fiber Dyeing By S M Burkinshaw								

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2108: Development in Textile Auxiliary Chemical				Credits / Hours per week		04			
Semester	I	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2108											
CO 1 Learning the auxiliaries used in various wet processing of textiles.											
CO 2 Understanding importance of textile auxiliaries.											
CO 3 Learning surfactants used in textile wet processing											
CO 4 Learning manufacturing process of various surfactants.											
CO 5 Understanding chemistry of various surfactants.											
CO 6 Learning developments in textile auxiliaries and chemicals.											
CO 7 Understanding application of newly developed auxiliaries & chemicals.											
CO 8 Learning specialty chemicals used in various processing of textiles.											
CO 9 Learning methods of qualitative & quantitative evaluation of textile auxiliaries.											
CO10 Understanding analysis of various textile chemicals.											
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: •Definition & importance of Textile Auxiliaries. •Classification of Textile Auxiliaries. •Advantages & disadvantages of Textile Auxiliaries. •Auxiliaries used in preparatory processes of textile such as spinning, weaving & sizing.			14	23	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	●Auxiliaries used in pre-treatment processes of textiles such as desizing, scouring, bleaching & mercerization of various textile fibres. ●Auxiliaries used in dyeing of various textiles. ●Auxiliaries used in printing of various textiles. ●Auxiliaries used in finishing of various textiles.								
2.	Chemistry of Textile Auxiliaries: ●Introduction of surface active agents. ●Classification of surface active agents. ●Methods of preparation of various surface active agents. ●Chemistry, Structure & Application of various surface active agents.	15	25	1,2,3,4,5	3,4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Developments in Textile Auxiliaries: ●Development in textile auxiliaries used in wet processing of cellulosic fibres. ●Development in textile auxiliaries used in wet processing of wool fibres. ●Development in textile auxiliaries used in wet processing of man-made fibres. ●Development in textile auxiliaries used in various finishing treatments of textile fibres. ●Specialty chemicals used in various wet processing of textile fibres.	15	25	1,2,3,4,5	6,7,8	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Evaluation of Textile Auxiliaries: ●Evaluation of Sizing softeners. ●Evaluation of desizing agents. ●Evaluation of pre-treatment auxiliaries.	16	27	1,2,3,4,5	9,10	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	●Evaluation of dyeing auxiliaries. ●Evaluation of printing auxiliaries. ●Evaluation of finishing auxiliaries.								
--	---	--	--	--	--	--	--	--	--

Reference Books

1.	Chemistry of textile auxiliaries Vol V By V A Shenai
2.	Textile Chemicals and Auxiliaries By R H Shah
3.	Evaluation of Textile Chemicals By V A Shenai
4.	Textile Auxiliary & Finishing Chemicals by A.A. Vaidya & S.S. Trivedi
5.	Technology of Textile Processing Vol-VII Synthetic Organic Textile Chemicals by V.A. Shenai & N.M. Saraf

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2109: Fibre Science				Credits / Hours per week		04			
Semester	I	Year of Introduction:2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2109 CO 1 Learning fine structure of textile fibres. CO 2 Understanding morphology of textile fibres. CO 3 Learning methods of polymerization. CO 4 Understanding the importance of molecular weight of textile fibres. CO 5 Learning properties of textile fibres. CO 6 Learning swelling of the textile fibres. CO 7 Understanding swelling behavior of different fibres. CO 8 Learning region of textile fibres. CO 9 Understanding various methods of determination of fibre regions. CO10 Learning about new generation or newly developed textile fibres. CO11 Understanding structural properties of newly developed 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.	Chemistry of Textile Fibre: ●Morphological, chemical & fine structure of fibres ●Polymer & polymerization. (Properties, preparation etc.) ●Molecular weight, its significance & determination of			16	27	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	fibres								
2.	Properties of Textile Fibres: ● Essential & Desirable properties of textile fibres. ● Physical & chemical properties of fibres, their Significances & comparison ● Effects of light, heat and other radiations on fibres ● Fiber swelling → Different types of swelling agents & its conditions. → Types of swelling. → Determination of swelling.	14	23	1,2,3,4,5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Structure of Textile Fibres: ● Crystalline & orientation of fibres & their determination ● Various techniques to study fibre structure like physical methods, chemical methods, SEM, IR, X-ray, Optical methods etc.	16	27	1,2,3,4,5	8,9	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Developments in Textile Fibres: ● Manufacturing, Properties & Application of new generation textile fibre such as → Spider Silk. → Basalt Fibre → Micro fibre. → Carbon fibres & many others.	14	23	1,2,3,4,5	10,11	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Chemistry Part I and II By R H Peters
2.	Textile fibres Developments & Innovations Vol – II By Dr V K Kothari

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2109L: Fibre Science–Practical				Credits / Hours per week		06			
Semester	I	Year of Introduction:2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Term work, Practical and viva									
Course Outcome (CO) TXC2109L CO 1 Learning fine structure of textile fibres. CO 2 Understanding morphology of textile fibres. CO 3 Understanding the importance of molecular weight of textile fibres. CO 4 Learning region of textile fibres. CO 5 Understanding various methods of determination of fibre regions.											
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 textile fibre through physical, burning & chemicals tests.			12	13	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Identification of textile fibre through microscopic test.			12	13	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Analysis of blend fabrics.			12	13	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Study characteristics of fibre in yarn form.			09	10	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Study characteristics of fibre in fabric form			09	10	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Determination of molecular weight of various natural textile fibres.			12	13	1,2,3,4,5	3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

7.	Study fibre structure using IR spectrum.	06	7	1,2,3,4,5	4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	Study the fibre surface morphology using SEM.	06	7	1,2,3,4,5	4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
9.	Study thermal properties of various natural textile fibres.	06	7	1,2,3,4,5	4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
10.	Determination of density of various natural textile fibres.	06	7	1,2,3,4,5	4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Chemistry Part I and II By R H Peters
2.	Textile fibres Developments & Innovations Vol – II By Dr V K Kothari
3.	AATCC Textile Manual
4.	Indian Standard Methods for Identification of Textile Fiber IS 667-1981

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme												
Year	I	Core / Elective / Foundation TXC2110: Man made fibre				Credits / Hours per week		04				
Semester	I	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100				
Mode of Transaction		Lectures										
Course Outcome (CO) TXC2110												
CO 1 Learning polymerization of polymers.												
CO 2 Understanding mechanism of the polymerizing.												
CO 3 Understanding the molecular weight of polymer and its significances.												
CO 4 Learning aspect of fibre forming polymers.												
CO 5 Learning production of different man-made fibres.												
CO 6 Understanding production technology of different man-made fibres.												
CO 7 Understanding post production process.												
CO 8 Learning about developments in newly manufacturing technology.												
CO 9 Learning about technical textiles.												
CO10 Understanding different structure of technical textiles.												
CO11 Learning about fibres used as technical field.												
CO12 Understanding processing 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.	Polymerization: •Basic concept about Polymerization •Different Types of Polymerization •Mechanism of Polymerization				15	25	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	●Molecular weight of polymers. ●Fibre forming polymers. ●Recent Development in Fibre Polymerization methods								
2.	Man-made fibres: ●Classification of man-made fibres. ●Flow chart, manufacturing & production steps, process condition of man-made regenerated cellulosic fibres. ●Flow chart, manufacturing & production steps, process condition of man-made synthetic fibres. ●Flow chart, manufacturing & production steps, process condition of man-made industrial fibres. ●Twisting & Texturizing of textile filament. ●Recent development in manufacturing of man-made fibres.	30	50	1,2,3,4,5	5,6,7,8	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Technical Textiles: ● Introduction of technical textiles, technical fibres & technical yarns. ● Technical fabric structure – Woven fabric, Knitted fabric &Non-woven fabrics. ● Textile in civil engineering – geo textiles. ● Medical textiles. ● Textile in Defense. ● Automotive textiles. ● Processing of technical textiles.	15	25	1,2,3,4,5	9,10,11,12	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books									
1.	Man Made Fibers By R W Moncrieff								
2.	Textile fibers By Dr V K Kothari								

3.

Textile fibre By A V Vaidya

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2110L: Man made fibre – Practical				Credits / Hours per week		06			
Semester	I	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Term work, Practical and viva									
Course Outcome (CO) TXC2110L CO 1 Learning polymerization of polymers. CO 2 Understanding mechanism of the polymerizing. CO 3 Understanding the molecular weight of polymer and its significances. CO 4 Learning production of different man-made fibres. CO 5 Understanding production technology of different man-made fibres. CO 6 Understanding post production process.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1.	Identification of various man-made fibre by different techniques			15	17	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Determination of molecular weight of different man-made fibres.			15	17	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Determination of density of different man-made fibres.			15	16	1,2,3,4,5	4,5,6	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Determination of thermal properties of man-made fibres.			15	16	1,2,3,4,5	4,5,6	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Study the various properties of man-made fibres.			15	17	1,2,3,4,5	4,5,6	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

6.	Prepare polymer using suitable methods and determine its molecular weight.	15	17	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
----	--	----	----	-----------	-------	---------	--------------	------------	---------------

Reference Books

1.	Man Made Fibers By R W Moncrieff
2.	Textile fibers By Dr V K Kothari
3.	Textile fibre By A V Vaidya
4.	AATCC Textile Manual
5.	Indian Standard Methods for Identification of Textile Fiber IS 667-1981

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2111: Quality Control in Textile Processing				Credits / Hours per week		04			
Semester	I	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2111											
CO 1 Learning about importance of quality & process control of textile wet processing.											
CO 2 Understanding concept of Total quality control & total quality management.											
CO 3 Learning about the process & quality control in pre-treatment of textiles.											
CO 4 Understating testing methods for evaluating pre-treatment processing.											
CO 5 Understanding the analysis of chemicals used in pre-treatment processing.											
CO 6 Learning about the process & quality control in dyeing of textiles.											
CO 7 Understanding the determination of fastness properties of dyed textiles & testing of dyed textile.											
CO 8 Understanding the analysis of chemicals used in pre-treatment processing.											
CO 9 Learning about the process & quality control in printing of textiles.											
CO10 Understanding the determination of fastness properties & testing of printed textiles.											
CO11 Understanding the analysis of chemicals used in pre-treatment processing.											
CO 12 Learning about the process & quality control in finishing of textiles.											
CO 13 Understanding various evaluation testing of different finishing products & processes.											
CO 14 Understanding the analysis of chemicals used in pre-treatment processing.											
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: • Introduction of Process control & Quality control. • Need of Process control & Quality control.			08	13	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Approach towards Process control & Quality control. ● Importance of Process control & Quality control. ● Total Quality Control (TQC) & Total Quality Management system (TQM).								
2.	Process & Quality control in Pre-treatment: ● Process control & quality control in Desizing, Scouring, Bleaching & Mercerization. ● Degradation of cellulose during various pre-treatment processing. ● Determination of degradation of cellulose by various tests. ● Analysis of various chemicals used in pre-treatment of textiles.	16	27	1,2,3,4,5	3,4,5	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Process & Quality control in Dyeing: ● Quality control in dyeing of various textiles fibres. ● Process control in dyeing methods. ● Process & Quality control in dyeing machines. ● Testing of dyed textiles. ● Determination of various fastness properties of dyed fabrics. ● Analysis of various chemicals used in dyeing of textiles.	12	20	1,2,3,4,5	6,7,8	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Process & Quality control in Printing: ● Quality control in printing of various textiles. ● Process control in printing of various textiles. ● Quality & Process control in Printing machines.	12	20	1,2,3,4,5	9,10,11	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	●Testing of printed textiles. ●Determination of various fastness properties of printed fabrics. ●Analysis of various chemicals used in printing of textiles.								
5.	Process & Quality control in Finishing: ●Quality control in finishing of various textiles. ●Process control in finishing of various textiles. ●Quality & Process control in different finishing machines. ●Testing of various finishing textiles. ●Analysis of various chemicals used in finishing of textiles.	12	20	1,2,3,4,5	12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Process & Quality Control in Chemical Processing of Textiles - S.V. Gokhle& J.R. Modi
2.	Towards Zero Defects - Amubhai Patel
3.	Process House Laboratory – Girish Luthra &Bapu Deshpande
4.	Textile Mills in the Changing Environment –Gulrajani

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2112: Chemical Modification of Polymers & Fibres.				Credits / Hours per week		04			
Semester	I	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2112											
CO 1 Learning about various terms of polymers.											
CO 2 Learning about various methods of polymerization.											
CO 3 Understanding chemistry of polymerization.											
CO 4 Learning about characterization of polymers.											
CO 5 Learning about the various techniques for modification of polymers.											
CO 6 Learning about surface modification of textile fibres.											
CO 7 Understanding the chemistry of surface modification.											
CO 8 Learning about application of enzymes on textiles.											
CO 9 Understanding the chemistry of enzymes.											
CO10 Learning about the application of plasma on textiles.											
CO11 Learning about the application of nano technology to the textile fibres.											
CO 12 Learning about the recent trends in modification of polymers and 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.	Modification of polymer: • Introduction of polymers. • Different types of polymerization. • Characterization of polymers.			30	50	1,2,3,4,5	1,2,3,4,5,12	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Fibre forming polymers. ● Cross linking of fibre forming polymer. ● Grafting of polymers. ● Metallization of polymers. ● Recent developments in grafting & modification of polymer.								
2.	Modification of textile fibres: ● Surface modification & preparation techniques for textile fibres. ● Textile surface characterization methods. ● Textile surface functionalization. ● Surface grafting of textiles. ● Modification of textiles surface using chemicals. ● Modification of textile surface using nano particles. ● Modification of textile surface using plasma. ● Modification of textile surface using enzymes. ● UV base photo chemical surface modification of textile fabrics. ● Recent developments in textile surface modification techniques.	30	50	1,2,3,4,5	6,7,8,9 ,10, 11,12	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books	
1.	Surface Modification of Textile; Woodhead Publishing;2009.
2.	Textile Finishing: Recent Development & Future Trends; Scrivener Publishing; 2017
3.	Chemical Technology in the Pre-treatment processes of Textile; Elsevier; 1999.
4.	Polymer Science by V.R. Gowarikar; N.V. Vishwanathan; JaydevShreedha; New Age International Publisher.
5.	Textbook of Polymer Science by F.W. Billmeyer; John Wiley & Sons

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2206: Advanced Textile Chemistry				Credits / Hours per week		04			
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2206											
CO 1 Learning single stage pre-treatment process of various textile fibres.											
CO 2 Understanding terminology and chemistry of single stage pre-treatment process.											
CO 3 Learning new dyeing processes.											
CO 4 Understanding chemistry of newly developed dyeing process.											
CO 5 Learning advances in printing & finishing process of textiles.											
CO 6 Learning digital printing of textiles.											
CO 7 Understanding advancement in printing of textiles.											
CO 8 Understanding working of newly developed finishing treatment.											
CO 9 Learning unconventional dyeing methods.											
CO10 Understanding terminology of unconventional dyeing methods.											
CO11 Learning energy conservation in textile industries.											
CO12 Understanding importance of energy conservation.											
CO13 Understanding energy & water consumption in different wet processing of textiles.											
CO14 Learning different low wet pick-up techniques.											
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.	Advances in Pre-treatment & Dyeing: ●Recent developments in pre-treatment processes such as single stage pre-treatment of cotton fabric.			15	25	1,2,3,4,5	1,2,3,4,14	1,2,3,4	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	- Recent developments in Dyeing processes - New techniques of application of chemical viz. transfer pad, minimum application, foam etc in dyeing.								
2.	Advances in Printing & finishing: - Recent developments in Printing processes. - Advances in transfer printing. - Digital printing of textiles. - Recent developments in Finishing processes - New techniques of application of chemical viz. transfer pad, minimum application, foam etc in finishing process.	15	25	1,2,3,4,5	5,6,7,8,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Unconventional Dyeing methods: - Super critical carbon dioxide method. - Electrochemical dyeing methods. - Ultrasound dyeing technology. - Plasma dyeing method. - Microwave dyeing method.	15	25	1,2,3,4,5	9,10	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Energy conservation in Textile industry: - Energy management in textile processing - Water management in textile processing - Low wet pick-up techniques. - Application of bio-technology in wet processing	15	25	1,2,3,4,5	11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Chemistry Vol –III By R H Peter
2.	Blend Dyeing By John Shore
3.	Chemical Technology in synthetic fiber processing By A V Vadiya and Datye

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry			Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2206L: Advanced Textile Chemistry–Practical			Credits / Hours per week		06				
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:			Maximum Marks / Grade		100				
Mode of Transaction		Term work, Practical and viva									
Course Outcome (CO) TXC2206L											
CO 1 Learning single stage pre-treatment process of various textile fibres.											
CO 2 Understanding terminology and chemistry of single stage pre-treatment process.											
CO 3 Learning new dyeing processes.											
CO 4 Understanding chemistry of newly developed dyeing process.											
CO 5 Learning advances in printing & finishing process of textiles.											
CO 6 Learning digital printing of textiles.											
CO 7 Understanding advancement in printing of textiles.											
CO 8 Understanding working of newly developed finishing treatment.											
CO 9 Learning unconventional dyeing methods.											
CO10 Understanding terminology of unconventional dyeing methods.											
CO11 Learning energy conservation in textile industries.											
CO12 Understanding importance of energy conservation.											
CO13 Understanding energy & water consumption in different wet processing of textiles.											
CO14 Learning different low wet pick-up techniques.											
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.	Study desizing of cotton fabric using different desizing agents.			06	6	1,2,3,4,5	1,2,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

2.	Study scouring of cotton using conventional & enzymatic scouring agents.	06	6	1,2,3,4,5	1,2,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	One bath, Two bath, Three bath pre-treatment processes of cotton fabric.	12	13	1,2,3,4,5	1,2,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Study the effect of different bleaching agent on cotton fabric.	06	6	1,2,3,4,5	1,2,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Study pre-treatment processes on jute fabric.	06	6	1,2,3,4,5	1,2,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Study weight reduction of polyester fabric.	06	7	1,2,3,4,5	1,2,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Study dyeing of wool using different solvents.	06	6	1,2,3,4,5	3,4,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	Study the effect of concentration of carrier on dyeing of polyester with disperse dye.	06	6	1,2,3,4,5	3,4,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
9.	Dyeing of cotton & viscose using various natural dyes.	12	13	1,2,3,4,5	3,4,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
10.	Study dyeing of polyester/cotton blend fabric using different dyeing systems.	12	13	1,2,3,4,5	3,4,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
11.	Study effect of application of different starch on cotton & viscose rayon fabric.	06	6	1,2,3,4,5	5,8,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
12.	Study effect of different softening agents on cotton & polyester fabric.	06	6	1,2,3,4,5	5,8,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
13.	Study effect of cross linking agents on cotton & polyester fabric.	06	6	1,2,3,4,5	5,8,11,12,13,14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Chemistry Vol –III By R H Peter
2.	Blend Dyeing By John Soore
3.	Chemical Technology in synthetic fiber processing By A V Vadiya and Datye

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry			Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2207: Advances in Textile Processing Machine			Credits / Hours per week		04				
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:			Maximum Marks / Grade		100				
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2207											
CO 1 Learning conventional pre-treatment processing of various textiles.											
CO 2 Understanding advancement in pre-treatment processing of various textiles.											
CO 3 Understanding importance of single stage pre-treatment processing of textiles.											
CO 4 Learning conventional dyeing machinery.											
CO 5 Learning about newly developed dyeing machinery.											
CO 6 Understanding working principle of various dyeing machinery.											
CO 7 Learning about unconventional dyeing methods.											
CO 8 Learning conventional printing machinery.											
CO 9 Learning about developments in printing machinery.											
CO10 Understanding working principle of various printing machinery.											
CO11 Learning ordinary finishing machinery used in textile finishing.											
CO12 Learning development in finishing machinery.											
CO13 Understanding advancement in finishing machinery.											
CO14 Learning minimum application techniques in finishing.											
CO15 Learning energy conservation in textile wet processing.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BTLevel	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1.	Pre-treatment Machineries: ●Conventional machineries for pre-treatment of cotton			15	25	1,2,3,4,5	1,2,3,15	1,2,3,4	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	fabric. ● Developments in conventional pre-treatment machines. ● Single stage pre-treatment of cotton fabric. ● Machinery used for pre-treatment process of wool fabric. ● Development in machineries for pre-treatment of textile fibres								
2.	Dyeing Machineries: ● Machinery used for dyeing of textile in yarn form. ● Machinery used for dyeing of textile in fiber form. ● Machinery used for dyeing of textile in fabric form. ● Development in machineries for dyeing of textile in all form. ● Unconventional dyeing methods.	15	25	1,2,3,4,5	4,5,6,7,15	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Printing Machinery: ● Block printing methods. ● Stencil printing methods. ● Roller printing methods. ● Screen printing methods. ● Transfer printing methods. ● Digital printing. ● Development in machineries for printing of textile fibres	15	25	1,2,3,4,5	8,9,10,15	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Finishing Machineries: ● Conventional machineries for finishing of textile fibres. ● Machinery used for minimum application of chemicals. ● Foam finishing technology. ● Heat recovery equipments.	15	25	1,2,3,4,5	11,12,13,14,15	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	●Development in machineries for finishing of textile fibres							
Reference Books								
1.	Textile Chemistry Vol III By R H Peters							
2.	Chemical Technology in Pre-treatment Processes of Textiles By S R Karamarkar							
3.	Engineering in Textile Coloration Edited By C Dyckworth							

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2207L: Advances in Textile Processing Machine–Practical				Credits / Hours per week		06			
Semester	II	Year of Introduction:2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Term work, Practical and viva									
Course Outcome (CO) TXC2207L CO 1 Learning conventional dyeing machinery. CO 2 Learning about newly developed dyeing machinery. CO 3 Understanding working principle of various dyeing machinery. CO 4 Learning about unconventional dyeing methods. CO 5 Learning conventional printing machinery. CO 6 Learning about developments in printing machinery. CO 7 Understanding working principle of various printing machinery.											
Unit No.	Topic/Unit			Contact Hours	Weightage (%)	BTLevel	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.	Study dyeing of cotton with reactive dye by different methods.			06	7	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Study dyeing of polyester with disperse dye by different methods.			06	7	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Study dyeing of nylon with acid dye by different methods.			06	7	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Study dyeing of polyester/cotton blend by different methods.			12	13	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Study heat setting of various synthetic fiber on their coloristic properties			18	21	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

6.	Study printing of cotton fabric with reactive dye by different methods.	06	7	1,2,3,4, 5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Study printing of polyester fabric with disperse dye by different methods.	06	6	1,2,3,4, 5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	Study printing of polyester/cotton fabric by different methods.	12	13	1,2,3,4, 5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
9.	Special styles of printing on various textile fabrics.	12	13	1,2,3,4, 5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
10.	Transfer printing of synthetic fabric.	06	6	1,2,3,4, 5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Textile Chemistry Vol III By R H Peters
2.	Chemical Technology in Pre-treatment Processes of Textiles By S R Karamarkar
3.	Engineering in Textile Coloration Edited By C Dyckworth

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme													
Year	I	Core / Elective / Foundation TXC2209: Energy & Water Conservation in Processing industry					Credits / Hours per week		04				
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:					Maximum Marks / Grade		100				
Mode of Transaction		Lectures											
Course Outcome (CO) TXC2209 CO 1 Learning about the different energy used in textile industry. CO 2 Learning about the properties of water and its sources. CO 3 Understanding the quality of water to be used in wet processing of textiles. CO 4 Learning the consumption of water & energy in various processing of textiles. CO 5 Learning distribution of water in textile industry. CO 6 Learning about the impurities present in water and its purification methods. CO 7 Understanding effect of impurities in water to different wet processing of textiles. CO 8 Understanding recycling & reuse of water. CO 9 Learning water conservation through process & machinery modifications. CO10 Leaning different types of fuels and their properties. CO11 Understanding the concept of steam generation & steam distribution. CO12 Learning different types of heating systems. CO13 Learning concept of energy audit. CO14 Learning energy conservation through process & machinery modifications.													
Unit No.	Topic/Unit					Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1.	Basic of Energy & Water: •Different sources of energy. •Different types of energy used in wet processing of					20	33	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	textiles. ●Conventional & Non-conventional sources of energy. ●Different sources of water. ●Quality of water used in textile wet processing. ●Consumption of energy & water in various wet processing treatments.								
2.	Conservation of water: ●Sources of water. ●Properties of water to be used in wet processing of textiles. ●Storage of water. ●Distribution of water. ●Impurities of water and its effect on wet processing treatment of textiles. ●Purification of water. ●Consumption of water in different wet processing treatments. ●Different methods of water conservation in different wet processing of textiles. ●Reuse of water. ●Water conservation through process modification & machinery modification.	20	33	1,2,3,4,5	5,6,7,8 ,9	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Conservation of energy: ● Different types of energy. ● Different types of fuel and its properties. ● Steam generation and its properties. ● Distribution of steam.	20	34	1,2,3,4,5	10,11, 12,13, 14	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

	● Insulation of steam. ● Utilization of steam in various wet processing of textiles. ● Different types of heating systems. ● Energy audit. ● Energy conservation through process modification & machinery modification.								
--	---	--	--	--	--	--	--	--	--

Reference Books

1.	Energy Conservation in Textile & Polymer Processing: American Chemical Society: Washington, DC, 1979.
2.	Water in Textiles and Fashion - Consumption, Footprint, and Life Cycle Assessment: Woodhead Publishing: 2019
3.	Water Saving and Reuse in the Textile Industry: Springer: 2005
4.	Energy Consumption & Conservation in Fibre Producing & Textile Industries Textile Progress Vol.13, No.3.
5.	Utilities by D K Bhattacharya, A K Jain, S. Saxena, Pub. NITRA
6.	Conventional Energy Technology – By S.B. Pandya
7.	Renewable Energy Resources by John Twidell
8.	Heat economy in Textile mill by ATIRA publication.
9.	Energy conservation in textile wet processing; Gulrajani M.L, Sanjay Gupta; Omega Scientific Publisher, New Delhi

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22			
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation TXC2210: Environmental Problems in Processing				Credits / Hours per week		04			
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:				Maximum Marks / Grade		100			
Mode of Transaction		Lectures									
Course Outcome (CO) TXC2210											
CO 1 Learning about pollution load generated during textile wet processing.											
CO 2 Learning about government norms for pollution load.											
CO 3 Understanding the ecology affected by these pollutions.											
CO 4 Understanding the importance of reduction of pollution load.											
CO 5 Learning about the characteristics of fresh water & effluents.											
CO 6 Learning about testing of fresh water & effluents.											
CO 7 Understanding importance of effluent management.											
CO 8 Learning about different methods for treatment of textile processing effluents.											
CO 9 Learning about recent trend in effluent treatment.											
CO10 Understanding the importance of the treatment of textile effluents.											
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.	Pollution in Textile Industry: ●Introduction about different pollution generated during textile wet processing. ●Pollution control norms. ●Pollution control acts implemented by government authorities.			20	33	1,2,3,4,5	1,2,3,4	1,2,3,4	Emp, Ent, SD	L,N,R,G	G, ES, HV, PE

	●Effect of these pollutant in ecology. ●Precautionary measure taken by the industry to control the pollution. ●Different methods for reduction in pollution load.								
2.	Water used in wet processing of Textile: ●Characteristics of water used for different wet processing of textiles. ●Water softening treatment. ●Analysis of fresh water. ●Characteristics of effluent generated during the different wet processing of textiles. ●Analysis of textile processing effluent. ●Recent trends in textile effluent management.	20	34	1,2,3,4,5	5,6,7	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Treatment of Textile Processing Effluent: ● Primary effluent treatment. ● Secondary effluent treatment. ● Tertiary effluent treatment. ● Advance methods for the treatment of textile processing effluent.	20	33	1,2,3,4,5	8,9,10	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Environmental Impact of Textiles: Production, Processes & Protection. Woodhead publishing: 2003
2.	Handbook of sustainable Textile Production: Elsevier: 2016
3.	Textiles and Clothing: Environmental Concerns and Solution: Wiley: 2019
4.	Assessing the Environmental Impact of Textiles and the Clothing Supply Chain: Woodhead publishing: 2014
5.	Treatment of Textile Processing Effluent: Chemical Publishing Co. U.S.A 2013

Academic Year

2021-22

M.E. (Textile Processing): Regular Programme

Year	I	Core / Elective/Foundation TXC2210L: Environmental Problems in Processing – Practical	Credits / Hours per week	06
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:	Maximum Marks / Grade	100

Mode of Transaction	Term work, Practical and viva
----------------------------	-------------------------------

Course Outcome (CO) TXC2210L	
--	--

CO 1 Learning about the characteristics of fresh water & effluents.

CO 2 Learning about testing of fresh water & effluents.

CO 3 Learning about recent trend in effluent treatment.

Unit No.	Topic/Unit	Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1.	Determination of hardness of water sample.	06	7	1,2,3,4,5	1	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2.	Determination of acidity, Alkalinity of water samples.	06	7	1,2,3,4,5	1	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3.	Determination of TS, TDS & TSS of water sample.	06	7	1,2,3,4,5	1	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4.	Determination of chloride content & iron content of water sample.	06	7	1,2,3,4,5	1	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5.	Determination of COD & BOD.	12	13	1,2,3,4,5	1	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6.	Analysis of textile effluent.	12	13	1,2,3,4,5	2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7.	Recovery of caustic from mercerisation liquor.	06	7	1,2,3,4,5	3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8.	Recovery of size from desizing liquor.	12	13	1,2,3,4,5	3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
9.	Recovery of dye form dyeing liquor.	12	13	1,2,3,4,5	3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
10.	Reuse of exhaust dye bath for redyeing.	12	13	1,2,3,4,5	3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Process House Laboratory – A Handbook by Girish Luthra &BapuDespande.
2.	AATCC Test Manual
3.	Treatment of Textile Processing Effluent: Chemical Publishing Co. U.S.A 2013

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme													
Year	I	Core / Elective / Foundation CBM2212: Organization and Management in Textile Industry					Credits / Hours per week		04				
Semester	II	Year of Introduction: 2006 Year of Syllabus Revision:					Maximum Marks / Grade		100				
Mode of Transaction		Lectures											
Course Outcome (CO) CBM2212													
CO1 Understanding the concept of Organization.													
CO2 Learn about the Functions of Management													
CO3 Learn effect of Location of Industry.													
CO4 Understand the Material Management / Inventory Control													
CO5 Understand basics of PPC procedure of management.													
CO6 Understand Human Resource Management.													
CO7 Developed the basic communication skill													
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	Various types of industrial organization, personnel management and training, management of raw material					12	20	1,2,3,4	1	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Linear programming,					08	13.33	1,2,3,4	2	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3	Inventory control,					08	13.33	1,2,3,4	2	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
4	Financial management,					08	13.33	1,2,3,4	3	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5	Principals of textile costing,					08	13.33	1,2,3,4	4	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6	Calculation of cost per unit of production,					08	13.33	1,2,3,4	5	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7	Machinery efficiency and production planning.					08	13.33	1,2,3,4	6	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
Reference Books													
1.	Principle of Management – L. M. Prasad												

2.	“Management” by Stoner J A and Freeman R E
3.	Mintzberg, H. (1973). The Nature of Managerial Work. New York: Harper & Row.
4	Financial Management – I M Pandey
5	Human Resource Management – Aswasthappa

Syllabus of Courses

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2021-22		
M.E. (Textile Processing): Regular Programme											
Year	I	Core / Elective / Foundation CBM2212L: Organization & Management in Textile Industry – Practical					Credits / Hours per week		06		
Semester	II	Year of Introduction:2006 Year of Syllabus Revision:					Maximum Marks / Grade		100		
Mode of Transaction		Term work, Practical and viva									
Course Outcome (CO) CBM2212L CO1 Understanding the concept of Organization. CO2 Learn about the Functions of Management CO3 Learn effect of Location of Industry. CO4 Understand the Material Management / Inventory Control CO5 Understand basics of PPC procedure of management. CO6 Developed the basic communication skill											
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	Industrial Visit specifically to HR Department and learning actual Process of HR Practices [Any company of Choice + report]			09	10	1,2,3,4,5	1	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
2	Plant Inventory Management related visit to specific industry by students and understanding practice in Industry [Any company of Choice + report]			09	10	1,2,3,4,5	2	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
3	Financial department of any organization visit and practical training by students prepare report for same and submit report to department [Any company of Choice + report]			12	13	1,2,3,4,5	3	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

4	Textile Engineering Costing Techniques and principal component through Classroom case teaching method	12	14	1,2,3,4,5	4	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
5	Case study on company in classroom focusing on costing aspect	12	13	1,2,3,4,5	4	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
6	Case study on Production and Planning of company + Field visit	12	13	1,2,3,4,5	5	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
7	Case study on actual company Linear Programming Application	12	13	1,2,3,4,5	2	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE
8	Group Discussion, Presentation and Business Games	12	14	1,2,3,4,5	6	5	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Reference Books

1.	Principle of Management – L. M. Prasad
2.	“Management” by Stoner J A and Freeman R E
3.	Mintzberg, H. (1973). The Nature of Managerial Work. New York: Harper & Row.
4.	Financial Management – I M Pandey
5.	Human Resource Management –Aswasthappa

Syllabus of Course

 सत्यं शिवं सुन्दरम्		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry				Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme												
Year	I	Core / Elective / Foundation AMT2225: Numerical & Statistical Methods and Introduction to Computers				Credits / Hours per week		04				
Semester	II	Year of Introduction:2006 Year of Syllabus Revision:				Maximum Marks / Grade		100				
Mode of Transaction		Term work, Practical and viva										
Course Outcome (CO) AMT2225												
CO 1 Understand about the concept of elliptic integral and its applications												
CO 2 Learn about the solution of differential equations using Frobenius method												
CO 3 Apply Frobenius method to solve Legendre and Bessel differential equations												
CO 4 Learn about various numerical schemes to find approximate solution to partial differential equations.												
CO 5 Learn about inferential statistics using the concept of testing of hypotheses												
CO 6 Learn about the flowchart and design an algorithm for a given problem and to develop simple C – programs using operators.												
CO 7 Study about Conditional and Iterative statements which are available in C – language												
CO 8 Learned about the importance and use of Arrays and Functions in C – language												
CO 9 Learned about Strings, Pointers, Structures, Unions and Command Line Arguments												
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)/G lobal (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV)and Professional Ethics (PE)
1	Introduction to elliptic functions. Elliptic Integrals.				15	25	1,2,3,5	1	4,5	SD	G	PE
2	Series solution of ordinary differential equations. Frobenius method, Solution of Bessel’s equation and Legendre’s equation. Bessel’s functions and Legendre’s polynomials.				15	25	1,2, 3,5	2,3	4,5	SD	G	PE
3	Numerical solution of Partial differential equations. Implicit and explicit methods for solving parabolic, hyperbolic and elliptic				15	25	1,2, 3,5	4,5	4,5	SD	G	PE

	equations. Statistical Methods: Testing of hypothesis, sample size, analysis of variance, operating characteristic curve, control charts.								
4	C programming: Algorithms, effective procedures in problem solving, flowcharts, pseudo-code. C Preliminaries: Data types, constants, variables, types specification statements, operators and expressions, library functions, simple C programs. Arrays, pointers, functions, text processing and program using the above features.	15	25	1,2, 3,5	6,7, 8,9	4,5	SD	G	PE

Reference Books

1.	Advanced Engineering Mathematics by Erwin Kreyzig- John Willey & Sons
2.	A text book on Engineering Mathematics by Bali, Sexena & Iyenger
3.	Engineering Mathematics by B. S. Grewal – Khanna Publisher
4	Programming in C – Sudhir Kailer
5	The C programming Language by Kernighan B. W. and Ritchie D. M. - 2nd edition

Syllabus of Course

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme													
Year	I	Core / Elective / Foundation TXC2208: Seminar (Presentation & Viva)					Credits / Hours per week		04				
Semester	II	Year of Introduction:2006 Year of Syllabus Revision:					Maximum Marks / Grade		100				
Mode of Transaction		Presentation & Viva											
Course Outcome (CO) TXC2208 CO 1 Understanding the critical review of textiles CO 2 Developed the skill of presentation CO 3 Developed the skill for report writing.													
Unit No.	Topic/Unit					Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Every student will be required to prepare a critical review on an advanced topic assigned to him and submit it in the form of a standard typed report. The student will also be required to make an oral presentation of the review.					60	100	1,2,3,4,5	1,2,3	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE

Syllabus of Course

		The Maharaja Sayajirao University of Baroda Faculty Technology and Engineering Department of Textile Chemistry					Academic Year		2021-22				
M.E. (Textile Processing): Regular Programme													
Year	II	Core / Elective / Foundation TXC2402: Dissertation					Credits / Hours per week		24				
Semester	III & IV	Year of Introduction:2007 Year of Syllabus Revision:					Maximum Marks / Grade		300				
Mode of Transaction		Presentation & Viva											
Course Outcome (CO) TXC2402 CO 1 Understanding the research methodology. CO 2 Developed new technology for research. CO 3 Developed the skill for research writing.													
Unit No.	Topic/Unit					Contact Hours	Weightage (%)	BT Level	CO	PSO	Elements of Employability (Emp)/ Entrepreneurship (Ent)/ Skill Development (SD)	Relevance to Local (L)/ National (N)/ Regional(R)/ Global (G) developmental needs	Relation to Gender (G), Environment and Sustainability (ES), Human Values (HV) and Professional Ethics (PE)
1	Every student will be required to submit the project report in a typed standard form on a topic set by one or more teachers. The object of the project work is to test the ability of the student to tackle and investigational problems in his field of specialization. Every Student will be orally examined in the subject incorporated in his project report					144	100	1,2,3,4,5	1,2	1,2,3,4	Emp, Ent, SD	L, N, R, G	G, ES, HV, PE